Managerial Ability and Firm Value: A New Perspective

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Abstract

Using a sample of U.S. firms over three decades, we examine whether the efficiency with which managers generate revenue has an impact on firm value. We find that managerial ability is positively related to firm value such that one standard deviation increase in ability is associated with a 5.7% increase in firm value relative to the mean level. Importantly, by exploiting exogenous CEO turnover, we establish causality between managerial ability and firm value. This relation is stronger in the presence of corporate governance mechanisms, such as institutional investors and financial analysts. We also document a reduction in value-destroying practices - such as earnings management - in firms with more efficient managers.

Keywords: Managerial Ability, Firm Value, Corporate Governance, CEO Turnover

JEL classifications: G30, G32, M12

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1. Introduction

How supplier of finance to companies assure themselves of achieving a return on their investments is a key consideration in corporate governance, as argued in Shleifer and Vishny's (1997) influential survey. Many studies have since then examined corporate governance frameworks and their effects on corporate outcomes (e.g., Core, Holthausen, and Larcker, 1999; Gompers, Ishii, and Metrick, 2003; Chhaochharia and Grinstein, 2007). However, a lesser studied but key dimension is the quality of the decisions being made by managers. Top management, after all, is entirely in charge of directing and running the firm, which ultimately affects shareholders' invested capital. From raising capital to investment decisions to day-to-day administration, corporate decision-making is substantially influenced by incumbent managers. If aligning the interests of managers with the interests of shareholders is one important factor through which suppliers of finance assure themselves of getting a return on their investment, the quality of a firm's management is another essential factor that plays a significant role in converging these interests (Hermalin and Weisbach, 2017; Chemmanur, Paeglis, and Simonyan, 2009). Investor capital would be at risk if managers are incompetent or bad at strategy or take on poor projects. Therefore, a crucial question is: does management quality add value to shareholders and genuinely affect corporate outcomes? Our study investigates whether managerial quality has a differential causal impact on corporate outcomes.

Our study is motivated by the numerous scandals of large corporations such as Enron, Tyco, WorldCom, Volkswagen, Parmalat, and Bernie Madoff. These widely-publicized incidents have garnered universal criticism and inflicted significant damage to the reputations of the culprits involved. As a consequence, both the companies and their stakeholders have endured severe financial consequences (Karpoff & Lott Jr, 1993; Zaman et al., 2021; Zaman et al., 2022). Moreover, these scandals have engendered a loss of trust in the implicated

companies, undermining investor confidence, eroding shareholder value, misallocation of capital resources and contributed to increased instability in the financial markets (Cumming et al., 2015; Johnson et al., 2009; Köster and Pelster, 2017). In all these scandals, a recurring factor emerges, pointing to the pivotal role of top management in steering the companies towards their eventual downfall. Given the far-reaching adverse effects of corporate scandals and failures, our research endeavors to explore the value that capable managers bring to shareholder wealth by analyzing their influence on firm value. By delving into this relationship, we aim to comprehend the potential impact of managerial ability on the prosperity and well-being of stakeholders in the corporate ecosystem.

The impact of management on corporate performance is a central research question considered in economics, finance, accounting, and management literature (e.g., Harris and Holmstrom, 1982; Rose and Shepard, 1997; Hermalin and Weisbach, 1998; Malmendier and Tate, 2008; Perez-Gonzalez, 2006; Silva, 2010). For example, Bertrand and Schoar (2003) show that, to a significant extent, the investment, financial, and organizational practices of firms can be explained by managerial influences. Chemmanur et al. (2009) provide evidence that able managers reduce the extent of information asymmetry between firm insiders and outsiders, which affects firms' financial, investment, and payout policies. Moreover, reputable managers can convey the intrinsic value of their firm more credibly to outsiders through IPOs (Chemmanur and Paeglis, 2005). Meanwhile, a strand of recent literature emphasizes the role of managerial ability in determining corporate outcomes, such as accounting practices, cost of capital, investment, and corporate innovation (Demerjian et al., 2012; Demerjian et al., 2013; Mishra, 2014; Pan, Wang, and Weisbach, 2015; Chen et al., 2015, Nadeem et al., 2021). A common proxy, amongst these studies, for managerial ability is the ability with which managers convert corporate resources into revenues.

More efficient managers are those who generate higher revenue for a given level of corporate resources relative to their industry peers (Demerjian et al., 2012). Able managers are better equipped to grasp technological advancements and industry trends, accurately forecast future product demands, identify and execute projects with higher returns, enhance resource productivity, and exhibit greater efficiency in managing their employees. Their enhanced capabilities enable them to make informed decisions and optimize the company's operations. As such, it is anticipated that firms who are managed by efficient managers are more likely to increase the firms' value, which maximizes long-run shareholder wealth. Demerjian et al. (2012) examine the impact of management on corporate outcomes, and further extend this rapidly growing literature.[1] In particular, their study concentrates on the integrated outcome of team talents and explores the extent to which managerial ability has an impact on firm value, which eventually increases long-run shareholder wealth maximization.

We use Demerjian et al. (2012) measure of managerial ability as our main proxy of management quality. They estimate the component of ability that is attributable to the management team, after accounting for firm-level factors such as age, size, free cash flow, industry, and operational complexity. We utilize Tobin's Q as the main measure of firm value following recent literature (e.g., La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2000; Fauver, Hung, Li, and Taboada, 2017). The paper starts the empirical analysis by conducting an OLS analysis using a large sample of publicly listed U.S. firms over the period 1988–2017. Firm value is regressed on lagged managerial ability firm-level control variables that are shown to affect firm value. To account for unobservable and time-invariant characteristics, we include industry, firm and year fixed effects in the baseline specifications. The results reveal a positive and statistically significant relation between the level of managerial ability and firm value. In terms of the economic significance of this relationship, we find that one standard deviation

[1] Managerial ability has been actively used in the recent literature (e.g. Baik, Farber, and Lee, 2011; Demerjian et al., 2013; Chen et al., 2015; Cornaggia, Krishnan, and Wang, 2017; Guan, Li, and Ma, 2018).

increase in MA Score is associated with a 5.7% increase in the firm value measured by *Tobin's Q* relative to the mean level [i.e. (0.121 × 0.897) / 1.913 = 5.7%]. Similarly, one standard deviation increase in *MA Rank* is associated with a 4.1% increase in the firm value relative to the mean level [i.e. (0.280 × 0.282) / 1.913= 4.1%]. For further robustness, we show that the baseline results are not sensitive to the inclusion of time-varying CEO attributes and corporate governance controls. The results also remain unchanged when using alternative measures of managerial ability and firm value. These results collectively indicate that managerial ability enhances shareholder wealth.

To address endogeneity concerns, we utilize propensity score matching (PSM) to compare firm value between a group of firms that have high managerial ability (treatment) a group of firms that have low managerial ability (control). We find that no statistically significant differences exist in firms' characteristics except those related to managerial ability, and firm value proxies appear to be significant at 1% level between both groups. Additionally, we exploit a quasi-natural experiment that generates a plausibly exogenous shock to managerial ability, namely exogenous CEO turnover during the 1992–2005 period. CEO turnover is defined as exogenous if the departure of the CEO is announced at least six months before the expected succession date or is due to a well-specified health problem (Eisfeldt and Kuhnen, 2013). Recent studies utilize exogenous CEO turnover events in establishing causality between CEO past experience and corporate risk-taking (Bernile, Bhagwat, and Rau, 2017; Tosun, Eshraghi, and Muradoglu, 2021), and inventor CEOs and higher-quality innovation (Islam and Zein, 2019). Moreover, Demerjian et al. (2012) show that replacing one CEO with another more (less) able CEO is associated with an increase (decrease) in subsequent firm performance. As such, a firm that experienced exogenous CEO turnover appears to be a good candidate for a quasi-natural experiment that generates a plausibly exogenous reduction in managerial ability. We use the difference-in-differences (DiD) approach to compare firm value of

treatment and control firms surrounding exogenous CEO turnover. In line with the main findings, we find treatment firms that experience an exogenous reduction in managerial ability have lower firm values compared to control firms which do not experience such reduction in managerial ability. These results suggest that our findings are robust to potential omitted variable bias and endogeneity concerns.

Having established that more efficient managers are positively associated with shareholder wealth, the study examines this relation in the presence of alternative corporate governance mechanisms. Specifically, given the governance role of institutional investors and financial analysts in monitoring firms, which encourages a higher level of disclosure and a lower level of information asymmetry (e.g., Shleifer and Vishny, 1986; Brennan and Subrahmanyam, 1995; Yu, 2008), we investigate the impact of managerial ability on firm value if firms are exposed more to a high (low) level of institutional ownership or financial analysts' coverage. It is predicted that a stronger relation will hold between managerial ability and firm value in a subset of firms that are exposed more to monitoring by institutional investors or financial analyst coverage than those firms that are less exposed to such mechanisms. The results indicate that the impact on firm value is more pronounced in a subset of firms that are exposed more to governance mechanisms.

Finally, if managerial ability increases shareholder wealth, it is intuitive to observe a reduction in value-destructive practices, such as earnings management. Specifically, we study examine the relation between the interaction of managerial ability and firm value on accrual-based and real earnings management. The coefficient estimate on the interaction between managerial ability and firm value matters as it captures the incremental effect on earnings management. The results show that the interactive coefficient is negative and statistically significant, suggesting that earnings management tends to decline in firms with more efficient managers and a higher firm value. Coupled with the preceding results, the positive effect that

managerial ability has on firm value is of real economic significance, as it appears that managerial ability not only increases shareholder wealth but also decreases value-destroying practices such as earnings management.

This study contributes to the literature in several ways. *Firstly*, it contributes to the managerial ability literature by illustrating its positive impact on firm value. Our paper is, therefore, related to recent studies that focus more on the consequences of managerial ability on corporate outcomes. For instance, existing studies show that more able managers are associated with higher stock return (Demerjian et al., 2012), produce more accurate earnings forecasts (Baik et al., 2011; Demerjian et al., 2013), are more innovative (Chen et al., 2015), reduce information asymmetry (Chemmanur & Paeglis, 2005), affect corporate investments (Bertrand & Schoar, 2003; Jian and Lee, 2011; Habib & Hasan, 2017, Nadeem et al., 2021), related to firm performance (Chang et al., 2010), have higher credit ratings (Bonsall et al., 2017; Cornaggia et al., 2017), improve the quality of financial reporting (García-Sánchez & García-Meca, 2018), involved in tax avoidance (Dyreng et al., 2010; Koester et al., 2017), increase income smoothing (Baik et al., 2020), reduce stock price synchronicity (Fu et al., 2022), and increase climate change disclosures (Daradkeh et al., 2023). We extend this emerging managerial ability literature by showing its effect on shareholder wealth and firm value.

Secondly, while prior studies mentioned above examine the role of managerial ability in determining certain economic outcomes, ours explores the causal effects that managerial ability has on aggregate firm value – in other words, the extent to which shareholder wealth is affected by management team ability. Prior studies find that firm value is affected by several factors, including managerial ownership (Morck et al., 1988), board of directors (Yermack, 1996; Oxelheim & Randøy, 2003), corporate governance (Gompers et al., 2003; Ammann et al., 2011), stock market liquidity (Fang, Noe, and Tice, 2009); social ratings (Cellier & Chollet,

2016), board reforms (Fauver et al., 2017), bribes (Zeume, 2017), managerial indiscretions (Cline, Walkling, and Yore, 2018), foreign investments (Likitwongkajon & Vithessonthi, 2020), ESG certification (Wong et al., 2021) and going digital (Chen & Srinivasan, 2023). Most of these studies focused on the role of firm-, industry-, or market-level factors on firm value. However, these studies tend to overlook the potential influence of individual managers in shaping firm value. As such, we extend the literature on the determinants of firm value by incorporating a human aspect (non-observable manager attribute), namely the managerial ability.

Thirdly, our research also adds to the existing body of knowledge on earnings management. Previous studies have established connections between earnings management and various factors such as declines and losses in earnings, equity incentives for CEOs and CFOs, financial analyst forecasts, IPO performance, CEO tenure, and the prevalence of a gambling culture (Burgstahler and Dichev, 1997; Beatty, Ke, and Petroni, 2002; Bergstresser and Philippon, 2006; Jiang, Petroni, and Wang, 2010; Cheng and Warfield, 2005; Teoh, Welch, and Wong, 1998; Ali and Zhang, 2015, Alharbi et al., 2023). Our findings demonstrate that more effective managers not only contribute to enhancing shareholder wealth but also help reduce harmful practices like earnings management. This outcome aligns with the notion that competent managers work to minimize information asymmetry between company insiders and outsiders (e.g., Chemmanur et al., 2009), thereby making it less likely for proficient managers to engage in value-destroying activities.

The remainder of this paper proceeds as follows. Section 2 describes the data and provides descriptive statistics of the main variables. Section 3 provides the baseline regression results, robustness tests, and endogeneity tests. In Section 4, the role of corporate governance mechanisms is explored. Section 5 documents the impact of managerial ability on earnings management. Section 6 sets forth the conclusions.

2. Data and Approach

The data are obtained from several sources. Managerial ability data are obtained from Peter Demerjian's web page. [2] Accounting data are from the Compustat database. Stock data are from the Center for Research in Security Prices (CRSP). Institutional blockholders' ownership data are from the Thomson-Reuters Institutional Holdings database. Financial analyst data are from the Institutional Brokers Estimate System (I/B/E/S) database. We start with all firms with managerial ability data that are available from 1980 to 2016. We then keep U.S. operating firms defined as firms with CRSP share codes of 10 or 11. Firms that are financials or utilities are dropped. Observations with missing accounting data are excluded. We also exclude observations with a stock price or total assets value of less than one dollar or US $10 million, respectively. The final sample consists of 76,746 firm-year observations during the 1988–2017 period.

2.1 Managerial ability score

The study examines managerial ability using the measure proposed by Demerjian et al. (2012), which is estimated based on data envelope analysis (DEA) methodology. This approach to measuring the ability with which resource inputs are converted into resource outputs has been heavily used in the recent accounting and finance literature (e.g., Baik et al., 2011; Demerjian et al., 2013; Chen et al., 2015; Cornaggia et al., 2017; Guan et al., 2018). In estimating ability, revenue is considered the sole output from applying DEA methodology, with more able management teams being those who generate the highest level of revenue from a given set of corporate resources (inputs). Corporate inputs considered in the process of generating revenue are: *Net Property, Plant and Equipment; Net Operating Leases; Net R&D; Purchased Goodwill; Other Intangible Assets; Cost of Inventory; and Selling, General, and Administrative Expenses (SG&A).*

[2] The data can be downloaded from: http://faculty.washington.edu/pdemerj/data.html.

The process of calculating ability involves multiple steps. In the first step, firms are sorted into groups by year, within which the relative ability program is estimated. Second, the weights on inputs and outputs are varied such that the ratio of outputs to inputs is maximized. The weights are assigned such that each firm's weight is maximized with respect to other firms in the same year. The resulting weights are firm-specific. Third, the derived optimal weights are multiplied by the corresponding output and input quantities and summed across all outputs and inputs. This yields a ratio-based ability score for each firm. Fourth, all ability scores are scaled by the highest ability score within the year group, resulting in an ordinal sorting of firms in terms of relative ability, where the most efficient firm has a value of one, indicating optimal ability. Fifth, the weights are constrained to be non-negative. This presumes that each input and output is valuable.

Once firm ability is calculated according to the DEA approach, it is parsed out into firm-level and manager-level components by regressing total firm ability on six firm characteristics that affect firm ability: firm size, firm market share, cash availability, life cycle, operational complexity, and foreign operations. To form the estimate of managerial ability, a Tobit regression is performed by year. The residual from the regression captures the component of firm ability that is not attributable to firm characteristics and is instead due to managerial decision-making. This component of firm ability is referred to as the "managerial ability score" (*MA Score*). In the regression analysis, this paper utilizes both the ability score variable and the ability rank. The ability rank (*MA Rank*) measures how the *MA Score* ranks amongst other sample firms in a given year.

2.2 Firm Value

The paper follows the literature on firm value (e.g., La Porta et al., 2000; Doidge, Karolyi, and Stulz, 2004; Fang et al., 2009; Fauver et al., 2017) and defines *Tobin's Q* as the main

measure of firm value. *Tobin's Q* is the ratio of the sum of total assets less the book value of equity plus the market value of equity, divided by total assets, calculated as follows:

$$Tobin's\ Q\ = \frac{(AT\ -\ CEQ + PRCC_F * CSHO)}{AT} \qquad (1)$$

where *AT* is the book value of total assets, *CEQ* is the book value of equity, *CSHO* is the total number of shares outstanding, and *PRCC_F* is the stock price at the end of the year.

The second measure is the industry adjusted of firm value *IndAdjQ*. Specifically, this study follows prior studies (e.g., Villalonga and Amit, 2006; Fauver et al., 2017) and constructs an industry adjusted firm value, which captures the relative performance of a firm relative to its industry peers, measured at the two-digit SIC code level. Specifically, *IndAdjQ* is computed as *Tobin's Q* subtract from it the average *Tobin's Q* for firms with the same two-digit SIC code for each firm-year. *Tobin's Q*, the ratio of the firm's market value to the replacement cost of its assets, has been widely used as a measure of firm value in recent literature (e.g., Kaplan and Zingales, 1997; Morck et al., 1988; Yermack, 1996; Gompers et al., 2003).

2.3 Firm-level control variables

The study controls for several firm-level characteristics that may affect firm value. Specifically, the paper follows Fauver et al. (2017) and controls for firm size (*Size*), which is the natural logarithm of total assets, firm age (*Age*), the natural logarithm of firm age approximated by the number of years listed on the CRSP, and total debt divided by total assets (*LEV*). The study also controls for the one-year sale growth rate (*SGR*), return on assets (*ROA*), research and development expenditure (*R&D*), capital expenditures (*Capex*), and net property, plant, and equipment (*Tangibility*) following Aggarwal, Erel, Stulz, and Williamson (2009). As with Gugler, Mueller, and Yurtoglu (2004), the paper also controls for free cash flow (*FCF*). The paper lastly controls for dividends (*Dividend*) like Villalonga and Amit (2006). All dependent and independent variables are winsorized at the 1% and 99% percentiles to minimize the effects of outliers. Detailed variable definitions are presented in Appendix 1.

2.4 Descriptive statistics

This subsection presents the descriptive statistics of the main variables used in this paper in Table 1. In summary, on average, firm value measured by *Tobin's Q* (*IndAdjQ*) has an average of 1.913 (-0.096) with a standard deviation of 1.335 (1.279).[3] The average *MA Score* is 0.006 with a standard deviation of 0.121. *MA Rank* has an average value of 0.559 with a standard deviation of 0.280. An average firm in the sample has total assets of $1.779 billion, a return on assets of 0.102, a leverage ratio of 0.211, an *R&D* ratio of 0.045, a dividend indicator of 0.337, a capital expenditures ratio of 0.059, an assets tangibility ratio of 0.260, a sales growth rate of 19.56%, a free cash flow ratio of 0.005, and an average age of 18 years.

[Insert Table 1]

3. Managerial Ability and Firm Value

This section examines the relation between managerial ability and firm value. The analysis begins by conducting an OLS regression analysis, where the two measures of firm value are regressed on managerial ability measures and control variables. Then, the study supplements the analysis with a comprehensive set of robustness tests. To support the main results, the study conducts a subsample analysis for high managerial ability and low managerial ability. To establish causality between managerial ability and firm value, the study exploits exogenous CEO turnovers as a quasi-natural experiment for a plausible exogenous decrease in managerial ability.

3.1 Baseline OLS Results

The study starts the analysis with the OLS regression analysis of the relation between managerial ability and both measures of firm value. The two measures of firm value are

[3] The study's sample mean of *Tobin's Q* is comparable to that reported in Fang et al. (2009), which has an average of 1.828 with a standard deviation of 1.360.

regressed on the lagged managerial ability measures and include a full set of firm-level control variables as follows:

$$Tobin's\ Q_{ijt}\ (IndAdjQ_{ijt}) = \beta_0 + \beta_1 MA\ Score(MA\ Rank)_{ijt-1} + \beta_z Controls_{ijt-1} + \phi_i + \omega_j + \psi_t + \varepsilon_{i,j,t} \quad (2)$$

where *i*, *j*, and *t* refer to firm, industry, and year, respectively. The dependent variable is firm value measure (*Tobin's Q*) or industry adjusted firm value measure (*IndAdjQ*). The key independent variable of interest is either managerial ability (*MA Score*) or managerial ability rank (*MA Rank*). Control variables consist of firm size (*Size*), return on assets (*ROA*), leverage (*LEV*), research and development (*R&D*), dividend (*Dividend*), capital expenditures (*Capex*), assets tangibility (*Tangibility*), free cash flow (*FCF*), sale growth (*SGR*), and firm age (*Age*). ϕ_i refers to the year fixed effect, ω_j is the industry fixed effect, whereas ψ_t is the firm fixed effect. Detailed variable definitions are presented in Appendix 1.

In Table 2, we run two separate specifications for each dependent variable. In the first, industry and year fixed effects along with the full set of firm-level control variables are included. Industry fixed effects account for all time-invariant industry-level factors that might be jointly related to both the level of institutional ownership and managerial ability. Year fixed effects account for common macroeconomic shocks. In the second specification, the table replaces industry fixed effects with firm fixed effects. Firm fixed effects account for all time-invariant firm-level characteristics that might be associated with both the level of managerial ability and firm value. The second specification is a more robust model, as it helps in overcoming simple endogeneity concerns stemming from omitted variables bias. The table corrects standard errors for clustering at the firm level.

[Insert Table 2]

Table 2 reports the OLS regression results. Columns (1), (3), (5), and (7) report regression results with industry fixed effects, whereas columns (2), (4), (6), and (8) report regression results with firm fixed effects. The results in Table 2 provide strong support for the main proposition that more efficient managers who run their operations and convert resource inputs into resource outputs increase firm value. Specifically, it is found that across all the models, and the two measures of firm value, the coefficient estimate on *MA Score* (*MA Rank*) is positive and significant at the 1% level, indicating a positive association between managerial ability and firm value. These results are not only robust to different types of fixed effects but also economically meaningful. For example, taking the coefficient on *MA Score* from column (1) of 0.897, the study finds that a one standard deviation increase in *MA Score* is associated with a 5.7% increase in firm value relative to the mean level [i.e. (0.121 × 0.897) / 1.913 = 5.7%]. Likewise, one standard deviation increase in *MA Rank* is associated with a 4.1% increase in the firm value relative to the mean level [i.e. (0.280 × 0.282) / 1.913= 4.1%].

Turning the attention to the control variables, the results show that firm size and leverage are mostly negatively associated with both measures of firm value, despite being statistically insignificant when including industry fixed effects in columns (1), (3), (5), and (7). Profitability, R&D expenditures, dividend, capital expenditures, free cash flow, and the growth in sale are positively related to firm value in all the specifications, whereas assets tangibility and firm age are negatively related to both measures of firm value across all the models.

Overall, the analysis in this subsection suggests a strong and positive relation between managerial ability and firm value.

3.2 Robustness Tests

This subsection supplements the baseline results with a set of robustness tests to validate the main results. Table 3 reports the robustness results. The robustness tests are based on the

model specification with firm and year fixed effects, but additional control variables or use alternative measures of managerial ability and firm value are included. For brevity, the table only reports the coefficients on the variables of interest.

[Insert Table 3]

In Panel A of Table 3, the test controls for CEO-level characteristics. Although in the empirical analysis the study tests whether ability of the entire executive management team enhances firm value, the CEO is largely responsible for the effective operation of the management team. As such, the results can be related to observable CEO characteristics. This analysis includes CEO-level characteristics that prior literature has shown to be important in driving corporate outcomes, such as CEO overconfidence, CEO age, CEO tenure, and incentive variables including equity compensation delta and vega.

Malmendier and Tate (2008) exploit the exposure of CEOs to the idiosyncratic risk of their firms through their holdings of stock options. They define an overconfident CEO as one who delays the exercise of vested options that are at least 67% in the money. This paper follows them and defines CEO overconfidence (*Holder 67*) as an indicator that takes the value of one when the CEO is identified as overconfident, and zero otherwise. The paper also follows Campbell, Gallmeyer, Johnson, Rutherford, and Stanley (2011) in estimating an average moneyness of the CEO's option portfolio for each year, since the data on the CEO's option holdings and exercise prices for each option grant are not available. First, for each CEO-year, the average realizable value per option is calculated by dividing the total realizable value of the options by the number of options held by the CEO. The strike price is computed as the fiscal year end stock price minus the average realized value. The average moneyness of the options is then calculated as the stock price divided by the estimated strike price. As the study is only

interested in options that the CEO can exercise, only the vested options held by the CEO are included.

This study also follows Hirshleifer, Low, and Teoh (2012) and controls for CEO age (*CEO age*), tenure (*Ln(Tenure)*), and incentives. The CEO incentives used in the analysis are CEO delta (*Ln(Delta)*) and vega (*Ln(Vega)*). *Delta* is defined as the dollar change in a CEO's stock and option portfolio for a 1% change in stock price and measures the CEO's incentives to increase the stock price. *Vega* is the dollar change in a CEO's option holdings for a 0.01 unit change in stock return volatility, which measures the risk-taking incentives generated by the CEO's option holdings. The results are reported in Panel A of Table 3. The table shows that the main results do not change qualitatively, suggesting that the results are unlikely to be driven by omitted CEO-level control variables.

Panel B of Table 3 controls for corporate governance. Since the study deals with the causal effect of managerial ability on firm value, it is important to control for other corporate governance characteristics since these can be correlated with managerial ability while at the same time driving firm value. Although firm fixed effects plausibly already account for the corporate governance environment in each firm, this panel further includes corporate governance variables in the regression specification to account for time-varying governance characteristics. These include institutional ownership (*IO*); the entrenchment index (*E-index*) compiled by Bebchuk, Cohen, and Ferrell (2009); the proportion of independent directors sitting on the board (*% of independent directors*), where independent outside directors are defined as directors who are not current or past employees of the corporation, do not have substantial business or family ties with management, and do not have potential business ties with the firm; and an indicator variable equal to one if the CEO and Chairman of the Board are the same person (*CEO duality*). The results in Panel B demonstrate that the coefficient estimates on both measures of managerial ability remain positive and significant, even after

controlling for corporate governance factors. These results suggest that firm value is not primarily driven by the overall corporate governance variables, but the ability of managers rather has the ability to enhance the value of firms.

In Panel C of Table 3, to rule out that the results are driven by stock characteristics, such as past performance, stock volatility, and stock liquidity, the study re-examines specification (1), controlling for such stock characteristics. Stock past performance (*Stock Return*) is defined as a firm's annual stock return calculated from monthly returns (CRSP item *ret*) over the previous 12 months. *Stock Volatility* is the annualized standard deviation of returns, estimated from monthly stock returns over the previous year. *Stock Liquidity* is defined as the annual average of the daily ratio of the absolute value of stock return divided by dollar trading volume, multiplied by one million (Amihud, 2002). The results, reported in Panel C, show that the coefficient estimates on *MA Score* and *MA Rank* stay positive and statistically significant, suggesting that the results are not driven by past performance, stock volatility, and stock liquidity.

In Panel D of Table 3, the study runs a two-stage least squares (2SLS) regression by using the two-year lagged value of managerial ability (*MA Score*) as an instrument for managerial ability. This approach is consistent with Hilary and Hui (2009) and Kumar, Page, and Spalt (2011), and it further mitigates the issue of causality and omitted variables bias (Atawnah et al., 2023). The results from the 2SLS regression are consistent with the baseline results, suggesting that managerial ability enhances firm value.

In Panel E of Table 3, the study uses the industry adjusted alternate measure of managerial ability. The measure is an industry adjusted *MA Score*. Specifically, the study follows prior studies (e.g., Rajgopal, Shevlin, and Zamora, 2006) and constructs an industry adjusted ability score, which captures the relative performance of a firm's management team relative to industry peers (measured at the two-digit SIC code level). Specifically, for each

industry and year, the study calculates the average *MA Score*, and subtracts this average score from the firm-level *MA Score*. The study denotes this variable as the *IndAdj MA Score*. The results reported in Panel E of Table 3 show that the results remain qualitatively unchanged when using the industry adjusted *MA Score*.

Finally, in Panel F of Table 3, the study uses an alternative measure of firm value, namely the ratio of market to book value (*MktBk*). Following Chemmanur et al. (2009), the study defines the alternative measure of firm value as the firm's market capitalization plus total debts plus liquidating value of preferred stock minus deferred taxes and investment tax credit divided by total assets. The results reveal that both measures of managerial ability are also related to firm value using such an alternative measure.

Overall, the results presented in Tables 2 and 3 suggest that a positive and robust relation exists between managerial ability and firm value. These results provide supporting evidence for the notion that executive managers who manage their day-to-day operations more efficiently will enhance firm value.

3.3 Subsample Analysis – High vs Low Managerial Ability

This subsection studies the relation between managerial ability and firm value after partitioning the sample into high and low managerial ability. The *High ability* (*Low ability*) sample includes firms whose MA Score or MA Rank is above (below) the cross-sectional median of MA Score or MA Rank, respectively. The logic of this test is to support the main hypothesis that more efficient managers who utilize internal corporate recourse efficiently to provide a higher level of revenue, are more likely to have a greater impact on firm value.

[Insert Table 4]

Table 4 reports the subsample results. Columns (1) to (4) report regression results of the relation between managerial ability measures and *Tobin's Q*, whereas the results of the relation between two measures of managerial ability and *IndAdjQ* are reported in columns (5) to (8). All regressions control for firm and year fixed effects. Standard errors are clustered at the firm level. The results in Table 4 provide strong evidence that more efficient managers are more able to influence firm value through their efficient management. Specifically, in columns (1) and (3) the results show that managerial ability is only related to firm value in a subsample of firms that are ruled by more efficient managers, whereas such a relation is waning in a subsample of firms that contain managers of low ability as in (2) and (4). For example, in columns (1) and (3) the coefficient of estimates on *MA Score* and *MA Rank* is positive and statistically significant at the 1% level when ability is above the cross-sectional median, while in columns (2) and (4) the coefficient of estimates on *MA Score* and *MA Rank* is positive and statistically unrelated to *Tobin's Q* when ability measures are below the cross-sectional median. Similarly, managerial ability is only related to *IndAdjQ* in a subsample of firms that are directed by more efficient managers as in columns (5) and (7), but not related to firm value if firms are exposed more to less efficient managers. Taken together, the results in this subsection further support the main findings that more efficient managers are likely to have a profound effect on firm value and maximize shareholder wealth as a result.

3.4 Addressing Endogeneity

The results so far suggest a positive relation between managerial ability and firm value. While the results are robust to the inclusion of firm fixed effects that absorb time-invariant unobservable firm characteristics as well as a comprehensive set of time-varying control variables, the findings may still be subject to reverse causality concerns. It is possible that firms with high value attract efficient managers and that it is not the efficient managers themselves that create that value. Hence, the direction of causality goes from firm value to managerial

ability. As such, to further address underlying endogeneity concerns relating to the relation between managerial ability and firm value, we utilize two approaches, namely propensity score matching (PSM) and difference-in-difference (DiD) exploiting exogenous CEO turnovers during the 1992 – 2005 period.

3.4.1 Propensity Score Matching (PSM)

We apply propensity score matching to compare firm value between a group of firms that have high managerial ability (treatment) a group of firms that have low managerial ability (control). High (low) managerial ability includes firms whose MA Rank is above (below) the cross-sectional median of MA Rank. We choose nearest neighbor with replacement to ensure that both groups are comparable, and no significant differences are detected between them (Michael et al., 2022). We report the results in Table 5.

[Insert Table 5]

Table 5 reports univariate mean comparisons between treatment and control firms' characteristics the same as those used in Table 2 and their corresponding *t*-statistics. To estimate the propensity score, we run a logit regression of a dummy variable that equals one if a firm has a MA Rank above the cross-sectional median, and zero if otherwise and include all the independent variables as in our baseline regression. After estimating the model, we use the propensity scores to perform in which we choose nearest neighbor with replacement. The comparison results indicate that no statistically significant differences exist in firms' characteristics, and firm value proxies are significant at 1% level between both groups. Overall, the univariate comparisons suggest that the matching process has successfully removed observable differences between these two groups except that related to managerial ability, which confirms that the difference in firm value is affected by the level of managerial ability.

3.4.2 Difference-in- differences – Evidence from CEO Turnover

In this subsection, we follow Zaman et al. (2021) and exploit a quasi-natural experiment that generates a plausibly exogenous shock to managerial ability, namely exogenous CEO turnovers. Demerjian et al. (2012) document that replacing CEOs with more (less) efficient CEOs is associated with improvements (declines) in subsequent firm performance. Recent studies utilize exogenous CEO turnover events in establishing causality between CEO experience and corporate risk-taking (Bernile et al., 2017), and inventor CEOs and higher-quality innovation (Islam and Zein, 2019). Accordingly, a firm that experienced exogenous CEO turnover appears to be a good candidate for a quasi-natural experiment that generates a plausibly exogenous reduction in managerial ability.

To address endogeneity, this study borrows exogenous CEO turnover data from Eisfeldt and Kuhnen (2013), which classifies CEO turnovers as either exogenous, forced, or unclassified turnovers during the period 1992–2005.[4] A CEO turnover is defined as exogenous if the departure of the CEO is announced at least six months before the expected succession date or is due to a well-specified health problem. Forced CEO turnovers and unclassified CEO turnovers are not utilized in this study since they are unlikely to be exogenous (e.g., Weisbach, 1988; Fee and Hadlock, 2000). This study uses the difference-in-differences (DiD) approach to compare firm value measures of treatment and control firms surrounding exogenous shock (Atawnah et al., 2023). To conduct our test, we define a treatment group which consists of firms that experienced reductions in MA Score a year following an exogenous CEO turnover takes place. We also create a control group which includes firms that have not experienced such reductions in MA Score in the same year. After applying such criteria, we end up with 428 exogenous CEO turnovers, and 213 events where MA Score deceases. We then match treatment and control observations using propensity score matching by choosing nearest

[4] Data on CEO turnover can be downloaded from: https://sites.google.com/site/andrealeisfeldt/.

neighbor without replacement on the same control variables as in Table 2. We report our findings in Table 6.

[Insert Table 6]

In Panel A of Table 6 we report the univariate mean comparisons between treatment and control firms' characteristics and their corresponding *t*-statistics. The results show that treatment and control firms prior to the shock are statistically identical except those relating to Managerial ability. To arrive at the DiD estimator, we follow recent studies and measure the effects of such events on firm value (e.g., Hong and Kacperczyk, 2010; He and Tian, 2013; and Irani and Oesch, 2013). Specifically, in Panel B of Table 6, we calculate the change in firm value measures from the pre-event period (defined as a three-year period preceding the shock) to the post-even period (defined as a three-year period after the shock) from both treatment and control groups. The difference is then averaged over the treatment (control) group and reported in Column 1 (2). The DiD estimator is simply the difference in the differences for the treatment and the control groups, which reported in Column 3. We Follow Hong and Kacperczyk (2010), and cluster standard errors of the DiD estimators at the event level (exogenous CEO turnovers). We find that a reduction in firm value is associated with an exogenous reduction in MA Score. Particularly, the average change in the three-year of *Tobin's Q* for treatment firms is -0.167, and that for control firms is much smaller, -0.006. The DiD estimator for *Tobin's Q* is -0.161 and significant at the 10% level. We find similar results using the second measure of firm value, *IndAdjQ*. While we acknowledge there are limitations in our identification attempts, the consistency of the directional results suggests that the association is indeed causal.

4. Examining The Role of Corporate Governance

Having established that more efficient managers are positively associated with firm value, this section examines such a relation in the presence of alternative corporate governance mechanisms. Specifically, given the governance role of institutional investors and financial analysts in monitoring firms, which increases disclosure and decreases information asymmetry (e.g., Shleifer and Vishny, 1986; Brennan and Subrahmanyam, 1995; Yu, 2008), this section investigates the impact of managerial ability on firm value in a subset of firms that are exposed more to monitoring by institutional ownership or financial analyst coverage. It is expected that the relation between managerial ability and firm value is more pronounced if firms are exposed more to oversight by institutional investors or financial analyst coverage. The section reinvestigates the relation between managerial ability and firm value in the presence of: (i) institutional investors' ownership; and (ii) financial analysts' coverage.

4.1 Institutional Investor Ownership

Several studies suggest that institutional investors affect the corporate outcomes of firms either directly by influencing top management (Shleifer and Vishny, 1986; Huddart, 1993; Bolton and von Thadden, 1998; Faure-Grimaud and Gromb, 2004) or indirectly through their threat of exit (Admati and Pfleiderer, 2009; Edmans, 2009). Because of their large ownership, institutional investors can exert monitoring upon managers, forcing them to align their interests with shareholders (Gillan and Starks, 2000, 2003). For example, prior studies show that institutional ownership can affect firm value, R&D investment, managerial pay, CEO turnover, payout policy, mergers and acquisitions, corporate governance, and earnings management (Gompers et al., 2003; Bushee, 1998; Hartzell and Starks, 2003; Parrino, Sias, and Starks, 2003; Grinstein and Michaely, 2005; Chen, Harford, and Li, 2007; Chung and Zhang, 2011, Alharbi et al., 2023). Baghdadi, Bhatti, Nguyen and Podolski (2018) provide evidence that managers become more efficient if they are mentioned by institutional investors as using MA Score as a

proxy for managerial ability. If that is the case, it is anticipated that managers who are exposed more to monitoring by institutional investors are more likely to affect the value of firms in a positive way. In line with this notion, this subsection partitions the sample into firms that are exposed to more monitoring and firms that are exposed to less monitoring by institutional investors.

To test this conjecture, the test relates *MA Score* and *MA Rank* to firm value measures after partitioning the sample into a *High IO* sample and *Low IO* sample. The *High IO* (*Low IO*) sample includes firms whose institutional ownership is above (below) the cross-sectional median of institutional ownership of the sample. Institutional ownership is defined as the percentage of institutional shareholding held by 13-F institutions in line with the existing literature (e.g., Hartzell and Starks, 2003). All regressions control for firm and year fixed effects. Standard errors are clustered at firm level. For each subsample, the test runs the baseline regression as in Table 2, where firm value measures are regressed on managerial ability (*MA Score* and *MA Rank*) and control variables. The rationale behind this analysis is to examine whether the firms that monitored by IO increase firm value by enforcing managers to be more efficient. For brevity, the subsection only reports the coefficients on the variables of interest.

Panel A of Table 7 presents the results. Columns (1) to (4) report regression results of *Tobin's Q*, and columns (5) to (8) report regression results of *IndAdjQ*. The results show that managerial ability measures are only related to firm value in a subsample of firms that are exposed more to the monitoring of *IO*. Specifically, the coefficient estimate on the *MA Score* (*MA Rank*) is positive and statistically significant at the 5% level in a subsample that contains high ownership of institutional investors in columns (1), (3), (5), and (7), while in the subsample of low *IO*, managerial ability is no longer related to firm value as in columns (2), (4), (6), and (8). These results imply that the effects of managerial ability are more pronounced in a subset of firms that are exposed to monitoring by institutional investors, thereby

highlighting the importance of the monitoring role of institutional investors in increasing the ability of executives.

[Insert Table 7]

4.2 Financial Analysts Coverage

Financial analysts are the most important groups affecting firms' share prices, and the second most important group next to institutional investors (Graham, Harvey, and Rajgopal, 2005). In the existing literature, financial analysts are considered effective monitors as they reduce information asymmetry, and therefore mitigate the conflict of interest between shareholders and managers (e.g., Brennan and Subrahmanyam, 1995; Yu, 2008). They can exert monitoring beside conventional corporate governance to prevent misreporting and discipline managerial misconduct (Yu, 2008; Irani and Oesch, 2016). As such, one can expect that analysts' coverage is likely to put more pressure on, and correct the behaviour of, CEOs, which leads to an increase in firm value. Building on this notion, the study examines the relation between managerial ability and firm value in the presence of financial analysts. In particular, the test partitions the sample into firms that are exposed to high coverage and firms that are exposed to low coverage. Financial analyst data are obtained from the Institutional Brokers Estimate System (I/B/E/S) database. For each firm-year observation, financial analyst (*Analyst*) is defined as the average number of analysts who provide earnings estimates over the fiscal year. Firms with missing data are replaced by zero analysts before taking the natural logarithm of one plus the number of analysts in line with the existing literature (e.g., He and Tian, 2013).

Panel B of Table 7 presents the results. The panel presents the regression results of firm value measures on managerial ability and control variables for a subsample of *High Coverage* (*Low Coverage*). *High Coverage* (*Low Coverage*) is defined as a sample that includes firms where the number of analysts is above (below) the cross-sectional median of the sample. For

each subsample, the test runs the baseline regression as in Table 2, where firm value measures are regressed on managerial ability measures and control variables. All regressions control for firm and year fixed effects. Standard errors are clustered at firm level. The reason behind this analysis is to examine whether firms that are followed more by financial analysts and directed by efficient managers are more likely to have a higher firm value. For brevity, the table only reports the coefficients on the variables of interest. Columns (1) to (4) report regression results of *Tobin's Q*, and columns (5) to (8) report regression results of *IndAdjQ*. The results show that managerial ability is significantly related to firm value in a subsample of firms that are exposed more to the coverage, but not the other way round. In particular, the coefficient estimate on the *MA Score* is positive and statistically significant at the 1% level in a subsample that has more coverage as in columns (1) and (5). Similarly, the coefficient estimate on the *MA Rank* is positive and statistically significant at the 5% level if the firm is followed more by financial analysts as in columns (3) and (7). However, the relation between managerial ability and firm value is fading if firms are in the sample of lower coverage across columns (2), (4), (6), and (8). Similar to IO, financial analysts improve the ability of managers, which increases firm value as a result.

Overall, the results in this section show that the relation between managerial ability and firm value is more salient in the presence of corporate governance mechanisms, including institutional ownership and financial analysts.

5. Implications for Earnings Management

This section concludes the empirical analysis with an examination of what the results mean for a firm's future performance. The results presented up to this point show that managerial ability has the effect of enhancing firm value. Intuitively, one would argue that if managerial ability increases shareholder wealth, as the study shows, a reduction in value-destroying practices, such as earnings management, should be observed. Prior studies show

that earnings management is associated with earnings decreases and losses (Burgstahler and Dichev, 1997; Beatty et al., 2002), managerial equity incentives (Bergstresser and Philippon, 2006; Jiang et al., 2010), analyst forecasts (Cheng and Warfield, 2005), long-run performance of IPOs (Teoh et al., 1998), and CEO tuner (Ali and Zhang, 2015), high corporate risk-taking behavior (Alharbi et al., 2021), and gambling culture (Alharbi et al., 2023). In addition, more able managers curb the extent of information asymmetry between firm insiders and outsiders (e.g., Chemmanur et al., 2009), which makes engaging in value-destroying practices less likely. As such, this section examines the impact of the interaction between managerial ability and firm value on accrual-based and real earnings management. Table 8 reports the results.

