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Managerial Ability, Managerial Incentives and Firm Performance: Empirical Evidence from Vietnam

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Abstract

This study investigates the impact of managerial ability and managerial incentives on firm performance. In particular, it studies how managerial ability factor can exert significant influence on the profitability and the risk of firms. By doing this, the study can provide several policy implications about how managerial ability can influence firm decisions and its corresponding business policies. Data of the study was collected from the Annual Enterprises Survey (AES), which is conducted by the General Statistics Office of Vietnam (GSO) during the 2009–2013 period. After removing firms with insufficient financial information, our final dataset includes over 50,000 firms in Vietnam. The main result of the study shows that there is a significant and positive relationship between managerial ability and firm leverage. This finding indicates that managerial ability significantly plays an important role in making financial decisions. In addition, our study provides empirical evidence about the causal relationship between managerial compensation and firm risk-taking behavior. Specifically, we find that firm risks are significantly associated with compensation schemes including lower delta and higher vega. In other words, our study implies that the sensitivity of CEO wealth to stock volatility can positively affect both delta and vega or managerial incentives schemes.

Keywords: Managerial Ability, Managerial Incentives, Profitability, Risk-Taking, Vietnam

JEL Classification Code: D21, D23, F23, G32, L25

1. Introduction

It is widely recognized that corporations are the main driving forces of the economy and are at the center of the development process. Therefore, the existing literature has devoted significant efforts to studying factors affecting firm performance, especially after the financial crisis. Many of these studies have focused on the role of firm-specific characteristics including firm capital (Martin, 1977; Altunbas et al., 2016); asset quality (Cole & Gunther, 1995); firm size (Kim & Sohn, 2017); liquidity (Vo, 2018) and ownership structure in affecting firm performance. Another strand of literature evaluates firms' operating outcome under more multi-dimensional perspectives by examining

how the external indicators such as market competition level (Martinez-Miera & Repullo, 2010), firming regulation (Fidrmuc & Hainz, 2013; Gersbach & Rochet, 2017), macroeconomic factors (Sharpe, 1990; Hu & Gong, 2018), industry-specific factors (Boot & Thakor, 2000) and state intervention (Bassett et al., 2017) affect firm performance.

Despite this large literature, little is known about the role of managerial ability in shaping firm performance, perhaps due to the fact that managerial ability is latent in nature and, thus, cannot be easily measured. However, because the day-to-day operational decisions (for example the decision to take risk, allocate resources, invest, or diversify in response to changes in macroeconomic conditions) are deeply determined by firm managers' ability, experience, and perception and, thus, failing to take the managerial ability in explaining firm behavior and its subsequent performance into consideration will lead to the incomplete findings. This study provides the first attempt to fill this gap in the literature by investigating the ability of latent, unobservable manager characteristics in explaining variation in firm performance.

Managerial ability indicates the ability to effectively allocate the resources (i.e., human and capital resources) for the pursuit of profit and value creation of managers (Holcomn

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et al., 2009; Leverty & Grace, 2012). Yet, because of its latent and unobservable nature, managerial ability remains a sophisticated notion that cannot be easily quantified (Demerjian et al., 2012). To the best of our knowledge, no study so far has a straightforward and accurate measure of managerial ability (Andreou et al., 2016). Evidently, some traditional methods used to measure managerial ability, for example press coverage/media are also infeasible to collect and can often be biased for large firms or more famous managers' orientation. The literature to date also pays little attention to the role of manager's features such as CEO experience, CEO age, CEO education and CEO gender. As a result, these problems raise concerns about the accuracy as well as the comprehensive view of the empirical results and ultimately challenge researchers in drawing broad implications from the estimation findings.

The literature to date has also ignored the causal relationship between managerial incentives and firm risk-taking behavior. Studying how the sensitivity of manager wealth-to-stock volatility affects firm choice of investment and corresponding risk level is particularly important, especially given the fact that the use of stock compensation has increased dramatically for the last decades. On the one hand, an increase of delta – the sensitivity of managers' wealth to stock price – can reflect the alignment of interest between managers and shareholders because they are sharing gains and losses with each other. As a result, a higher level of delta can imply that managers are trying to work hard and perform more effectively. On the other hand, higher delta can mean that managers are willing to take more risk by investing in some risky and more profitable projects. The sensitivity of CEO wealth to stock return, known as vega, is often related to the rise in equity-based compensation through the provision of convex payoffs. This mechanism however can decrease the risk aversion driven by higher delta. This has led to a critical question of whether higher vega is associated with higher risk or not.

This study therefore contributes to the growing literature on firm performance by focusing on the role of managerial ability and managerial incentives to solve the existing shortcomings in a several ways. Firstly, it provides a superior and more accurate measure of managerial ability suggested by Demerjian et al. (2012). Secondly, it fills the omission in economic literature by directly evaluating the managerial ability-firm performance nexus, and investigating whether managers' characteristics matter in shaping the performance of firms. On one hand, more able firm managers have often been found to have superior knowledge, experience and decision-making skills which enable them to effectively manage the firm operational activities (i.e. the allocation of human resources, capital and risk) and subsequently have a positive impact on firm performance (i.e., Bertrand & Schoar, 2003; Choi et al., 2015; Demerjian et al., 2012).

On the other hand, some scholars argue that higher managerial ability may have a negative influence on firm value and shareholder wealth based on the rent seeking and perk consumption (Malmendier & Tate, 2007). Ultimately, the impact of managerial ability on firm performance remains unclear and will be addressed in this study. Specifically, this study evaluates how managerial ability could affect the performance of firms in Vietnam. Thirdly, by adding delta and vega in our models, we can examine the impact of each of these managerial incentives on firm risk-taking behavior separately. While prior research (i.e., Rogers, 2002; Nam et al., 2003) concentrate on only one factor of these compensation schemes that is delta or vega, our study is more advanced compared to previous studies by controlling for both of them. The fact is that due to the delta-vega structure is largely different among firms and both of these two factors can significantly affect firm risk-taking behavior, any effort to investigate the separate influence of delta and vega will lead to incomplete and biased results. Finally, this research contributes to the literature by providing empirical evidence about these relationships in the context of Vietnam, a vital transitional economy that has experienced a major process of economic transition and institutional framework's weakness cause difficulties to business.

2. Literature Review and Hypothesis

The existing economic and management literature has often recognized the important role of managers in shaping firm performance (i.e., Naushad et al., 2020). In particular, the upper echelons theory developed both by Hambrick and Mason (1984) and Hambrick (2007) has pointed out that the success of any firm is largely driven by an effective management team. Moreover, these authors show that the complex process of making decisions has necessitated the idiosyncratic importance of business leaders. Following these authors, many studies have focused on examining how manager's features are critical in deciding firm performance, such as the study of Bertrand and Schoar (2003), which shows that many leader- and firm-specific characteristics affect firm behaviors. Similarly, the study of Bamber et al. (2010) finds that managerial ability significantly affect the disclosure strategies of firms while the work of Davis et al. (2015) shows that management ability is a deciding factor of a firm's accounting transparency and reporting quality. Rajgopal et al. (2006) also document that more ably managed firms have better performance.

Malmendier and Tate (2008) show that managers who have overconfidence tend to participate in risky merger and acquisition deals and Chemmanur et al. (2009) point out that firm investment is influenced by both managerial quality and the reputation of managers. Behavioral studies also document the importance of managerial ability in making

decisions. For example, Camerer (2004) and Costa-Gomes and Crawford (2006) find that, since some people have the capability of executing better strategies, they can make better decisions than others. Other scholars (i.e., Demerjian et al., 2013; Chen et al., 2015; Andreou et al., 2016) show that managerial ability can positively affect earnings quality, innovation and bank liquidity creation.

The literature about managerial ability-firm risk nexus so far remains very limited. Many scholars (i.e., John et al., 2008) have long believed that the extent to which a manager is willing to take risk will decide not only how much profit a firm can achieve but also the survival possibility of the firm. According to Shapira (1986), whether a manager has more or less incentives of taking risk is largely determined by his/her personal characteristics and experience. As such, the literature to date shows a mixed finding. On the one hand, managerial ability is found to positively influence firm risk in the way that managers with superior expertise, higher reputation and higher ability are more likely to make riskier investments and better decisions (Chemmanur et al., 2009; Cremers & Petajisto, 2009). Similarly, a positive relationship between managerial ability and firm risk is found in the study of Chen et al. (2015) and Andreou et al. (2016). On the other hand, other scholars find that managerial ability might have a negative impact on firm risk. For example, Boholm (1998) and Culver et al. (2001) show that some managers who are extremely intelligent and are educated at higher levels tend to be more cautious and conservative about risk and thus, they are less likely to take risky investments. Similarly, Amihud and Lev (1981) and Wang et al. (2013) argue that some managers want a quiet-life and thus they avoid risk-taking. Based on these arguments, the following hypotheses are developed:

H1: Managers with high (low) managerial ability will increase (decrease) firm profitability.

H2: Managers with high (low) managerial ability will increase (decrease) firm risk.

The existing literature has also documented some evidence that compensation schemes are somehow associated with the decision-making process of managers (i.e., Mazumder, 2017; Gwon & Moon, 2019). Specifically, several studies show that many firm characteristics can significantly affect compensation schemes and subsequently influence firm performance. Other studies find that managerial incentives are related to firm policy implications such as how CEOs risk aversion can be reduced by the convex payoffs incentives given to them (Guay, 1999). The study of Ju et al. (2002) shows that managerial compensation in the form of call option contract may lead to more or less risk-taking behavior in firms. Lewellen (2003) proposes that options can be given to managers to reduce firm risk. In contrast, Ross (2003)

shows that there is no incentive scheme that can affect risk-taking behavior.

The empirical studies (i.e., Mehran, 1992 & 1995; Berger et al., 1997 & 1999; Rogers, 2002) so far have documented the link between managerial incentives and firm behaviors, but with mixed evidence. For example, some scholars (i.e., Denis et al., 1997; Anderson et al., 2000) investigate the relationship between managerial holdings and firm strategies. Defusco et al. (1990) show that the stock option schemes in 1978 and 1982 increased the volatility of stock return. Agrawal and Mandelker (1987) argue that higher stock together with option schemes given to managers lead to more variance in acquisitions. Guay (1999) finds that vega is related to the standard deviation of returns. Cohen et al. (2000) provide evidence that the volatility of CEO wealth in stock returns has a positive association with leverage and stock return volatility. Altman (1968) suggests that increase leverage means that firms are taking more risk and thus, a higher value of vega implies that firms have higher leverage or higher risk. Accordingly, firms with higher leverage ratio tend to build managerial incentives with low vega so that managers can invest in less risky projects (John & John, 1993).

Moreover, for those firms having greater growth chances, they are often characterized by a capital structure with low debt and thus, their managers are usually given higher vega (Bhagat & Welch, 1995; Rajan & Zingales, 1995; Guay, 1999). The findings of these studies indicate that firm risk measured by leverage level may be negatively associated with vega. Additionally, if delta can substitute for leverage, lower delta means that firms have higher leverage. Based on these arguments, we propose the two following hypotheses:

H3: Firms with high (low) delta are associated with lower (higher) risk.

H4: Firms with high (low) vega are associated with higher (lower) risk.

3. Data and Model Specifications

3.1. Measuring Managerial Ability

In this study, we use the managerial ability measure developed by Demerjian et al. (2012). In their study, Demerjian et al. (2012) first estimate the firm efficiency score, which contains both firm characteristics and managerial efforts by using the data envelopment analysis (DEA) to estimate the following regression:

$$\max V_{\theta} = \frac{\text{Sales}}{v_1 \text{CoGS} + v_2 \text{SG \& A} + v_3 \text{PPE} + v_4 \text{OpsLease} + v_5 \text{R \& D} + v_6 \text{Goodwill} + v_7 \text{OtherIntan}}$$

where, CoGS is cost of goods sold; SG&A is selling and administrative expenses; PPE is net PP&E; OpsLease is net operating leases; R&D is net research and development; Goodwill is purchased goodwill; and OtherIntan is other intangible assets.

The managerial ability proxy is then extracted from this overall firm efficiency score by performing the following regression:

$$\begin{aligned} \text{Firm Efficiency}_i = & \alpha_0 + \alpha_1 \text{Ln(Total Assets)}_i \\ & + \alpha_2 \text{Market Share}_i + \alpha_3 \text{Free Cash} \\ & \text{Flow Indicator}_i + \alpha_4 \text{Ln(Firm Age)}_i \\ & + \alpha_5 \text{Business Segment Concentration}_i \\ & + \alpha_6 \text{Foreign Currency Indicator}_i \\ & + \alpha_7 \text{Year Indicator}_i + \varepsilon_i \end{aligned}$$

In the next step, we follow Demerjian et al. (2012) and derive a measure of managerial ability as the error term of the regression.

3.2. Measuring Firm Performance

Since the ultimate objectives of a firm is to maximize profit and shareholder's wealth, profitability is a popular financial ratio used to measure firm's performance due to the fact that it can reflect the capability of a firm to efficiently utilize its capital and human resources to make a return on an investment. It also shows that how much profit a firm can make and how big a firm can become. As a result, this ratio can help compare the performance of many firms in the way that a higher ratio means a better performance. Because the profit-making process includes various activities ranging from making investment, manufacturing products and services, selling and distributing final products to deciding operational strategies, merely looking at the profitability will lead to an incomprehensive evaluation of the performance of a business. Therefore, another indicator of firm's performance that attracts great interest from business leaders, investors, stakeholders and the general public is firm risk.

According to Bromiley (1991), this ratio is important in the way that it can draw implications for firm sustainable growth and firm survival. As suggested by Luhmann (1993), certain firm advantages can only be achieved when firm is willing to accept some risk. Imhof and Seavey (2014) also state that firm risk reflects the uncertainty level of a firm's income flows and thus firm risk taking behavior can bring both positive and negative impact on firm operating outcomes. There are three main risk indicators used in the literature, namely, firm leverage (calculated by the ratio of financial debt divided by the sum of financial debt plus equity); standard deviation of return on assets measured by the volatility of the firm's operating return on assets; and the

volatility of returns that captures the riskiness of investment decisions (Faccio et al., 2016).

Following previous studies as firm performance, I use three profitability indicators: return-on-asset (ROA), return-on-equity (ROE) and Tobin's Q. In addition, standard deviation of ROA; standard deviation of ROE; firm leverage are used to proxy for firm risk.

3.3. Other Control Variables

Based on the literature, in this study, firm characteristics and CEO characteristics are a set of control variables that are also included into the model. Specifically, for firm-level variables, we include into the model firm size, firm age, market-to-book ratio and sales growth. Firm size is measured as the natural logarithm of total assets and firm age is measured by the natural logarithm of the numbers of years the firm appears. To measure the market value of firm, we use the sum of market value of equity and book value of liabilities and finally, sales growth is the annual growth of sales. With regard to CEO's characteristics, we use CEO cash compensation, CEO delta and CEO vega to reflect the risk attitude of CEOs. CEO cash compensation is controlled to capture the total current compensation paid to CEOs including salary and bonus. While CEO delta is calculated as the change in dollar value of CEO's wealth for one percentage point change in stock price, CEO vega is measured as that change of annualized stock volatility as followed by Guay (2002) ε is standard error. Finally, data were collected from the Annual Enterprises Survey (AES) conducted by the General Statistics Office of Vietnam (GSO) for the 2009–2013 period. After removing all firms with insufficient information, the final sample includes 149,472 firm-year observations.

4. Empirical Results

Table 1 and 2 present the statistics and the correlation matrix of all variables in the model. As can be seen from the table, managerial ability has a positive relationship with firm profitability and firm risk. It is worth noting that all the correlation coefficients of control variables are less than 0.7, suggesting that there is no multicollinearity problem in the model.

Columns 1, 2, 3 in Table 3 illustrate the relationships among managerial ability and the profitability of firm, which is measured by ROA, ROE and Tobin's Q. We first test whether managerial ability has positive or negative effects on firm's profitability. The results are shown in Column 1 where the estimated coefficient of managerial ability is 0.0031. This shows that managerial ability has significant positive relationship with accounting ROA. Specifically, if the level of managerial ability increases by one unit, ROA

Table 1: Summary Statistic

Variable	Observations	Mean	Std. Dev.	Min	Max
Profitability	154,544	−0.001	0.113	−0.999	0.994
Risk	89,694	0.072	0.160	0.000	4.313
Managerial Ability	154,544	6.558	1.013	3.675	8.943
Firm characteristics					
Firm size	149,710	3.987	2.648	−2.303	17.900
Firm age	154,541	8.638	1.863	0.000	18.951
Market-to-book ratio	154,388	2.024	0.582	0.000	4.234
Sales growth	154,542	3.148	1.467	0.000	11.346
CEO characteristics					
CEO Cash Compensation	154,407	0.779	0.415	0	1
CEO Delta	154,405	3.815	0.211	2.833	4.489
CEO Vega	154,405	0.545	0.498	0.000	1.000

Table 2: Correlation Matrix

		VIF	1	2	3	4	5	6	7	8	9
1	ROA		1								
2	Risk		−0.119	1							
3	Managerial Ability	1.04	0.014	0.011	1						
4	Firm size	1.03	0.010	−0.020	−0.025	1					
5	Firm age	1.78	0.234	−0.017	−0.057	0.067	1				
6	Market-to-book ratio	2.01	0.198	−0.074	−0.175	0.076	0.613	1			
7	Sales growth	1.20	0.051	−0.010	−0.082	0.034	0.205	0.225	1		
8	CEO cash compensation	1.47	0.064	−0.014	0.047	0.148	0.392	0.411	0.212	1	
9	CEO delta	1.13	0.035	0.016	0.015	0.072	0.096	0.087	0.260	0.109	1
10	CEO vega	1.12	0.007	0.053	0.122	0.112	0.121	0.153	0.092	0.268	−0.101

increases 0.31% when other variables are kept constant. This outcome could be explained by the following reasons. Column 2 presents the association between managerial ability and ROE. The estimated coefficient of managerial ability is positive, suggesting that managerial ability has a positive impact on return on equity. Similarly, Column 3 reports the relationship between managerial ability and Tobin's Q. The estimated coefficient of the interaction term is positive and significant, indicating that managerial ability has a positive influence on firm profitability regardless different profitability indicators are taken into consideration. This result is consistent with prior research (i.e., Demerjian et al., 2012), which find that more capable managers can make better profitability.

With regard to firm risk, our results show that managerial ability is positively associated with three risk measures

(SD_ROA, SD_ROE and firm leverage). Columns 4, 5, 6 in Table 3 provide the regression results for the effect of managerial ability on firms' risk measured by standard deviation of ROA, standard deviation of ROE and firm leverage. For example, Column 4 in Table 3 shows that managerial ability has significantly positive effect on risk level of companies. The estimated coefficient is 0.0012, meaning that one unit increases in managerial ability, standard deviation of ROA increases by 0.12% if other variables are kept unchanged. This finding is in line with the results of Andreou et al. (2016) who report that high ability managers are more risk-taking.

Regarding the effect of compensation on firm risk, the estimated coefficient on vega and delta are positive and significant, suggesting that both delta and vega increase firm risk. This result is consistent with the results of prior studies. For example, the study by Guay (1999) estimates the impact

Table 3: The Impact of Managerial Ability on Firm Performance

Dependent Variable: Profitability and Risk						
Variables	(1)	(2)	(3)	(4)	(5)	(6)
Managerial ability	0.006*** (0.0003)	0.007*** (0.0003)	0.006*** (0.0006)	0.008** (0.0006)	0.009** (0.0006)	0.001*** (0.0043)
Firm size		0.020 (0.0007)	0.021*** (0.0043)		−0.027*** (0.0017)	−0.065*** (0.0098)
Firm age	0.001*** (0.0002)	0.001*** (0.0002)	0.038*** (0.0002)	0.011*** (0.0002)	0.011*** (0.0002)	0.021*** (0.0002)
Market-to-book ratio	0.011*** (0.0003)	0.011*** (0.0003)	0.011*** (0.0003)	−0.035*** (0.0004)	−0.025*** (0.0004)	−0.015*** (0.0004)
Sales growth	0.016*** (0.0006)	0.016*** (0.0006)	0.016*** (0.0006)	−0.013** (0.0014)	−0.013** (0.0014)	−0.013** (0.001)
CEO cash compensation	−0.013*** (0.0003)	−0.013*** (0.0003)	−0.013*** (0.0003)	−0.010* (0.0005)	−0.010 (0.0005)	−0.010 (0.0005)
CEO delta	0.015*** (0.0015)	0.015*** (0.0015)	0.025*** (0.0015)	0.025*** (0.0034)	0.024** (0.0034)	0.024*** (0.0034)
CEO vega	0.027*** (0.0006)	0.027*** (0.0006)	0.027*** (0.0006)	0.026*** (0.0013)	0.026*** (0.0013)	0.026*** (0.0013)
Constant	−0.072*** (0.0062)	−0.072*** (0.0062)	−0.080*** (0.0070)	0.129*** (0.0133)	0.130*** (0.0133)	0.144*** (0.0158)
Observations	149,472	149,472	149,472	86,476	86,476	86,476
Number of firms	52,552	52,552	52,552	50,593	50,593	50,593
Year dummies	YES	YES	YES	YES	YES	YES
Firm dummies	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

of vega on leverage, standard deviation of stock return while Cohen et al. (2000) investigate how cash compensation, vega and delta affect firm stock volatility on the elasticity of CEO wealth and find somehow similar results.

5. Conclusion

Conventionally, corporate value maximization is often seen as the mandate of making decisions for managers and, thus, the role of managerial ability has long been ignored. Therefore, this research helps close this gap by concentrating on the relationship between managerial ability and firm performance. In particular, it examines how managerial ability factor can affect the performance of firms in terms of both profitability and risk, and thereby shows that managerial ability can influence firm strategies. Our result of a significant positive relationship between managerial ability

and firm leverage indicates that managers significantly play an important role in making financial decisions.

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