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INFLUENCE OF CEO GENDER ON CORPORATE RISK-TAKING AND CAPITAL ALLOCATION EFFICIENCY

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ABSTRACT

Purpose: This paper aims to study the impact of CEO gender on firm's risk taking decisions and related corporate resource allocation efficiency using data collected from UK and USA based firms.

Design/Methodology: This study is an empirical research and employs the Panel data regression approach. The study uses cross-country panel data comprising of 69 companies (30 companies from the UK (LSE) and 39 companies from the USA (NYSE) during the time period 2012-2020.

Findings: The regression results show a positive impact of CEO gender on corporate risk-taking when leverage is taken as a key variable for measuring risk. On the other hand, CEO gender is observed to have a negative relationship with corporate risk when risk is measured through the standard deviation of ROA. Likewise, the gender of the CEO negatively impacts the efficiency of capital allocation.

Originality: This study enriches the available literature by relating the conservative leanings of females to risk-taking behavior and capital allocation. In addition to contributing to literature discussing CEOs' characteristics with impact on firm performance, the findings of the study add to the existing literature by showing that CEO gender is also an important factor influencing corporate choices.

Keywords: *CEO gender, Corporate risk, Capital allocation efficiency, Resource allocation efficiency*

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INTRODUCTION

The dearth of female CEOs on the corporate ladders is evident, despite evidence in literature showing that female leaders play a positive role in bringing economic value to firms. Kotiranta, Kovalainen and Rouvinen (2007) explored Finnish firms with female versus male CEOs and found that higher profits were being earned by the firms with female CEOs which represents the benefits of cultural diversity and multidimensionality. Over the past few years, quotas for women in public and private companies have grown vigorously in Europe. In Europe, there is one female CEO amongst 8 CEOs leading top companies, and women occupy only one quarter of top management positions and 10 percent of the positions as board members (Liu, 2021). In Germany, women form about 13 percent of top management and only 2 percent of board members of the board of directors. In USA, according to Forbes, there were only 20 women CEOs heading the Fortune 500 companies until August 2012 which represents a new record,. The corporate horizon is not much different in other parts of the globe. In Hong Kong, the year 2011 saw only 10% female representation amongst board members and approximately 40% of listed companies had zero representation of females in the board of directors. The total percentage of Female CEOs in the UK market in FTSE 100 is 9 %, and in FTSE 250 IS, the percentage is 4.8%.

Corporate finance literature provides interesting insights regarding the important characteristics of CEOs which can act as bases of corporate decisions, resultantly influencing the overall performance of the firm (Bertrand and, Schoar, 2003; Bertrand, Kramarz, Schoar and Thesmar, 2004; Malmendier and Tate, 2005). Given the present dearth of female CEOs and directors and support for the positive influence of female business leaders on organizational performance, the literature seems to signal that gender-based more balanced corporate leadership is likely to result in high marginal benefits.

In view of the presence of theoretical literature recording the influence of diversity in gender with regard to a firm's board composition and financial performance, further investigation into the topic is warranted. A firm operates to increase the wealth of its shareholders, which it never segregates based on gender; there is no known evidence of the presence of any glass ceiling when it comes to women leadership in top positions in a firm. Gender diversity within top management can contribute to better management of shareholder wealth (Liu,2021). If at all a preference has to exist, then it should be in favor of more feminine representation, as in the United States alone, financial performance was found to have a linear relation with ethnic and racial diversity. Just like the need for a balanced diet for a healthy growth spectrum, a balanced mix of gender is more promising for achieving desired firm growth milestones (Liu,2021). Moreover, given the fast paced increase in world population, it would be incautious to neglect the effective representation of a major percentage of the total workforce. As diversity in the gender of the workforce serves a firm positively, diversity in corporate board composition is likely to lead to a similar effect.

Gulamhussen and Santa (2010) observe that boardroom diversity with respect to gender is likely to have an incrementing effect on client relationships and

management of risk side-by-side value addition for the firm. The results of another study by Francoeur, Labelle and Sinclair-Desgagne (2008) indicate the positive impact of gender diversity on the financial performance of the firm, particularly those firms which are functioning in high-risk settings. This leads to understanding that the presence of the female gender in think tanks of firms is a great help in dealing with strategically complex decisions.

According to traditional finance theories and in perfect capital markets, a CEO or manager is supposed to select a project which has a positive effect on the firm's market value. Apparently, it has nothing to do with the personal characteristics of managers or shareholders' personal preferences in selecting one project over the other. When it comes to CEO gender, and its effects on corporate risk-taking traditional finance theories propose possible explanations in the form of agency theory and asymmetric information, which may play a role in defining a managers' preference for one project over the other. Moreover, certain other possible justifications as documented in available literature are overconfidence by Malmendier and Tate (2008) differences in risk taking behavior based on gender by Marianne (2011) and Croson and Gneezy (2009), differences in emoluments and incentives structures, unemployment risk, and different societal expectations based on gender in a given society by Akerlof and Kranton (2000) and Altonji and Blank (1999).

Given that CEO is the one who decides the path and direction the company has to follow in order to achieve firms' objectives and goals, the investigation of firm performance under top female management (Γκουρνέλου, 2017) is warranted. Further research has also borne out the relationship between risk and CEO gender, indicating a negative relation between risk-taking and CEO gender (Elsaid & Ursel, 2011). Therefore, it is worthy to study the association between the gender of top executives and related risk management and capital allocation decisions, with the scope of study going further than the United States, which had remained a focus of such studies in the past.

The paper is organized as follows: Section 2 elaborates literature review and hypothesis development, Section 3 deals with research methodology, Section 4 is about data analysis and finally Section five concludes the paper along with limitations and implications.

UNDERPINNING THEORY

The Upper Echelons Theory

Hambrick and Mason (1984) postulated the upper echelons theory, which contends that firm level strategic and organizational decisions are somewhat forecastable based on the demographics of top management. It proposes that managerial decision-making may not always extend from rational drives, but they tend to be largely influenced by the inherent limitations of managers being humans (Nielsen, 2010; Usdiken, 1992; Liang, Ndofor, Priem and Picken, 2010). The way how firms respond to environmental stimuli determines their ultimate level of competitiveness and

sustainability in the long run (Machuki & Aosa, 2011), which in turn is dependent upon the ability and capability of the firm's top management team that how well it interprets the signals emerging from their environment (Hambrick, 1994). Therefore, how the top management perceives and decodes the signals of the environment they are operating in, plays a pivotal role as it has a direct impact on firm level strategic decisions they are going to adopt. Hence this process leads up to and has an impact upon strategic decision making process.

According to the upper echelon's theory, the top management team's education, age, functional background and financial position, all make up part of the demographic characteristics of top management. More recent studies on the subject incorporated the tenure of the top management team (Nielson & Nielsen, 2013) and also gender (Marimuthu & Kolandaisamy, 2009) into the demographic structure. The advocates of this theory provide that companies having younger managers were likely to enjoy better growth and high profitability in comparison to companies with rather older managers reason being young corporate leaders were more inclined towards making high risk strategies. Other researchers also supported this stance and argued that younger managers are more related to firm performance because they react better and are more receptive to environmental change (Hambrick, 1994; Tihanyi, Ellstrand, Daily & Dalton, 2000).

Hence the top managers are the core of the business success as they play a primary role in the strategy development process, which is very crucial for the survival of the organization. Therefore, it becomes the responsibility of the top hierarchy to lead the organization in the right direction by aligning with the environmental stimuli (Miles, Snow, Meyer and Coleman Jr, 1978) which will make them better equipped for responding to ever changing environment.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Corporate Risk Taking and CEO Gender

Bajtelsmit and Bernasek (1996) put in an effort to compile and compare studies conducted on the subject of gender based differences. They conducted a survey of private investments and policy implications based on gender differences. They quoted a number of studies which conclude that women behave more conservatively while investing their pension funds than men (Bajtelsmit & VanDerhei, 1996; Hinz, McCarthy, & Turner, 1996) since females are less risk takers (Jianakoplos & Bernasek, 1996). Yet the reason for observed gender based differences is not commented upon. In search of causes of different risk-taking behaviors, the reasoning is also stretched up to biological differences versus socialization.

Even though majority of the studies document women being more risk averse when compared to men but none of those studies is conducted in practical life, in real corporate risky environment. That's why Elsaid and Ursel's (2009) study seems to bring it closer to real life when they conducted research on the issue in real corporate environment. The study concludes that transitioning from male to female CEO results in lesser corporate risk, confirming previous research results. This resultant decrease

in firm risk happens even though all other variables are taken as controlled variables, e.g. incentive policies.

A substantial literature is available to investigate the bearing of the relationship between risk and CEO gender, where many studies found a negative relation between risk-taking and CEO gender (Elsaid & Ursel, 2011). CEO gender and other personal characteristics, when linked with firm performance, were found to get partially mediated by debt to equity ratio, as hypothesized and later asserted by Naseem, Lin, Rehman, Ahmad and Ali (2019). Such negative relationship between the female gender and performance is evident in fairly old studies of Schwartz, and more recent ones by Watson, Newby, and Mahuka (2009), which were compiled by Storberg-Walker and Madsen (2017). Such evidence also connotes the extent of entrepreneurial risk taking of the CEOs when gender is taken as a variable.

Based on the above discussion, it is hypothesized that:

H1: Corporate risk-taking is negatively associated with the presence of female CEO.

Efficiency of Capital Allocation and CEO Gender

Durnev, Morck and Yeung (2004) provide that male CEOs prefer to invest more in industries having better growth opportunities. However, investments of firms run by female CEOs are less sensitive to the quality of growth opportunities. Thus, female CEOs do not appear to allocate capital more efficiently as compared to male CEOs. They reached at these findings by using marginal Q as the proxy for the quality of investment opportunities.

Adams and Ferreira (2009) report that CEO turnover is strongly related to poor performance when the board of directors has more gender diversity. The powers of his results were compromised by the fact that he acknowledged as well, despite the statistical significance of his results. Such lack of statistical power could have been addressed, as Wolfers (2006) asserts, by waiting for more data to come.

Stein (2002), on the contrary, asserted that it is the organizational structure, rather than gender, that may influence more on how the resources especially capital is allocated in the organizations. Such an effect was investigated in the backdrop of soft as well as hard information production. It hence relied on how the information is disseminated rather than who, for example, a CEO with a female or male gender, may obtain or use such information. In a fairly recent study, a positive sign was associated with female representation on boards and capital resource allocation in the Malaysian market (Badru, Ahmad-Zaluki, & Wan-Hussin, 2019). This suggests that the phenomenon might be culture or market-specific, and hence this adds to another perspective which is worth exploring. The existence of both positive and negative association of capital resource allocation and females either heading the corporation or being predominantly represented on boards makes this enticing study to explore how corporate resource allocation and the CEO being a female has any bearing on allocative efficiency. With this theoretical backdrop, the following hypothesis is tested for significance.

H2: Efficiency of capital allocation is negatively associated with the presence of female CEO.

METHODS

Research Design

This study adopted a quantitative research. Cross-country panel data of 69 companies (30 companies from the UK (LSE) and 39 companies from the USA (NYSE and NASDAQ) during the time period (2012-2020) are analysed.

The data source included published audited annual financial statements, stock exchange websites and freely accessible databases of respective countries. Based on the data, the minimum number of years led by a female CEO comprised one year.

Study Variables

Corporate Risk Taking

Corporate risk-taking is a diversifiable or unsystematic risk that a firm diversifies by company's other assets. To measure corporate risk taking, two dimensions are tested. One is Firm's Leverage, and the second is the Volatility of firms operating return on assets. Leverage measures the riskiness of financial decisions and is calculated by dividing firms' debt (sum of long-term debt and short-term debt or payables) by the sum of firms' debt plus equity. Firms with higher leverage are more vulnerable to any sudden change in the prevailing business environment.

Second, the ratio of return on assets calculates the firm's operating return on asset volatility. Most frequently employed in financial economics, this variable evaluates the risk associated with an investment opportunity. The volatility of the returns on asset ratio paints a picture of how risky the business is.

ROA = EBIT

Total Assets

Where,

ROA = Return on Asset

EBIT = Earnings before interest and tax

Efficiency of Capital Allocation

Capital allocation can be done efficiently by allocating financial resources to those investment opportunities and projects which are more profitable and withdrawing funds from sectors which are at a loss or comparatively less profitable or considered poor investment options (Faccio, et al., 2016). If it is looked at from the point of view of Wurgler (2000), efficiency of capital allocation means making an ideal investment by investing in the industries that are flourishing and growing and decreasing resource allocation in such industries which are following a negative growth trend. As Wurgler (2000) contends that economic growth is derived from growth in the GDP of the country which is cumulative value addition across all industries in an economy, so to see value-added, the simplest way is to measure growth. Regarding of analysis

of data in his study, he used a proxy of value-added growth to measure the quality of the investment opportunities, (Faccio, et al., 2016).

For the purpose of this study, Wurgler (2000)'s approach is adopted for calculating the efficiency of capital allocation and growth in value added. Due to the limitation of unavailability of desired data, growth in value added per employee (VAPE) is used as a proxy in this study instead of value added as studied by Wurgler (2000), who calculated value added by adding the cost of employees to earnings before interest and tax. But in this study, value added per employee is calculated by dividing earnings before interest and tax by the number of employees. Furthermore growth in value added per employee is calculated as the difference of natural logs of value added in the year t and year t-1. Moreover, value added per employee is calculated per year for every firm.

To reach at efficiency of capital allocation, a simple version of the Fazzari, Hubbard, and Petersen (1988) model of investment is used with an additional indicator for denoting a female CEO and its interaction with each firm's value added per employee's growth (Faccio, et al., 2016).

$$\frac{\Delta \text{ Gross PPE}_{i,t}}{\text{Total Fixed Assets}_{i,t-1}} = \alpha + ß.\ \text{Ln}\frac{\text{V.A.P.E}_{i,t}}{\text{V.A.P.E}_{i,t-1}} + \gamma.\frac{\text{Cash Flows}_{i,t}}{\text{Total Fixed Assets}_{i,t-1}} + \delta.\ \text{Ln}(1+\text{Age}) + \sigma.\text{CEO(G)} + \theta.\ \text{V.A.P.E}_{i,t-1}.\text{CEO(G)} + \Sigma\ \text{Controls}_{i,t}$$

ΔGross PPE$_{i,t}$	The annual change in net Total Fixed Assets after adding back depreciation.
Total Fixed Assets	The sum of tangible, intangible and other fixed assets.
$\frac{\Delta \text{ Gross PPE}_{i,t}}{\text{Total Fixed Assets}_{i,t-1}}$	Shows the capital expenditure of firm.
VAPE	Value added per employee (VAPE) is calculated as revenue minus operating costs (EBIT) divided by number of employees. $\frac{\text{EBIT}}{\text{No of Employees}}$
Ln $\frac{\text{V.A.P.E}_{i,t}}{\text{V.A.P.E}_{i,t-1}}$	Measures growth in value added per employee, shows quality of investment prospects of the firm.
$\frac{\text{Cash Flows}_{i,t}}{\text{Total Fixed Assets}_{i,t-1}}$	Cash flows are calculated by adding depreciation to net income.
Ln(1+Age)	The natural logarithm of firm age

Where β represents investment sensitivity to prospects of growth. So to say a good manager would be one who would wisely increase the investment of funds in opportunities with higher growth prospects and vice versa.

ɵ coefficient shows the impact of CEO gender on corporate investment choices with respect to growth prospects and growth in value added per employee per firm. So if there is no relationship between CEO gender and investment efficiency, the value of this coefficient will be zero. The variable of firm age is controlled because it can be linked to risk-taking of the firm depending upon the age and stage of the firm (Faccio, et al., 2016).

CEO Gender

The gender of the CEO is predominantly found from his/her first name, and will be identified from the published annual financial reports.

Control Variables

Following a prior study with regards to this investigation (see Faccio, et al., 2016) this study controls for firm size, ROA, sales growth, firm age and tangibility.

Research Models

Panel data regression approach is employed in this study. The following regression models are tested in this study.

For Corporate Risk Taking

$$Lev_{i,t} = \sigma_0 + \sigma_1 CEO(G)_{i,t} + \Sigma Controls_{i,t} \quad \text{....Equation (i)}$$

$$\sigma ROA_{i,t} = \sigma_0 + \sigma_1 CEO(G)_{i,t} + \Sigma Controls_{i,t} \quad \text{.....Equation (ii)}$$

For Efficiency of Capital Allocation

$$\Delta \text{ Gross PPE}_{i,t} = \alpha + ß \,.V.A.P.E_{i,t} + \gamma \,.\text{Cash Flow}_{i,t} + \delta \,.\, Ln(1+\text{Age})$$

$$\text{Total Fixed Assets}_{i,t-1} \quad V.A.P.E_{i,t-1} \quad \text{Total Fixed Assets}_{i,t-1}$$

$$+ \sigma \,.\, CEO(G) + ɵ.\ V.A.P.E_{i,t} \,.\, CEO(G) + \mu_{i,t} \quad \text{.....Equation (iii)}$$

$$V.A.P.E_{i,t-1}$$

EMPIRICAL FINDINGS

Descriptive Analysis

Across the firms in the cross-country data of this study, the mean average leverage ratio comes to 36.5% with a standard deviation 0.221, which is consistent with past literature related to firm leverage of developed countries including the UK (Faccio, et al., 2016).

The other measure adopted in this study to gauge the corporate risk taking capability of the firm is the volatility of its operating returns on assets measured by calculating σ (ROA). The volatility of operating returns on assets is extensively used as a standard proxy for measuring risk in the financial economics literature.

The average volatility of operating returns on assets for cross country firms sample for this study is 2.2% with a standard deviation 0.041 which is consistent with past literature. Moreover, past literature (John et al., 2008) provides that the volatility of operating return on assets of the firm has a positive impact on long-term economic growth.

CEO gender is an indicator variable that which is taken as 1 if the firm CEO is a woman and 0 otherwise. The average of variable CEO gender is 30.5%, with the standard deviation 0.461 which corresponds to the small sample used for this study as top listed firms from only two developed economies, namely the UK and USA have

Table 1: Summary Descriptive Statistics

	Mean	Median	Std. Dev	p25	p75
Leverage	0.365	0.344	0.221	0.214	0.520
σ(ROA)	0.022	0.011	0.041	0.005	0.022
CEO gender	0.305	0	0.461	0	1
ROA	0.101	0.087	0.076	0.053	0.140
Sales growth	55017.02	22087	91915.24	7810	62346
Ln (Size)	67376.46	39946	81840.05	9633	81882
Firm age	61.804	38.5	49.729	20	104
Tangibility	0.289	0.188	0.239	0.103	0.452
ΔGross PPE/Total fixed assets	1.277	1.136	0.489	1.029	1.343
Value added per employee	0.093	0.055	0.142	0.019	0.111
Cash flow/Total fixed assets	0.937	0.625	1.209	0.212	1.095

been selected. Given the circumstances that data can be enriched more by adding more countries and including firms across the extended number of years, this ratio will most likely fall (Faccio, et al., 2016).

In this study variables which are taken as control variables are: ROA, sales growth, firm size, firm age, and tangibility. The average operating profitability of the firms for this study is 10.1%. The mean average age of the firms in the cross-country sample of this study is 61.8 years. The assets tangibility is defined as the ratio of total fixed assets to total assets of the firm. The average asset tangibility is 21.2%. This variable is controlled because past literature provides that it is likely to have a strong effect on firm investment performance under external financing (Campello, 2007). The past literature also provides that other variables like CEO age, wealth and ownership be controlled (Arrow, 1984; Calvet and Sodini, 2014; Faccio, et al., 2016; Forbes, 2005; Kovalchik, Camerer, Grether, Plott & Allman, 2005; Taylor, 1975) to reach at more

accurate results yet due to limitation of availability of data same is not done in this study. A summary of descriptive statistics of the full sample is presented in Table 1.

Table 2: OLS Regression of Leverage

VARIABLES	Model 1
CEO Gender	0.0632***
	(0.0197)
ROA	-0.277**
	(0.117)
Sales Growth	-0.0681
	(0.0863)
Firm Age	-0.00657
	(0.00857)
Tangibility	0.0526
	(0.0395)
Firm Size	0.0238***
	(0.00662)
Constant	0.145*
	(0.0843)
Observations	621
R-squared	0.064

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

Table 3: OLS Regression of Standard Deviation of ROA

VARIABLES	Model 2
CEO Gender	-0.00888***
	(0.00289)
ROA	-
	-
Sales Growth	-0.0148
	(0.0132)
Firm Age	-
	-
Tangibility	-0.00473
	(0.00468)

Firm Size	-0.000126
	(0.000732)
Constant	0.0268***
	(0.00840)
Observations	483
R-squared	0.016

Robust standard errors in parentheses

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

Regression Analysis – CEO Gender and Corporate Risk Taking

To analyze whether the presence of a female CEO impacts risk taking decisions of the firm, panel ordinary least square regression is conducted in two parts. Firstly, leverage is taken as the dependent variable in Regression 1, where standard errors and firm fixed effects are clustered at firm level. Since firm-related individual variables are likely to alter the results by having an impact on the predictor, they must be controlled. The results are given in Table 3.

In Regression 2, volatility of firm profitability σ(ROA) is taken as the dependent variable with CEO gender as the independent variable. The results are shown in Table 4.

Regression Analysis - CEO Gender and Efficiency of Capital Allocation

Since CEO gender has been investigated concerning its influence on how risky company decisions are made, it is now known that female CEOs are more likely than male CEOs to take less risk. If the first statement is accurate, having a female CEO will affect how well capital is allocated. The Wurgler (2000) approach, which uses value-added growth as a proxy for determining the quality of investment possibilities, is employed in this study to access this with minor modifications. Value added per employee is used in this analysis in place of importance-added growth. In the following section, the value added per employee is further discussed.

Capital resources should be invested into chances that offer the highest return on investment and withdrawn from those sectors that offer low returns on investments to achieve efficiency in the capital allocation process. According to Wurgler (2000), making the best possible investment decisions entails shifting more of your money into expanding businesses with greater returns and reducing invested capital from declining industries.

Value Added per Employee

Value added per employee is a measure of employee productivity which is arrived at by dividing pre–tax income with the number of employees. Where productivity is a measure of performance, which comprises of both effectiveness and efficiency. High-performing organizations support such a culture which helps encourage employee involvement. This makes employees more willing to participate in decision making and goal setting processes, problem resolving activities etc which resultantly lead to higher employee performance (Hellriegel, Slocum & Woodman, 1998). Such organizations adopt a more modern approach to styles of management which help in raising employee productivity and satisfaction even at lower remuneration rates (Madison, 2000).

Employee productivity is also increased by job satisfaction which brings in high levels of motivation and working capabilities of the employees (Miller & Monge, 1986). Apropos this job satisfaction is affected by a participative climate where a strong effect on productivity with regards to participation in specific decisions is observed by Berg (1999). Workers participation has a strong impact on both job satisfaction and employee productivity yet it has a rather strong effect on productivity. Human resource policies are designed in such a way as to encourage workers' participation in decision-making by providing them with such opportunities and incentives in order to expand discretionary efforts and also encourage acquiring appropriate skills. Employee participation schemes are one such policy which has a direct impact on incentives and opportunities. All before mentioned efforts are expected to increase employee efficiency and productivity (Berg, 1999).

Table 4: OLS Regression of Efficiency of Capital Allocation

VARIABLES	Model 3
VAPE	-0.413***
	(0.149)
Cash flow	0.304***
Total Fixed Assets	(0.0318)
Firm Age	-0.00895
	(0.0146)
CEO Gender	0.0359
	(0.0460)
V.A.P.E x CEO Gender	-0.834*
	(0.489)
Sales Growth	0.475***
	(0.119)

Constant	0.138**
	(0.0576)
Observations	621
R-squared	0.454

*Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1, VAPE Value added per employee*

DISCUSSION OF FINDINGS

Results of regression 1 reported in table 3, in which leverage is taken as the dependent variable along with CEO gender is taken as an independent variable, show a very low level of influence of the independent variable on the dependent variable. The adjusted R-squared coefficients show that the presence of a female CEO explains only about 6% of the variance in the leverage of firm ultimately affecting the levels of riskiness of firm (Faccio, et al., 2016).

Where a significant relationship exists between the CEO gender and leverage (r = 0.0632). It shows that CEO gender has a positive impact on firm leverage and it results in increased risk-taking by the firm contrary to the commonly believed risk-averse nature associated with female corporate leaders (Elsaid and Ursel, 2011; Huang and Kisgen, 2012; Martin, Nishikawa & Williams, 2009). Hence it does not support hypothesis 1 that corporate risk-taking is negatively associated with the presence of female CEO.

On the other hand results of regression 2 are reported in table 4, with the standard deviation of ROA as the dependent variable and CEO gender as the independent variable, show a further reduced impact of the independent variable on the dependent variable. The adjusted R-squared coefficients in this case show that the independent variable, CEO gender, explain only about 1% of total variance in dependent variable corporate risk taking. Presence of a female CEO explains only about 1% of variance in leverage of firm. Therefore hypothesis 1 is supported.