[Insert Table 8]

In this empirical model, we follow use accrual-based earnings management (*Kothari_ROA*) in panel A and real earnings management (*Roy_PROD*) in panel B as dependent variables, and lags include all independent variables by one year. In all the specifications a large set of firm-level control variables, as well as firm and year fixed effects, are included. The independent variables are *MA Score* in columns (1) and (3) and *MA Rank* in columns (2) and (4). The study defines the measure of accrual-based earnings management as per Kothari, Leone, and Wasley (2005) and Alharbi et al. (2023). As managers may choose to manage earnings through deviating from the normal business activities instead of using accrual-based earnings management, the study also defines a measure of real earnings management following Roychowdhury (2006), which is the abnormal production costs measured as the deviations from the predicted values.

Panel A of Table 8 relates the interaction between managerial ability and firm value to accrual-based earnings management (*Kothari_ROA*). Columns (1) and (2) report regression results of *MA Score* (*MA Rank*) × *Tobin's Q*, and columns (2) and (4) report regression results

of *MA Score* (*MA Rank*) × *IndAdjQ*. All regressions control for firm and year fixed effects. Standard errors are clustered at the firm level. The coefficient estimate on the interaction *MA Score* (*MA Rank*) × *Tobin's Q* (*MA Score* (*MA Rank*) × *IndAdjQ*) is negative and statistically significant at the 1% level across all the columns, suggesting that the effect of managerial ability on accrual-based earnings management activities is negative for firms with a higher value.

Panel B of Table 8 repeats the same analysis by using the measure of real earnings management (*Roy_PROD*). Similar to panel A, this test relates the interacting of managerial ability with firm value measures to the measure of real earnings management (*Roy_PROD*). Columns (1) and (2) report regression results of *MA Score* (*MA Rank*) × *Tobin's Q*, and columns (2) and (4) report regression results of *MA Score* (*MA Rank*) × *IndAdjQ*. In line with the results in panel A, the results of panel B remain qualitatively the same. In other words, the coefficient estimate on the interactive variable *MA Score* (*MA Rank*) × *Tobin's Q* (*MA Score* (*MA Rank*) × *IndAdjQ*) is negative and statistically significant at the 1% level across all the columns. These results imply that real earnings management decreases substantially in relation to efficient managers and firm value.

Overall, the results in this section show that earnings management activities tend to decline in the presence of managerial ability and higher firm value. Coupled with the preceding results, the positive effect that managerial ability has on firm value is of real economic significance, as it appears that managerial ability not only increases shareholder wealth, but also decreases detrimental activities such as earnings management.

6. Conclusions

In this study we examine whether managerial ability adds value to shareholder wealth by examining its impact on firm value. Given that more able managers are those who generate a higher level of revenue by efficiently utilizing internal corporate resources, which ultimately

increases firm profitability (Demerjian et al., 2012), we hypothesize, and provide evidence that firms who are managed by efficient management increase firms' value, which in turn maximizes long-run shareholder wealth. Using the ability measure of Demerjian et al. (2012), we find that managerial ability has a positive effect on firm value as measured by Tobin's Q. This positive relation is economically meaningful, and robust to the addition of numerous controls and the use of alternative measures of managerial ability and firm value. We conduct a difference-in-differences approach to address endogeneity concerns using exogenous CEO turnovers as exogenous shock in managerial ability to capture the effect of this shock on firm value. The results collectively suggest a positive and causal relation between managerial ability and firm value.

Further, given the governance role of institutional investors and financial analysts in monitoring firms, which encourages a higher level of disclosure and a lower level of information asymmetry, we find that the relation between managerial ability and firm value is more pronounced in a subset of firms that are exposed more to monitoring by institutional investors and financial analysts. Finally, we document a reduction in value-destroying practices, such as accrual-based and real earnings management, in firms with more efficient managers and a higher value. Taken together, the paper's findings suggest that the impact that managerial ability has on firm value is of real economic significance, as it increases shareholder wealth and decreases value-destroying practices such as earnings management.

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Table 1. Descriptive Statistics

This table present descriptive statistics for the variables used in this study. The sample consists of 76,746 firm-year observations during the 1988-2017 period, representing 8,092 unique firms. Detailed variable definitions are provided in Appendix 1.

	N	*Mean*	*P25*	*Median*	*P75*	*Std.*
Panel A: Dependent Variables						
Tobin's Q	76,746	1.913	1.105	1.472	2.181	1.335
IndAdjQ	76,746	-0.096	-0.806	-0.360	0.223	1.279
Panel B: Independent Variables						
MA Score	76,746	0.006	-0.065	-0.014	0.045	0.121
MA Rank	76,746	0.559	0.300	0.600	0.800	0.280
Size	76,746	5.653	4.213	5.462	6.887	1.849
ROA	76,746	0.102	0.062	0.120	0.176	0.141
LEV	76,746	0.211	0.023	0.175	0.335	0.200
R&D	76,746	0.045	0.000	0.004	0.058	0.082
Dividend	76,746	0.337	0.000	0.000	1.000	0.473
Capex	76,746	0.059	0.020	0.040	0.073	0.061
Tangibility	76,746	0.260	0.093	0.199	0.367	0.215
FCF	76,746	0.005	-0.041	0.025	0.079	0.130
SGR	76,746	0.196	-0.009	0.092	0.246	0.496
AGE	76,746	2.440	1.792	2.565	3.219	1.036

Table 2. Managerial Ability and Firm Value

This table presents regression results on the relation between managerial ability, firm value, and control variables. Detailed variable definitions are provided in Appendix 1. All regressions control for firm-, industry-, and year-fixed effects. Standard errors are clustered at the firm level and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

	Tobin's Q				*IndAdjQ*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MA Score	0.897***	0.310***			0.893***	0.305***		
	(9.44)	(3.71)			(9.36)	(3.60)		
MA Rank			0.282***	0.074***			0.279***	0.071***
			(9.31)	(3.06)			(9.19)	(2.95)
Size	-0.002	-0.333***	0.006	-0.329***	-0.002	-0.331***	0.006	-0.328***
	(-0.27)	(-20.91)	(0.86)	(-20.66)	(-0.30)	(-20.91)	(0.83)	(-20.64)
ROA	1.251***	1.243***	1.286***	1.282***	1.246***	1.241***	1.283***	1.281***
	(10.18)	(12.47)	(10.59)	(12.94)	(10.26)	(12.52)	(10.67)	(12.99)
LEV	-0.238***	0.090	-0.245***	0.089	-0.234***	0.091	-0.240***	0.090
	(-4.18)	(1.50)	(-4.28)	(1.48)	(-4.12)	(1.50)	(-4.22)	(1.48)
R&D	5.924***	3.489***	6.086***	3.551***	5.940***	3.541***	6.103***	3.603***
	(29.98)	(13.25)	(30.91)	(13.42)	(29.84)	(13.23)	(30.74)	(13.40)
Dividend	0.121***	0.102***	0.114***	0.102***	0.121***	0.104***	0.114***	0.104***
	(5.36)	(4.52)	(5.06)	(4.52)	(5.39)	(4.59)	(5.10)	(4.59)
Capex	2.265***	1.036***	2.283***	1.039***	2.241***	1.017***	2.260***	1.020***
	(13.11)	(6.94)	(13.27)	(6.95)	(13.06)	(6.84)	(13.23)	(6.86)
Tangibility	-0.702***	-0.553***	-0.706***	-0.555***	-0.697***	-0.546***	-0.702***	-0.548***
	(-11.07)	(-6.06)	(-11.08)	(-6.09)	(-11.08)	(-5.99)	(-11.11)	(-6.01)
FCF	0.523***	0.390***	0.559***	0.395***	0.514***	0.381***	0.549***	0.385***
	(5.51)	(5.21)	(5.85)	(5.26)	(5.43)	(5.07)	(5.76)	(5.12)
SGR	0.261***	0.116***	0.269***	0.118***	0.262***	0.116***	0.270***	0.118***
	(17.11)	(7.72)	(17.44)	(7.87)	(17.02)	(7.61)	(17.35)	(7.76)
AGE	-0.090***	-0.152***	-0.091***	-0.153***	-0.089***	-0.152***	-0.090***	-0.153***
	(-9.07)	(-7.57)	(-9.14)	(-7.59)	(-8.97)	(-7.59)	(-9.03)	(-7.62)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	No	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes	No	Yes
Adjusted R^2	0.26	0.58	0.26	0.58	0.19	0.54	0.19	0.54
Observations	76,746	76,746	76,746	76,746	76,746	76,746	76,746	76,746

Table 3. Managerial Ability and Firm Value: Robustness tests

This table presents robustness tests of the baseline results from Table 2. Panel A provides the results after controlling for CEO-specific factors. Panel B reports the results after controlling for firm corporate governance variables. Panel C reports the results after controlling for stock characteristics. Panel D reports regression results of 2SLS using two-year lagged MA Score as an instrument. Panel E reports regression results using alternative measures of managerial ability. Panel F reports regression results using alternative measures of firm value. Detailed variable definitions are provided in Appendix 1. All regressions control for firm- and year-fixed effects. Standard errors are corrected for clustering of observations at the firm and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

	Tobin's Q		*IndAdjQ*	
	(1)	(2)	(3)	(4)
Panel A: Controlling for CEO characteristics				
MA Score	0.285***		0.279***	
	(3.53)		(3.42)	
MA Rank		0.070***		0.067***
		(2.96)		(2.84)
Holder 67	0.340***	0.341***	0.341***	0.343***
	(11.72)	(11.76)	(11.82)	(11.86)
CEO age	0.018	0.019	0.026	0.027
	(0.17)	(0.19)	(0.25)	(0.26)
Ln (Tenure)	0.026**	0.026**	0.027**	0.026**
	(2.15)	(2.13)	(2.19)	(2.17)
Ln (Delta)	0.179***	0.179***	0.177***	0.177***
	(4.40)	(4.40)	(4.39)	(4.39)
Ln (Vega)	-0.139***	-0.139***	-0.138***	-0.138***
	(-3.09)	(-3.10)	(-3.09)	(-3.09)
Other controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.59	0.59	0.55	0.55
Observations	76,746	76,746	76,746	76,746
Panel B: Controlling for corporate governance				
MA Score	0.308***		0.303***	
	(3.69)		(3.58)	
MA Rank		0.073***		0.071***
		(3.04)		(2.93)
IO	0.241***	0.241***	0.240***	0.240***
	(6.40)	(6.37)	(6.39)	(6.37)
E-index	-0.023*	-0.023*	-0.024*	-0.023*
	(-1.87)	(-1.86)	(-1.92)	(-1.91)
% of independent directors	-0.152*	-0.150*	-0.152*	-0.150*
	(-1.79)	(-1.77)	(-1.81)	(-1.78)
CEO duality	0.006	0.007	0.007	0.007
	(0.25)	(0.25)	(0.27)	(0.28)
Other controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.58	0.58	0.54	0.54
Observations	76,746	76,746	76,746	76,746

Table 3 (Con't)

Panel C: Controlling for Stock Characteristics

MA Score	0.270***		0.261***	
	(3.34)		(3.20)	
MA Rank		0.055**		0.052**
		(2.49)		(2.35)
Stock Return	0.680***	0.680***	0.679***	0.679***
	(51.55)	(51.57)	(51.29)	(51.31)
Stock Volatility	-0.243***	-0.242***	-0.242***	-0.242***
	(-9.31)	(-9.30)	(-9.26)	(-9.25)
Stock Liquidity	-0.197***	-0.197***	-0.197***	-0.197***
	(-29.38)	(-29.35)	(-29.31)	(-29.30)
Other controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.64	0.64	0.61	0.61
Observations	70,162	70,162	70,162	70,162

Panel D: 2SLS with two-year lagged MA Score as instrument

MA Score	0.543***		0.540***	
	(2.79)		(2.77)	
MA Rank		0.302***		0.300***
		(2.78)		(2.77)
Other controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.13	0.13	0.13	0.13
Observations	61,506	61,506	61,506	61,506

Panel E: Alternate measure of managerial ability

IndAdj MA Score	0.326***	0.319***
	(3.55)	(3.44)
Other controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Adjusted R^2	0.58	0.54
Observations	75,208	75,208

Panel F: Alternate measure of firm value

	MktBk	
MA Score	0.268***	
	(3.23)	
MA Rank		0.074***
		(3.04)
Other controls	Yes	Yes
Year FE	Yes	Yes
Firm FE	Yes	Yes
Adjusted R^2	0.59	0.59
Observations	72,615	72,615

Table 4. Subsample Analysis

This table presents regression results on the relation between managerial ability, firm value, and control variables for a subsample of high (low) managerial ability. High ability (Low ability sample includes firms whose MA Score or MA Rank is above (below) the cross-sectional median of MA Score or MA Rank, respectively. Detailed variable definitions are provided in Appendix 1. All regressions control for firm and year-fixed effects. Standard errors are clustered at the firm level and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

	Tobin's Q				*IndAdjQ*			
	High Ability	*Low Ability*	*High Ability*	*Low Ability*	*High Ability*	*Low Ability*	*High Ability*	*Low Ability*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MA Score	0.746***	0.100			0.748***	0.101		
	(5.54)	(0.58)			(5.54)	(0.58)		
MA Rank			0.467***	0.021			0.465***	0.022
			(4.75)	(0.57)			(4.73)	(0.59)
Size	-0.391***	-0.282***	-0.387***	-0.298***	-0.389***	-0.281***	-0.385***	-0.298***
	(-14.97)	(-15.09)	(-12.38)	(-17.05)	(-15.02)	(-15.09)	(-12.45)	(-17.01)
ROA	1.596***	0.946***	1.679***	1.028***	1.597***	0.940***	1.673***	1.028***
	(10.15)	(7.48)	(9.25)	(8.86)	(10.21)	(7.45)	(9.26)	(8.83)
LEV	-0.027	0.181***	-0.022	0.152**	-0.029	0.183***	-0.023	0.152**
	(-0.26)	(2.64)	(-0.19)	(2.21)	(-0.28)	(2.65)	(-0.20)	(2.20)
R&D	2.993***	3.546***	3.083***	3.460***	3.022***	3.616***	3.103***	3.529***
	(8.36)	(8.60)	(7.30)	(9.60)	(8.34)	(8.53)	(7.29)	(9.55)
Dividend	0.099**	0.095***	0.073*	0.112***	0.101**	0.096***	0.076*	0.113***
	(2.49)	(4.23)	(1.69)	(4.89)	(2.54)	(4.30)	(1.75)	(4.94)
Capex	0.996***	0.880***	0.674**	0.973***	0.952***	0.878***	0.638**	0.968***
	(3.57)	(4.92)	(2.33)	(5.49)	(3.44)	(4.90)	(2.23)	(5.46)
Tangibility	-0.520***	-0.581***	-0.417**	-0.594***	-0.493***	-0.586***	-0.393**	-0.596***
	(-2.88)	(-5.93)	(-2.28)	(-6.01)	(-2.73)	(-5.98)	(-2.15)	(-6.02)
FCF	0.469***	0.211**	0.624***	0.146	0.456***	0.210**	0.610***	0.145
	(4.21)	(2.07)	(4.62)	(1.59)	(4.08)	(2.05)	(4.49)	(1.57)
SGR	0.164***	0.070***	0.192***	0.063***	0.165***	0.070***	0.193***	0.063***
	(6.20)	(3.50)	(6.34)	(3.38)	(6.15)	(3.41)	(6.30)	(3.31)
AGE	-0.194***	-0.037	-0.198***	-0.093***	-0.192***	-0.038	-0.197***	-0.094***
	(-5.88)	(-1.54)	(-5.23)	(-4.06)	(-5.87)	(-1.55)	(-5.25)	(-4.07)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.58	0.62	0.59	0.59	0.54	0.60	0.54	0.56
Observations	38,373	38,373	30,957	45,789	38,373	38,373	30,957	45,789

Table 5. Propensity Score Matching

This table presents propensity score matching results on the relation managerial ability and firm value. High managerial ability is an indicator variable that takes the value of one if managerial ability is above the cross-sectional median, and zero otherwise. Detailed variable definitions are provided in Appendix 1. *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

	Treated	*Control*	Difference	*t*-statistics
Tobin's Q	1.761	1.704	0.056***	3.281
IndAdjQ	-0.220	-0.291	0.071***	4.291
Size	5.798	5.745	0.053*	1.891
ROA	0.079	0.081	-0.002	-0.918
LEV	0.236	0.234	0.002	0.765
R&D	0.035	0.037	-0.002	-1.456
Dividend	0.344	0.337	0.007	0.943
Capex	0.057	0.056	0.001	0.628
Tangibility	0.282	0.278	0.004	1.312
FCF	-0.005	-0.004	-0.002	-0.922
SGR	0.164	0.161	0.002	0.332
AGE	2.489	2.467	0.022	1.392

Table 6. Difference-in-Differences Analysis

This table presents the difference-in-differences (DiD) analysis for firm value around CEO exogenous turnovers for the 1992 – 2005 period. The treatment group consists of firms that experienced reductions in MA Score a year following a CEO exogenous turnover takes place. The control firms are those matched firms that have not experienced such reductions in MA Score in the same period. Control firms are matched using propensity score matching (nearest firm without replacement) on the same control variables as in Table 2. Penal A reports univariate mean comparisons between treatment and control firms' characteristics and their corresponding *t*-statistics. Penal B reports difference-in-differences (DiD) estimators. Detailed variable descriptions can be found in the Appendix 1. *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% level, respectively.

Panel A: Post-Match Mean Differences

Variable	*Treated*	*Control*	*Differences*	*t-statistics*
Tobin's Q	1.806	2.078	-0.272**	-2.375
IndAdjQ	-0.182	0.040	-0.222**	-1.965
Size	7.259	7.034	0.225	1.418
ROA	0.141	0.146	-0.005	-0.498
LEV	0.241	0.231	0.010	0.606
R&D	0.032	0.034	-0.002	-0.356
Dividend	0.681	0.718	-0.038	-0.844
Capex	0.068	0.062	0.005	1.081
Tangibility	0.332	0.315	0.017	0.851
FCF	0.035	0.040	-0.006	-0.705
SGR	0.064	0.067	-0.003	-0.176
AGE	3.071	3.061	0.010	0.119

Panel B: Difference-in-differences Estimators

	Mean treatment difference (after–before)	Mean control difference (after–before)	Mean DiDs (treat–control)
	(1)	(2)	(3)
Tobin's Q	-0.167***	-0.006	-0.161*
(standard error)	(0.062)	(0.075)	(0.097)
IndAdjQ	-0.168***	-0.001	-0.167*
(standard error)	(0.061)	(0.076)	(0.098)

Table 7. The Role of Corporate Governance

This table presents regression results on the relation between managerial ability, firm value, and control variables in the presence of corporate governance mechanisms. Panel A and B report the results for a subsample of high (low) institutional ownership and financial analysts. High IO or High Coverage (Low IO or Low Coverage) sample includes firms whose IO or Coverage is above (below) the cross-sectional median of IO or Coverage, respectively. Detailed variable definitions are provided in Appendix 1. All regressions control for firm and year-fixed effects. Standard errors are clustered at the firm level and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Panel A: Institutional Ownership

	Tobin's Q				*IndAdjQ*			
	High IO	*Low IO*	*High IO*	*Low IO*	*High IO*	*Low IO*	*High IO*	*Low IO*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MA Score	0.249**	0.211			0.247**	0.199		
	(2.41)	(1.46)			(2.36)	(1.36)		
MA Rank			0.067**	0.028			0.065**	0.025
			(2.24)	(0.69)			(2.18)	(0.62)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.64	0.58	0.64	0.58	0.60	0.55	0.60	0.55
Observations	38,373	38,373	38,373	38,373	38,373	38,373	38,373	38,373

Panel B: Equity Analysts

	Tobin's Q				*IndAdjQ*			
	High Coverage	*Low Coverage*	*High Coverage*	*Low Coverage*	*High Coverage*	*Low Coverage*	*High Coverage*	*Low Coverage*
MA Score	0.306***	0.140			0.307***	0.122		
	(2.78)	(0.96)			(2.74)	(0.82)		
MA Rank			0.086**	0.023			0.085**	0.020
			(2.56)	(0.65)			(2.50)	(0.55)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.62	0.57	0.62	0.57	0.58	0.55	0.58	0.55
Observations	38,331	38,415	38,331	38,415	38,331	38,415	38,331	38,415

Table 8. Earnings Management

This table presents regression results on the effects of the interplay between managerial ability and firm value on earnings management measures. Detailed variable definitions are provided in Appendix 1. All regressions control for firm and year-fixed effects. Standard errors are clustered at the firm level and *t*-statistics are reported in parentheses. ***, **, * denote significance at the 1%, 5%, and 10% significance levels, respectively.

Panel A: Accrual-based earnings management

	Kothari_ROA			
	Tobin's Q		*IndAdjQ*	
	(1)	(2)	(3)	(4)
*MA Score * Firm Value*	-0.013***		-0.014***	
	(-4.28)		(-4.46)	
MA Score	0.020**		-0.008	
	(2.30)		(-1.57)	
*MA Rank * Firm Value*		-0.006***		-0.006***
		(-3.47)		(-3.54)
MA Rank		0.006*		-0.005**
		(1.89)		(-2.45)
Firm Value	0.005***	0.008***	0.005***	0.008***
	(7.71)	(6.00)	(7.55)	(5.95)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.12	0.12	0.12	0.12
Observations	63,069	63,069	63,069	63,069

Panel B: Real Earnings Management

	Roy_PROD			
*MA Score * Firm Value*	-0.075***		-0.071***	
	(-6.56)		(-6.03)	
MA Score	0.109***		-0.055**	
	(3.28)		(-2.20)	
*MA Rank * Firm Value*		-0.040***		-0.036***
		(-7.26)		(-6.55)
MA Rank		0.040***		-0.039***
		(3.52)		(-5.25)
Firm Value	-0.011***	0.011**	-0.011***	0.008*
	(-5.44)	(2.54)	(-5.50)	(1.83)
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.42	0.42	0.42	0.42
Observations	64,417	64,417	64,417	64,417

APPENDIX
List of Variables and Definitions

Tobin's Q	Market-to-book ratio measured at the end of the fiscal year, defined as (market value of equity (CSHO×PRCC_F) plus book value of debt (AT- CEQ) divided by book value of total assets (AT).
IndAdjQ	Industry adjusted firm value defined as the industry adjusted of market-to-book ratio measured at the two-digit SIC code level.
Independent Variables	
MA Score	Managerial ability measure of Demerjian et al. (2012). Managerial ability is the residual of the following regression: $Total\ Firm\ Ability = \alpha_0 + \alpha_1\ Ln\ (Total\ Assets) + \alpha_2\ Market\ Share + \alpha_3 Positive\ Free\ Cash\ Flow + \alpha_4\ Ln\ (Age) + \alpha_5\ Business\ Segment\ Concentration + \alpha_6\ Foreign\ Currency\ Indicator + \alpha_7\ Year\ Indicators + \varepsilon$. Details of estimating managerial ability are provided in Section 2.1.
MA Rank	Managerial ability rank is the decile rank (by industry and year) of the residual of the above regression.
Size	The natural logarithm of total assets at the end of the fiscal year (Ln (AT)).
ROA	Return-on-assets ratio measured at the end of the fiscal year, defined as operating income before depreciation (OIBDP) divided by book value of total assets (AT).
LEV	Debt-to-assets ratio measured at the end of the fiscal year, defined as book value of total debts (DLC + DLTT) divided by book value of total assets (AT).
R&D	R&D intensity measured at the end of the fiscal year, defined as research and development expenditure (XRD) divided by book value of total assets (AT), with all missing values set to zero.
Dividend	An indicator variable takes a value of one if dividends of common stocks variable (DVC) is greater than zero.
Capex	Capital expenditures (CAPEX) divided by book value of total assets (AT).
Tangibility	Net property, plant, and equipment (PPENT) divided by book value of total assets (AT).
FCF	Free cash flow measured at the end of the fiscal year, defined as Operating Activities Net Cash Flow (OANCF) minus Capital Expenditures (CAPEX) divided by book value of total assets (AT).
SGR	One-year sale growth rate measured at the end of the fiscal year, defined as sales (SALE) minus lagged sales divided by lagged sales.
AGE	The natural logarithm of firm age approximated by the number of years listed on the CRSP.
Governance Variables	
IO	Percentage of institutional shareholding held by 13-F institutions divided by total number of shares outstanding.
Analyst	Average number of analysts following the firm over the fiscal year.
Additional Variables	
Kothari_ROA	Accrual-based earnings management measure defined as the discretionary accruals of firm *i* in year *t*, estimated as the residual of the accruals as per Kothari et al. (2005) by estimating the following cross-sectional regression: $TA_{it} = \lambda_0 + \lambda_1\ (1/ASSETS_{it-1}) + \lambda_2\ (\Delta SALES_{it}) + \lambda_3 PPE_{it} + ROA_{it-1} + \varepsilon_{it}$, where: *ASSETS*=total assets in the previous year (Compustat item #6); *SALES*=Sales (Compustat items #12); *PPE*=net property, plant, and equipment scaled by lagged total assets (Compustat items #7) + *ROA*=Change in inventory, inventory net income scaled by total assets (Compustat items #172).
Roy_PROD	Real earnings management measure defined as abnormal production costs measured following Roychowdhury (2006) as the deviations from the predicted values from the corresponding industry-year regression: $PROD_t/A_{t-1} = \alpha_0 + \alpha_1\ (1/A_{t-1}) + \beta_1\ (S_t/A_{t-1}) + \beta_2\ (\Delta S_t/A_{t-1}) + \beta_3\ (\Delta S_t/A_{t-1}) + \varepsilon_t$, where: A=total assets in the previous year (Compustat item #6); S=Sales (Compustat items #12); PROD=Production costs calculated as Cost of goods sold (Compustat items #44) + Change in inventory (Compustat items #3).