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Are masculine-faced CEOs linked to higher stock price risks? Evidence from Indonesia

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ARTICLE INFO	ABSTRACT
	This study examines whether masculine-faced CEOs are associated with a higher stock price crash risk. Using the purposive sampling method, we collected 2,969 samples from companies listed on the Indonesia Stock Exchange from 2010 to 2019. We use the least square regression test with the robust Coarsened Exact Matching (CEM) approach to overcome sensitivity to behavioral bias. We found that CEOs with masculine faces are at higher risk of causing falling stock prices and are proven to be robust. Furthermore, only male CEOs with masculine faces were associated with falling stock prices; not female CEOs. Our findings are the first in Indonesia, complementing the development of the literature on individual characteristics by identifying CEOs with masculine faces as personality and characteristic shapers of falling stock prices. Although this study is limited to measuring facial features, which are part of an individual's gene characteristics, it also provides stakeholders with insights into the importance of considering facial structure when evaluating CEO decision-making.

Introduction

Facial masculinity as an individual characteristic, the result of the influence of testosterone levels and steroid hormones in the accounting literature, has drawn a long debate regarding its relationship with risk-taking and dominance in competitive performance (Ahmed et al., 2019; Jia et al., 2014; Kamiya et al., 2019; Sheerin & Linehan, 2018). We looked at a study from Adams et al. (2018) titled "Are CEOs Born Leaders?" that gave us hope that CEOs may be born for their roles in the future. CEOs who are born shape behavior instinctively while leaving the physical evidence that differentiates them from others. Carré and McCormick (2008) explain the differences in facial features from the perspective of the face-to-height ratio, which is known to be closely related to dominance and aggression during behavioral and naturalistic tasks.

Ormiston et al. (2017) used the facial width-to-height ratio (FWHR) measure for CEOs to predict financial performance, and the results proved superior. The superiority is based on their optimism and ability to see opportunities and the bigger picture regarding the environment. In the study, FWHR was strongly associated with high power and thus seen as more likely to help an individual achieve successful organizational performance. On the other hand, several other studies have found a positive correlation between facial masculinity generated by salivary testosterone levels and financial risk preferences (Apicella et al., 2008). This is because the FWHR study has found that men with wider faces are relatively less trustworthy and are more likely to commit fraud (Stirrat & Perrett, 2010). Subsequent research has also emerged, showing that masculine-faced CEOs tend to increase the volatility of stock returns and are more sensitive to company risk (Ahmed et al., 2019; Kamiya et al., 2019) and financial reporting errors (Jia et al., 2014). CEOs with masculine faces in our literacy findings are impacted more by harmful conditions in their leadership, especially regarding risk (Anderl et al., 2016; Haselhuhn & Wong, 2012; Lefevre et al., 2013).

The differences in the results of the study from the existing literature is an important reason to conduct a test that determines the relationship between a CEO's facial width-to-height ratio (FWHR) and the risk of falling stock prices. This study is interested in testing whether CEO masculinity increases the risk of falling stock prices and whether CEO gender has an impact. We use data from companies listed on the Indonesia Stock Exchange from 2010-2019 and focused on the facial characteristics of Asian CEOs, particularly in Indonesia. The decision to use a long-term sample was because of the possibility of CEOs serving more than three years; we expect CEO turnover to result in an adequate masculine sample.

Our findings show that CEOs with a higher facial width to height ratio (FWHR), an indicator of facial masculinity, tend to cause a higher risk of falling stock prices. Our assumption supports the idea that masculine CEO

characteristics are more aggressive in their assessment and risk preferences, so they tend to exceed the company's acceptable risk limits. The results of this study are consistent with image theory, which states that CEO decision-making is based on what a CEO thinks is right rather than maximizing what is right (Beach & Mitchell, 1987). The masculine CEO believes that his decision can improve the company's performance and ignores risk assessments, which leads to the risk of a falling company stock price. In addition, our findings also confirm that the main factor that forms masculinity is testosterone. Only a masculine-faced CEO is significantly associated with the risk of falling stock prices.

Ultimately, our research provides an overview of the physical characteristics of facial features, namely CEO masculinity. Given that our findings show that the level of CEO masculinity is associated with a higher risk of falling stock prices, it complements previous research that has shown that masculinity is closely related to individual risk preferences and tolerance levels. Our analysis also shows how vital personal characteristics influence risk-taking at the firm level. This study also provides a reason for stakeholders to ensure the CEO's decision by paying attention to their facial structure so as not to bear more risks than the company can accept.

Further research will be continued with part 2, which details the literature review and hypothesis development; section 3 describes the data and methodology used. Section 4 presents the results of our findings, and, finally, section 5 contains the study's conclusions.

Literature Review

Image Theory

Image theory assumes that decision makers have the right to accept or reject plans based on what they think is right to do rather than maximizing what is right (e.g., values, beliefs, ethics, and morals). This theory also assumes that most decisions are made quickly and are simply based on conformity with decision-making principles (Beach, 1993; Beach & Mitchell, 1987). Image theory contributes to an individual's social identity and motives for social dominance contribute to the formation of the image (Alexander, 2005). This underlies the selection of decisions made after they are weighed according to the values, goals, and personal strategies of an individual. The leaders at the top of the company will weigh the options to find the most interesting and compatible for implementation. Even so, image theory also explains the dark side of decisions taken that usually do not involve good calculations and are typically obtained through past arrangements and personal principles (Morrell, 2004).

Linking this theory to CEO masculinity, it can be argued that CEOs' facial masculinity—measured through features such as the Facial Width to Height Ratio (FWHR)—influences the social image they project, which may impact their decision-making. CEOs with more masculine facial features may be perceived as more dominant, assertive, and confident, traits that align with the social motive for dominance emphasized in Image Theory. These perceptions may lead to more risky or aggressive decision-making, as their image may be aligned with a leadership style that favors bold choices. Thus, CEOs' social identities, shaped by their facial masculinity, become a major factor influencing how they conform to or challenge decision-making norms, which ultimately influences the decisions they make for their companies. In this study, we argue that CEOs' masculinity, as measured through facial features such as Facial Width to Height Ratio (FWHR), is an integral part of the social image they project. CEOs with more masculine facial features may be perceived as more dominant, assertive, and confident, traits that align with image theory's emphasis on social dominance. This image may influence their decision-making, particularly in terms of risk-taking and leadership style. Specifically, masculine traits may encourage CEOs to make bold and aggressive decisions that reflect their confidence in their leadership abilities, reinforcing their social image as strong and capable leaders. Therefore, by examining the relationship between facial masculinity and decision-making, we aim to explore how these visual traits, influenced by testosterone levels and other hormonal factors, shape CEOs' risk preferences and leadership choices, which are aligned with their personal beliefs about what constitutes good performance.

Masculinity and the Risk of Falling Stock Prices

Masculinity on the face of men is viewed as a signal of physical toughness (Hugill et al., 2009). Masculinity, generated by testosterone levels and body metabolism, is a resource for men to compete. This competition is not only attractive to the opposite sex through physical toughness, but also in terms of work. Testosterone levels not only affect male masculinity, but also several masculine behaviors such as hostility, sensation seeking, competition, and risk (Apicella et al., 2008; Archer, 2006; Roberti, 2004). Differences in facial masculinity in men can help predict differences in their behavior. Ahmed et al. (2019) found that a CEO-led bank with a masculine face is associated with the level of volatility of stock returns and risk. Regarding the relationship between masculinity and behavior, Kamiya et al. (2019) found that CEOs with physically masculine faces tend to act aggressively on acquisitions. This physical masculinity is often associated with masculine behavior, such as risk taking and dominance. In addition, investor responses to acquisition announcements were shown to be negative when the deals were made by CEOs with masculine facial characteristics, likely due to the higher perceived risk associated with such decisions.

This research uses the above context to assess the broader association of masculinity with the increased risk of falling stock prices. Kamiya et al. (2019) stated that CEOs with masculine characteristics have an experienced and aggressive nature, which supports the research (Ahmed et al., 2019). Furthermore, as the CEO is the decision-maker for financial statements, an attractive CEO's face has a more positive effect on the quality of financial predictions than an unattractive face shape (Ahmed et al., 2019; