Vol. 3 No. 8 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Managerial Ability and Firm Market Value: Moderating Role of Managerial Incentives

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Article Details:

Received on 21 July 2025
Accepted on 23 Aug 2025
Published on 25 Aug 2025

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Abstract

Examining the relationship between managerial ability and firm performance and investigating the moderating effect of managerial incentives in the relationship between managerial ability and firm performance in an undeveloped market is the goal of this study. This research uses a sample of 261 non-financial companies listed on the Pakistan Stock Exchange (PSX) from 2013 to 2022. The study employs various regression techniques, including pooled ordinary least squares, fixed effects, and two-step system generalized method of moments. The propensity score matching approach is used to handle endogeneity concerns. The study's findings indicate that managerial ability enhances firm performance in terms of Tobin Q, and managerial incentives strengthen this relationship. Furthermore, alternative definition of firm performance provides robust findings. This research represents the initial effort to examine the moderating role of managerial incentives in the association between managerial ability and firm performance. Compiling the knowledge about managerial ability and managerial incentives from this study give a better idea to researchers to find out the direction and potential avenues for future studies.

Key Words: Firm Performance, Managerial Ability, Managerial Incentives, Endogeneity, Pakistan.

Vol. 3 No. 8 (2025)

Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Introduction

Corporate governance affects numerous business decision-making processes that enhance firm value. Effective corporate governance mitigates agency problems by minimizing excess cash available for management expenditure (Ullah, Zahid, Saad, & Fayaz, 2021). Finance theory argues that every managerial decision must align with the objective of the company, which is to maximize the wealth of shareholders. Hence, the study inquiry, "Does managerial ability improve company performance?" is quite important. In previous studies managerial ability has immense importance in many eras and dimensions. Managers with high ability are always under constant pressure to maximize the value of both tangible and intangible assets. They select those projects with positive NPV, such ability of managers is associated with investment efficiency for firms (Bozorgasl, Salehzadeh, & Mohammadi, 2018; Khurana, Moser, & Raman, 2018). So, several studies in literature indicates that managerial ability and firm performance are positively related (Bhutta, Sheikh, Munir, Naz, & Saif, 2021; Chuah & Foong, 2019). Though some studies also show that managerial ability may also has negative influence on firm performance in the context of management entrenchment hypothesis (Rouf, 2011).

Though, the inconsistency in the literature's mixed conclusions stimulate us to research on the relationship between managerial ability and firm performance. Hence, it is hypothesized that involvement of managerial ability may have an effective effect on firm performance in terms of reducing agency conflicts. Other aim is to determine the characteristics that guarantee effective investment decisions for company success through the right match of interests between managers and shareholders. Granting of managerial incentives to managers have positive role in higher levels of productivity, profitability, drive more customer satisfaction and higher levels of retention (Muller, Veile, & Voigt, 2020). Managerial incentives refer to the provision of monetary rewards, such as commissions and bonuses. Financial rewards encompass several forms such as basic salary, cost of living adjustments, short term incentives, and long term incentives. Theoretically, it is contended that providing managerial incentive can help to alleviate the impact of agency issues and CEO aversion to risk, hence increasing firm performance (Singer & Ye, 2013) . Therefore, this study further hypothesized the managerial incentives strengthen the relationship between managerial ability and firm performance.

The sample is extracted from non-financial companies listed on the Pakistan Stock Exchange (PSX) between 2013 and 2022. This research employs multivariate regressions to test the hypotheses. On the basis of data, three models are used. The first model is the Ordinary Least Squares (OLS) estimate method, incorporating industry and year controls, as well as robust standard errors. The second model employs fixed effect (FE) regression to address the time-invariant omitted variable bias commonly found in panel data. The third model utilizes a two-step GMM estimation method to address biases resulting from omitted variables, simultaneity, and dynamic endogeneity.

Regression results indicate that firms with managerial ability perform noticeably better and validate hypothesis I. Further the findings also support the hypothesis II that corporations with managerial incentives strengthen the positive relationship between managerial ability and firms' performance with efficient investment decisions consistent with resource based theory. Furthermore, the qualitative findings remain consistent after resolving endogeneity concerns associated with the selection of managers with managerial ability and function misspecification biases through the application of the Propensity

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Journal of Social Signs Review

Online ISSN 3006-4651

Print ISSN 3006-466X

Score Matching (PSM) technique, as well by utilizing alternative definition of firm performance. This study enhances information in literature by examining the influence of managerial ability on firm performance and it also shows the initial effort to examine the moderating influence of managerial incentives on the relationship between managerial ability and firm performance in the context of Pakistan.

Literature Review

Managers have power over business operations and the utilization of internal and external resources in the context of agency model (Eisenhardt, 1989). Fernando, Jain, and Tripathy (2020) show that companies run by competent managers tend to have better profits quality. While Siao and Chou (2013) find that managerial ability may mitigate the detrimental effects of earnings management on firm performance. Koester, Shevlin, and Wangerin (2017) finds that managerial ability enhance financial reporting quality via effective internal control and competent managers select projects with positive NPV. Phillips and Roper (2009) conclude that talented managers contribute positively to higher levels of efficiency in revenue growth, increased safety, driving more customers' satisfaction and excellent attendance. Banerjee and Guha Deb (2024) find that credibility among creditors and other stakeholders is enhanced when managers are viewed as having the skills to effectively address agency concerns. Li, Gai, and Xue (2018) find that managerial ability positively influences Chinese firms' investment efficiency and profitability.

Lee, Wang, Chiu, and Tien (2018) find the positive relationship between managerial ability and investment efficiency across US industries. Similarly Andreou, Ehrlich, and Louca (2013) find that the high managerial ability of managers leads firms to perform better at times of crisis because they employ corporate resources more effectively and efficiently. Able managers do not invest during a crisis period in order to avoid a possible crash. In addition, Anom (2018) confirm the success of companies with respect to able managers in the context of Indonesia. Chuah and Foong (2019) find the high performance of companies with high managerial ability in the Malaysian context. Yung and Chen (2018) find that able managers are more innovative and generate higher returns on investment. Moreover, Park and Jung (2017) find that competent management is inversely connected to the likelihood of a market crash. De Franco, Hope, and Lu (2017) find that managerial ability helps to reduce information risk, default risk, and operational risk. Chronopoulos and Siougle (2017) reveal that able managers tend to have a better knowledge of the company, generate better sales projections, and anticipate profit more accurately. Sun (2016) show that organizations with better managers may avoid goodwill impairment. Chemmanur and Paeglis (2005) find that able management increases a company's value during an initial public offering (IPO) and improves its operational and market efficiency. Chemmanur, Paeglis, and Simonyan (2009) describe that able managers are considered as adding value to organizations. Khurana et al. (2018) find that there is higher tax avoidance with better management ability. Atawnah and Eshraghi (2024) find that managerial ability determines a firm's accounting transparency and reporting quality, while Tian (2020) reveals that managerial ability strongly affects businesses' disclosure techniques. Though, Bozorgasl et al. (2018) find an inverse correlation between managerial ability and return on investment.

Hence, given the above discussion, the following relationship is hypothesized:

H1: *There is a positive relationship between managerial ability and firm performance*

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Journal of Social Signs Review

Online ISSN 3006-4651

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Empirical research demonstrates that monetary rewards have a significant impact on employee motivation and firm performance. Monetary rewards are effective in motivating employee performance and attracting and retaining top performers and higher-level needs such as belonging to a group, receiving respect from others, and achieving mastery in one's work (Muller et al., 2020). Managerial incentives resulted in an average 30% productivity gain of firms (Kryscynski, Coff, & Campbell, 2021). Shafi et al. (2023) find that CEO short-term remuneration positively associated with innovation. Schneider et al. (2023) highlight the significance of pay incentives of managers in firms. Findings show a significant inverse relationship between cash compensation and the probability of these managers to fraud in companies. Williams, Michael, and Waller (2008) show that managers' decision-making may be influenced by remuneration systems. Chesney, Stromberg, Wagner, and Wolff (2020) find that payoff incentives may make CEOs less risk averse. However, Cheng, Hsu, and Kung (2015) find that incentive system may influence individuals' propensity to take risks.

Liu, Zhao, Lu, and Li (2023) find that 39 percent of companies attribute the granting of bonuses to the success of firms, and most of these incentives are given in the form of cash rather than stock or deferred pay. Managerial incentives and investment efficiency, have a significant and positive relationship (Bhattacharya, Guner, & Ventura, 2013). Yung and Chen (2018) find that managers are more innovative and are likely to take risks on research and development heavy projects and, as a result, generate higher returns on investment when getting managerial incentives. Coles and Li (2020) shows that managerial ability and incentives positively affects business performance because managers with greater ability, reputation, and knowledge are more likely to make better judgments and riskier investments. Villena and Dhanorkar (2020) indicates a positive relationship between managerial incentives and firm performance. There is a positive effect of incentives on profits quality, innovation, and the development of bank liquidity (Huang, Hsiao, & Wang, 2012). Piñeiro et al. (2020) find a negative correlation between firm performance and the magnitude of the management compensation. Managers with greater authority tend to receive significantly bigger bonuses, on average and achieve lower announced returns for shareholders.

Consequently, based on above discussions, following hypothesis is proposed:

H2: *Managerial incentives enhance the positive relationship between managerial ability and firm performance.*

Methodology

Data is collected from the nonfinancial firms listed on the Pakistan Stock Exchange (PSX) over the period from 2013 to 2022. The final unbalanced panel data has 2245 firm-year observations and 261 non financial firms. Based on hypothesis, we design two models in equation 1 and equation 2

$$TQ_{it} = \alpha_0 + \beta_1 MA\_DUM_{it} + \beta_2 Firm\ Leverage_{it} + \beta_3 Firm\ Size_{it} + \beta_4 Sales\ Growth_{it} + \beta_5 CFO_{it} + \beta_6 Cash_{it} + \beta_7 DIV\_DUM_{it} + \varepsilon_{it} \quad (1)$$

$$TQ_{it} = \alpha_0 + \beta_1 MA\_DUM_{it} + \beta_2 MA\_INC_{it} + \beta_3 (MA\_DUM \times MA\_INC)_{it} + \beta_4 Firm\ Leverage_{it} + \beta_5 Firm\ Size_{it} + \beta_6 Sales\ Growth_{it} + \beta_7 CFO_{it} + \beta_8 Cash_{it} + \beta_9 DIV\_DUM_{it} + \varepsilon_{it} \quad (2)$$

In this work, the managerial ability is an exogenous independent variable, quantified as a dummy variable where a value of 1 indicates a strong managerial ability score exceeding the 75th percentile, and 0 otherwise (Demerjian, Lev, & McVay, 2012), firm performance is

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Online ISSN 3006-4651

Print ISSN 3006-466X

endogenous/dependent variable , TQ, a market-based measure, is defined as the market value of equity (share price multiplied by shares outstanding) plus total debt, divided by total assets (Bhutta et al., 2021). The moderating variable of managerial incentives is quantified by assigning a value of 1 to organizations that provide bonuses to managers and 0 to those that do not (Kopel & Putz, 2021). Firm leverage is calculated by dividing total debt at book value by total assets. The size of a firm is defined as the logarithm of its total assets (Shahid & Abbas, 2019). Sales growth is determined by measuring the difference between the current year's sales and the previous year's sales. CFO denotes the ratio of operational cash flow to total assets. The term cash denotes the sum of money and short-term investments relative to total assets (Naz, Bhutta, Sheikh, & Sultan, 2023). Dividend is a binary variable that assumes the value of 1 when a firm distributes dividends and 0 (Triani & Tarmidi, 2019).

This study investigates the impact of managerial ability on firm market value and the moderating role of managerial incentives is also investigated by using three methodologies: Ordinary Least Squares (OLS), Fixed Effects (FE) and Generalized Method of Moments (GMM). The Ordinary Least Squares (OLS) regression is predicated on the assumption of robust standard errors, incorporating the control of fixed effects for industry and year (Hao, Chen, & Chen, 2022). A powerful method for enhancing identification and getting rid of the time-invariant omitted variable bias in panel data is fixed effect regression (Dehaan, 2021). Furthermore, the Generalized Method of Moments (GMM) addresses supplementary biases, including simultaneity and dynamic endogeneity (Banerjee & Guha Deb, 2024). Furthermore, endogeneity concerns associated with the selection of managerial ability and functional misspecification biases are mitigated through the application of the Propensity Score Matching (PSM) technique (Peel & Makepeace, 2012). An alternative definition of firm performance is used, and the baseline findings are confirmed in robustness tests.

Empirical Results

Descriptive Statistics

Table 1 shows mean, median, and standard deviation values for dependent, independent, moderating and controls variables. Mean (median) TQ values is 1.2067 (0.8312) with a standard deviation of 1.3209, mean (median) value of MA_DUM is 0.1451 (0.0008) and the standard deviation is 0.2672, and mean (median) value of incentives is 0.1327 (0.1204) and the standard deviation is 0.2387 of 2245 observations. Mean value of firm leverage is 0.1253 with a standard deviation of 0.3267, the average firm size is 0.1498 with median value is 0.0579 and S.D is 0.1331, firm sales growth is about 14.812, median value 13.579 and standard deviation is 1.4230, cash flow is averaged at mean (median) values 0.0936 (0.0820) with a standard deviation of 0.2901. Moreover, firm's average holds 8.12% cash and short-term investments with median 0.0416 and a standard deviation is 0.1209 and almost 7.69% firms pay a cash dividend with a standard deviation of 0.1804.

Table 1: Descriptive Analysis

	N	Mean	Median	Std. Dev.	Min	Max
TQ	2245	1.2067	0.8312	1.3209	0.2188	8.8887
MA_DUM	2245	0.1451	0.0008	0.2672	0	1
MA_INC	2245	0.1327	0.1204	0.2387	0	1
Firm Lev	2245	0.1253	0.0089	0.3267	0.0619	1.989
Firm Size	2245	0.1498	0.0579	0.1331	0.0721	0.6126

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Sales Growth	2245	14.812	13.579	1.4230	11.8272	19.6513
CFO	2245	0.0936	0.0820	0.2901	-0.6862	1.9345
Cash	2245	0.0812	0.0416	0.1209	-0.2469	0.5726
DIV_DUM	2245	0.0769	0.0410	0.1804	0.0004	0.9352

Correlation Analysis

Table 2 presents the pairwise correlation matrix for TQ, managerial ability, managerial incentives, and control variables. With a value of 0.05, TQ and MA_DUM have a substantial positive correlation. TQ exhibits a significantly positive correlation with managerial incentives, quantified at 0.16. Regarding control variables, firm size, firm sales growth, CFO, cash, and dividend payout have positive correlations with firm performance, with values of 0.12, 0.28, 0.17, 0.36, and 0.20, respectively, while firm leverage shows a negative correlation of -0.23. Moreover, all variables, except for sales growth, have a significant correlation with TQ at a 10% significance level.

Table 2: Correlation Matrix

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
(1) TQ	1.0000								
(2) MA_DUM	0.05*	1.0000							
(3) MA_INC	0.16*	0.68*	1.0000						
(4) Firm Lev	-0.23*	-0.05*	-0.029	1.0000					
(5) Firm Size	0.12*	0.21*	0.34*	0.25*	1.0000				
(6) CFO	0.17*	0.10*	0.20*	-0.22*	0.11*	1.0000			
(7) Cash	0.36*	0.09*	0.23*	-0.27*	0.14*	0.32*	1.0000		
(8) Sales Growth	0.28	0.30	0.28	0.10*	0.08*	0.06*	0.0300	1.0000	
(9) DIV_DUM	0.20*	0.18*	0.23*	-0.13*	0.23*	0.23*	0.21*	0.10*	1.0000

$p<0.10$

Regression Analysis

Effect of the Managerial Ability on Firm Performance

Table 3 displays the outcomes of a regression analysis investigating the impact of managerial ability on firm performance. The estimated coefficients of MA_DUM in models 1 and 3 are 0.267 and 0.210, respectively at 5% level of significance while in model 2 it is found that managerial ability (MA_DUM) has positive and insignificant influence on profitability (TQ) with value 0.018. Overall, these findings indicate that the performance is higher in firms which have managerial ability. These findings support the hypothesis and consistent with efficiency enhancing hypothesis (Chronopoulos & Siougle, 2017). According to models, firm size and leverage have a considerable negative impact on firm performance when it comes to control variables. Higher operating cash flow, high cash investment, high sales growth, and dividend-paying companies, on the other hand, exhibit favorable outcomes that show these companies have strong market performance.

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Table 3: The Impact of MA on Profitability

VARIABLES	(Model 1: OLS) TQ	(Model 2: Fixed Effects) TQ	(Model 3: System GMM) TQ
L.TQ	---	---	0.859***
	(--)	(--)	(672.907)
MA_DUM	0.267**	0.018	0.210**
	(2.348)	(0.238)	(9.349)
Firm Leverage	-0.346***	0.209	-0.067***
	(-5.260)	(1.116)	(-4.527)
Firm Size	-0.046***	0.063	-0.012***
	(-2.323)	(1.141)	(-9.829)
Sales Growth	0.019	0.111**	0.121***
	(0.521)	(2.398)	(28.839)
CFO	2.187***	0.882***	0.444***
	(6.310)	(6.160)	(41.420)
Cash	0.491*	0.113	0.122***
	(1.751)	(0.795)	(14.237)
DIV_DUM	0.435***	0.054	0.053***
	(3.286)	(1.384)	(16.693)
Industry Effects	YES	NO	YES
Year Effects	YES	YES	YES
Constant	-0.276	-0.212	0.055***
	(-0.985)	(-0.252)	(3.219)
Observations	2245	2245	2,056
R-squared	0.307	0.179	---

*** p<0.01, ** p<0.05, * p<0.1

Effect of the Managerial Ability and Managerial Incentives on Profitability

Table 4 presents the results of a regression analysis that examines how management incentives moderate the relationship between managerial ability and firm market value. The findings indicate that the performance is higher in firms which have managerial ability. These findings support the hypothesis I. Moderating results of this table show significant and positive relationship provide evidence in support of hypothesis II, that firms that give incentives to managers enhance the positive relationship between managerial ability and firms' performance with efficient investment decisions consistent with resource based theory (Lei & Hitt, 1995; Mahoney, 2001).

Table 4: The impact of MA and Managerial Incentives on profitability

VARIABLES	(Model 1: OLS) TQ	(Model 2: Fixed Effects) TQ	(Model 3: System GMM) TQ
L.TQ	---	---	0.859***
	(--)	(--)	(672.907)
MA_DUM	0.227**	0.019	0.119**
	(2.232)	(0.118)	(8.221)
MA_INC	0.385**	0.313*	0.094**

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	(4.666)	(5.501)	(19.957)
MA_DUM × MA_INC	0.205***	0.176***	0.508***
	(1.448)	(1.401)	(8.329)
Firm Leverage	-0.946***	0.209	-0.039***
	(-5.860)	(1.116)	(-3.225)
Firm Size	-0.046***	0.063	-0.034***
	(-2.616)	(1.141)	(-9.729)
Sales Growth	0.038	0.111**	0.111***
	(0.711)	(2.398)	(29.549)
CFO	3.187***	0.882***	0.204***
	(8.910)	(6.160)	(39.200)
Cash	0.391*	0.113	0.152***
	(1.951)	(0.795)	(14.237)
DIV_DUM	0.245***	0.061	0.043***
	(4.236)	(1.264)	(13.983)
Industry Effects	YES	NO	YES
Year Effects	YES	YES	YES
Constant	-0.276	-0.212	0.055***
	(-0.495)	(-0.192)	(3.219)
Observations	2245	2245	2,056
R-squared	0.298	0.183	---

*** p<0.01, ** p<0.05, * p<0.1

Endogeneity Concern

Nearly neighbor one-to-one matching is employed in Table 5 (Panel A) to pair a set of companies exhibiting low managerial ability with a group of companies demonstrating high managerial ability for each fiscal year. This methodology selects a sample of treatment and control firms. This table displays the outcomes of a mean difference test performed on treatment and control firms utilizing matched samples. The t-test results reveal a p-value of 1.239 (0.125), indicating no statistically significant difference between the treatment and control groups' variables. Nevertheless, the mean TQ value in the treatment group significantly exceeds that of the control group showing firms having high managerial ability show high market value. As indicated in Table 5 (Panel B), the baseline regression is then re-run using a matched sample of treatment businesses (with High MA). The results are qualitatively consistent and confirm the baseline conclusion that firms with high managerial ability exhibit superior performance. Furthermore, the coefficient of the interaction term is 0.113, significant at a level below 1%. Matched sample studies indicate that the presence of managerial incentives strengthens the relationship between managerial ability and firm performance.

Table 5: PSM Analysis

Endogeneity Analysis using Propensity Score Matching				
Panel A: Description statistics of matched sample and their comparison				
	Mean		**t-test**	**p-value**
Variables	**Treated**	**Control**		
TQ	1.456	1.265	1.239	0.125
MA_DUM	0.165	0.152	0.380	0.703
Firm Leverage	0.118	0.113	0.450	0.650

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Firm Size	16.320	16.270	0.410	0.679
Sale Growth	0.131	0.092	1.260	0.209
CFO	0.071	0.074	-0.280	0.777
Cash	0.101	0.110	-0.470	0.638
DIV_DUM	0.539	0.604	-1.410	0.158

Panel B: PSM Regression

VARIABLES	MA_INC	TQ
MA_DUM	0.6212***	0.245*
	(6.54)	(1.727)
MA_INC	---	0.293**
		(2.291)
MA_DUM × MA_INC	---	0.113***
		(0.471)
Firm Leverage	-1.06***	-1.311***
	(-3.72)	(-3.201)
Firm Size	0.467***	0.078*
	(19.06)	(1.716)
Sales Growth	-0.0565	-0.030
	(-0.55)	(-0.232)
CFO	0.1858	2.814***
	(0.65)	(3.944)
Cash	0.2686	0.371
	(1.41)	(0.985)
DIV_DUM	0.0742	0.277***
	(1.10)	(2.748)
Constant	-8.0688	-0.916
	(-20.06)	(-1.211)
Observations	1,996	460
R-squared	0.2080	0.291

*** p<0.01, ** p<0.05, * p<0.1

Robustness Checks

In Table 6 alternative proxy of profitability is used as robustness, i.e., MV/BV (log of market value / book value) as measured in (Graham, Galbraith, & Stiles, 2014). Results in Table 6 provide evidence in support of hypothesis and baseline findings that managerial ability increase firm market value and managerial incentives strengthen relationship between managerial ability and firm market value.

Table 6: Alternative Proxy of Profitability as (MV/BV)

	(Model 1: OLS)	(Model 2: Fixed Effects)	(Model 3: System GMM)
VARIABLES	MV/BV	MV/BV	MV/BV
Lag (MV/BV)	---	---	0.238***
			(3.288)
MA_DUM	0.197***	0.073	0.252**
	(7.380)	(1.586)	(2.278)
MA_INC	0.198***	0.120***	0.001

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	(5.614)	(4.325)	(0.005)
MA_DUM × MA_INC	0.005***	0.026***	0.054***
	(0.124)	(1.693)	(1.586)
Firm Leverage	-0.305***	0.275***	0.301
	(-2.892)	(3.013)	(0.650)
Firm Size	0.022**	-0.098***	0.025
	(2.291)	(-3.615)	(0.358)
Sales Growth	0.054	0.067***	0.117*
	(1.580)	(2.960)	(1.717)
CFO	1.249***	0.295***	0.401
	(8.924)	(4.236)	(1.624)
Cash	0.155**	0.054	-0.088
	(2.212)	(0.783)	(-0.274)
DIV_DUM	0.093***	0.018	0.019
	(4.253)	(0.960)	(0.325)
Constant	-0.112	2.007***	-0.155
	(-0.749)	(4.898)	(-0.143)
Observations	2245	2245	2,056
R-squared	0.366	0.240	---

*** p<0.01, ** p<0.05, * p<0.1

Findings

This study examines the impact of managerial ability on the performance of nonfinancial firms. Further, the objective of this study is to evaluate this primary relationship by including moderating variables, managerial incentives in the context of Pakistan. The sample is selected from companies listed on the PSX. The hypotheses are tested by using multivariate regressions methods: OLS, FE and system GMM. The regression analysis reveals that the average value of TQ is much greater for firms with high managerial ability. Regarding the role of managerial incentives as moderating variable, the regression analysis indicates that companies that give incentives to managers strengthen the positive relationship between managerial ability and firm performance. These findings align with resource-based theory. The propensity score matching approach is employed to mitigate endogeneity problems associated with selection bias and function misspecifications. Furthermore, the hypothesis is retested by employing alternative definition of firm performance and yield findings similar to the baseline results. This study provide evidence on how managerial ability is related to firm performance in the context of nonfinancial firms of Pakistan. Moreover, this relationship has been further explored with the moderating role of managerial incentives. Findings show that the existence of managerial ability and managerial incentives are associated with a rise in a firm performance, that is helpful for shareholders, executives, and investors.

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