The results of regression 2 are consistent with previous literature available about females being risk averse or having a negative impact on risk-taking. Firms with female top executives are less likely to go into risky decisions like mergers and acquisitions and issuing debt in comparison to companies being run by male executives (Huang & Kisgen, 2012). Martin, Nishikawa and Williams (2009) provide that companies keeping high risk profile are inclined towards appointing a female CEO for the sake of reducing risk. Elsaid and Ursel (2011) by studying data of CEOs succession in firms of North American, provide that a transition of CEO gender i.e., from male CEO to female CEO, brings down the firm risk level.

The r = -0.00888 shows a significant negative relationship between CEO gender and the standard deviation of ROA. The presence of a female corporate head has a significant yet negative impact on the firm risk profile. A female CEO is associated with less volatility in operating returns on assets of the firm. The standard deviation

of ROA is taken as the other measure for assessing the risk of a firm in addition to leverage. Where leverage is the most widely used variable for measuring risk in corporate finance, volatility of operating returns on assets is widely quoted in the financial economics literature. The results of regression 2 establish that CEO gender does affect the riskiness of a company but in the opposite direction. The evidence of the market perception of females being risk-aversive is supported by research conducted by Martin, Nishikawa and Williams (2009). The results of regression 1 are in contrast to most studies where risk is reported to decrease in presence of female CEO but the results of regression 2 are in accordance to previous literature such as (Niessen & Ruenzi, 2007; John, Litov & Yeung, 2008; Croson &Gneezy, 2009). For this study result of regression 2 are given more weightage because it reflects the riskiness level of investment decisions which are another angle of looking at things with respect to CEO gender.

Table 5 presents the results of regression 3. The capital expenditure of the firm calculated by dividing ΔGross PPE with Total fixed assets is regressed with CEO gender. The adjusted R-squared coefficient shows that the independent variable, i.e. CEO gender, explains about 45% of the total variance in the dependent variable, i.e. capital expenditure of the firm, showing the level of influence CEO gender can have on corporate-level investment decisions.

The results presented in Table 5 show a significant but negative relationship between value added per employee and CEO gender (-0.413), in accordance with optimal capital budgeting. The coefficient capturing sensitivity of investment funds to growth prospects when regressed with CEO gender provides that when a female executive is running the business, the corporate investment decisions are less responsive to value-added growth per employee. It infers that female CEOs when compared to male CEOs, are less likely to allocate funds efficiently. The robustness of results is ensured by controlling other variables that are likely to affect the results, such as firm size, sales growth and tangibility of assets.

In other words, it can be maintained that male CEOs allocate funds in profitable investment projects achieving higher efficiency than female CEOs. The male corporate executives are better at understanding and responding to bad growth opportunities by timely divesting funds to other projects that have better growth prospects.

A significant negative relationship is observed between CEO gender and value added per employee ($r = -0.413$). In the presence of a female CEO, the value added per employee is likely to follow a decreasing trend and vice versa. CEO gender has a significant positive relationship with the ratio of cash flows to total fixed assets with $r = 0.304$. The interaction term VAPE x CEO Gender has a significant negative relationship with CEO gender as indicated by $r = -0.834$. Hence, based on these findings, the efficiency of capital allocation seems to increase in the presence of female corporate executives, rejecting hypothesis 2.

These findings of the study are consistent with previous literature where CEO gender is observed to have a significant impact on capital allocation efficiency, such as the

study conducted by Yu, Lord, Peni and Vähämaa (2010), which provides that female CEOs are rather more inclined towards choosing conservative strategies in the wake of capital allocation process.

A possible explanation for the inefficient allocation of investment resources by female CEOs can be the underinvestment of funds when growth prospects are really welcoming. This is possible when a female executive chooses to let go of a growth opportunity despite the positive NPV of the project. On the other hand, another explanation could be overinvestment in projects with negative NPV in the wake of taking higher risk. On the contrary female CEOs of firms with poor growth prospects do investments just to avoid divestitures. This factor needs further investigation with better-defined data set in order to analyze such behavior closely.

A number of traditional explanations often come associated with the risk aversion behavior of female CEOs, such as information asymmetry and agency costs, economic explanations like risk aversion behavior of female CEOs rather than male CEOs, being less confident as compared to males, differences in unemployment risk, incentive structure and expectations in terms of socially accepted norms as expected out of a female.

In addition to the above, other possible reasons behind less efficient resource allocation and risk avoidance by female CEOs can be personal preferences, such as less overconfidence, unemployment risk, and higher expectations by society.

Practical Implications

Overall, these results will contribute new insights into the understanding of the role of CEO gender in managing firm risk. The results of this study provide that firms being managed by female CEOs are less inclined towards increasing the ratio of debt, ultimately exposing firms to a lesser degree of distress. Hence by giving more opportunities to female team leads and CEOs can be used as a passive measure in the organization of corporate risk.

Although the benefits of using more debt in the form of tax benefits entice firms to increase debt ratio in capital structure. But a female CEO being less prone to opting for higher risk decisions not only decreases firm risk on the one hand but also keeps the level of debt at manageable levels. Looking at it from the perspective of the volatility of returns, a female CEO also reflects lesser volatile returns of the firm. Hence the robustness of this study can help in the decision to appoint a female corporate leader.

Limitations of Study

The primary limitation of the study pertained to of limited access to premium databases such as COMPUSTAT and CRSP governing insights into the selected population. Further, due to limitations in the data set of this study, the sample contains only large publically traded companies in the United States and United

Kingdom. Hence the results of this study are expected to be generalizable only in relation to large firms for which it has some economic significance. However, these results are less likely applicable to economies which are not yet as developed.

Moreover, owing to data source limitation, value-added growth at the firm level is replaced with value-added per employee, unlike the approach adopted from Wurgler (2000) whereby he used value-added growth for reaching at the efficiency of capital allocation process of the firm along with incorporating a degree of impact of gender of the corporate team lead of the firm. Lastly, sample size remained small due to CEO positions of the listed firms being occupied by very few female leaders and managers.

CONCLUSION

Although the proportion of female CEOs is extremely low, it is further reduced by the fact that few of such firms are not listed on the stock exchange; therefore, their financial reports are not public and easily accessible. The study provides evidence that CEO gender has a positive impact on corporate risk profile when leverage is taken as a key variable of risk. When the CEO is a female, the risk is observed to be increasing. Contrary to this when volatility of returns in terms of the standard deviation of ROA is taken as a measure of corporate risk, CEO gender tends to have a negative impact. Thus, the study suggests that the presence of a female CEO tends to decrease the risk of corporate decisions.

REFERENCES

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of financial economics*, *94*(2), 291-309002E

Akerlof, G. A., & Kranton, R. E. (2000). Economics and identity. *The quarterly journal of economics*, *115*(3), 715-753.

Altonji, J. G., & Blank, R. M. (1999). Race and gender in the labor market. *Handbook of labor economics*, *3*, 3143-3259.

Arrow, KJ, (1984). The theory of risk aversion. Individual Choice under Certainty and Uncertainty, Collected Papers of KJ Arrow. *Harvard University Press, Cambridge*, MA, pp. 147–171.

Badru, B. O., Ahmad-Zaluki, N. A., & Wan-Hussin, W. N. (2019). Women on corporate boards and allocation of capital raised through IPOs. *Management Decision*, *57*(3), 547-568

Bajtelsmit, V. L., & Bernasek, A. (1996). Why do women invest differently than men?. *Financial Counseling and Planning*, *7*.

Bajtelsmit, V. L., & VanDerhei, J. A. (1996). Risk Aversion and Retirement Income Adequacy. Forthcoming in Positioning Pensions for the Twenty-First Century.

Berg, J. (1999). van den (1999). *Individual preferences in the aesthetic evaluation of natural landscapes*.

Bertrand, M., Kramarz, F., Schoar, A., & Thesmar, D. (2004). Politically connected CEOs and corporate outcomes: Evidence from France. *Unpublished manuscript*.

Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *The Quarterly journal of economics*, *118*(4), 1169-1208.

Calvet, L.E. & Sodini, P., (2014). Twin picks: disentangling the determinants of risk-taking in household portfolios. *J. Finance 69,* 867–906.

Campello, M. (2007). Asset tangibility and firm performance under external financing: evidence from product markets. *Available at SSRN 971170*.

Chandra, S., & Shadel, W. G. (2007). Crossing disciplinary boundaries: Applying financial portfolio theory to model the organization of the self-concept. *Journal of Research in Personality*, *41*(2), 346-373.

Claessens, S., Djankov, S.,& Nenova, T. (2000). *Corporate Risk around the World. Policy Research Working Paper;No. 2271. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/19855*

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. *Journal of Economic literature*, *47*(2), 448-74.

Durnev, A., Morck, R., & Yeung, B. (2004). Value-enhancing capital budgeting and firm-specific stock return variation. *The Journal of Finance*, *59*(1), 65-105.

Elsaid, E., & Ursel, N. D. (2011). CEO succession, gender and risk taking. *Gender in Management: An International Journal*, *26*(7), 499-512.

Elsaid, E., & Ursel, N. D. (2011). CEO succession, gender and risk taking. *Gender in Management: An International Journal*, *26*(7), 499-512.

Faccio, M., Marchica, M. T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, *39*, 193-209.

Fazzari, S., Hubbard, R. G., & Petersen, B. (1988). Investment, financing decisions, and tax policy. *The American Economic Review*, *78*(2), 200-205.

Forbes, D.P., (2005). Are some entrepreneurs more overconfident than others? *Journal of business venturing. 20,* 623–640.

Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of business ethics*, *81*, 83-95.

Γκουρνέλου, Ε. (2017). Gender diversity and firm performance: evidence from Greece (Doctoral dissertation).

Gulamhussen, M. A., & Santa, S. F. (2010). *Women in boardrooms and their influence on performance and risk taking*. Harvard University Working Paper.

Hambrick, D. C. (1994). Top Management Groups: A Conceptual Integration and Reconsideration of the "team" label. *Research in Organizational Behavior*, 16, 171-171.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of management review*, *9*(2), 193-206.

Hellriegel, D., Slocum, J. W., & Woodman, R. W. (1998). Organizational behavior, cincinnati. *Ohio, South+ Western college Publ*.

Hinz, R. P., McCarthy, D. D., & Turner, J. A. (1996). Are women conservative investors? Gender differences in participant-directed pension investments.

Hubbard, M. (2007). *Entitlement, rules, coordination, club, market and hierarchy: General budget support practice and theory; implications of results of the joint evaluation of general budget support* (No. 2007/39). Research Paper, UNU-WIDER, United Nations University (UNU).

Huang, J., & Kisgen, D. (2012). Gender and Corporate Finance, forthcoming. *Journal of Financial Economics*, 108(3), 822-839.

Jianakoplos, N. A., & Bernasek, A. (1996). Are Women More Risk Averse?" Working Papers in Economics and Political Economy, Colorado State University.

John, K., Litov, L., & Yeung, B. (2008). Corporate governance and risk-taking. *The journal of finance*, *63*(4), 1679-1728.

Kotiranta, A., Kovalainen, A., & Rouvinen, P. (2007). Female leadership and firm profitability. *EVA analysis*, *3*, 2007.

Kovalchik, S., Camerer, C.F., Grether, D.M., Plott, C.R., & Allman, J.M., (2005). Aging and decision making: a comparison between neurologically healthy elderly and young individuals. *J. Econ. Behav. Organ. 58*, 79–94.

Liang, X., Ndofor, H. A., Priem, R. L., & Picken, J. C. (2010). Top management team communication networks, environmental uncertainty, and organizational performance: A contingency view. *Journal of Managerial issues*, 436-455.

Liu, C. (2021). CEO gender and employee relations: Evidence from labor lawsuits. *Journal of Banking and Finance*, *128*, 106136. https://doi.org/10.1016/j.jbankfin.2021.106136

Machuki, V. N., & Aosa, E. (2011). The influence of the external environment on the performance of publicly quoted companies in Kenya.

Machuki, V. N., & Aosa, E. O., Letting, D., & Nicholas, K. (2012). Firm-level institutions and performance of publicly quoted companies in Kenya. *International Journal of Humanities and Social Science*, *2*(21), 298-312.

Madison, W. I. (2000). University of Wisconsin-Madison. *Wisconsin Center for Education Research, National Center on Effective*.

Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *The journal of finance*, *60*(6), 2661-2700.

Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of financial Economics*, *89*(1), 20-43.

Marianne, B. (2011). New perspectives on gender. In *Handbook of labor economics* (Vol. 4, pp. 1543-1590). Elsevier.

Marimuthu, M., & Kolandaisamy, I. (2009). Can Demographic Diversity in Top Management Team Contribute for Greater Financial Performance An Empirical Discussion.

Marshall, A. (1890), Principles of Economics, Macmillan, London

Martin, A. D., Nishikawa, T., & Williams, M. A. (2009). CEO gender: Effects on valuation and risk. *Quarterly Journal of Finance & Accounting*, *48*(3).

Miles, R. E., Snow, C. C., Meyer, A. D., & Coleman Jr, H. J. (1978). Organizational strategy, structure, and process. *Academy of management review*, *3*(3), 546-562.

Miller, K. I., & Monge, P. R. (1986). Participation, satisfaction, and productivity: A meta-analytic review. *Academy of management Journal*, *29*(4), 727-753.

Naseem, M. A., Lin, J., Rehman, R. U., Ahmad, M. I., & Ali, R. (2019). Does capital structure mediate the link between CEO characteristics and firm performance?. *Management Decision*, 58(1), 164-181.

Nielsen, B. B., & Nielsen, S. (2013). Top management team nationality diversity and firm performance: A multilevel study. *Strategic Management Journal*, *34*(3), 373-382.

Nielsen, S. (2010). Top management team diversity: A review of theories and methodologies. *International Journal of Management Reviews*, *12*(3), 301-316.

Niessen, A., & Ruenzi, S. (2007). *Sex matters: Gender differences in a professional setting* (No. 06-01). CFR Working Paper.

Stein, J. C. (2002). Information production and capital allocation: Decentralized versus hierarchical firms. *The journal of finance*, *57*(5), 1891-1921.

Storberg-Walker, J., & Madsen, S. R. (2017). The women and leadership theory think tank report 2015. *Women & Leadership Think Tank Report 2015*, 1.

Taylor, R.N., (1975). Age and experience as determinants of managerial information processing and decision making performance. *Acad. Manag. J. 18*, 74–81

Tihanyi, L., Ellstrand, A. E., Daily, C. M., & Dalton, D. R. (2000). Composition of the top management team and firm international diversification. *Journal of management*, *26*(6), 1157-1177.

Üsdiken, B. (1992). The impact of environmental change on the characteristics of top management teams. *British Journal of Management*, *3*(4), 207-219.

Watson, J., Newby, R., & Mahuka, A. (2009). Gender and the SME "finance gap". *International Journal of Gender and Entrepreneurship*, *1*(1), 42-56.

Wolfers, J. (2006). Diagnosing discrimination: Stock returns and CEO gender. *Journal of the European Economic Association*, *4*(2-3), 531-541.

Wurgler, J. (2000). Financial markets and the allocation of capital. *Journal of financial economics*, *58*(1-2), 187-214.

Yu, S., Lord, R., Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*.

Zenger, T. R., & Lawrence, B. S. (1989). Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management journal*, *32*(2), 353-376.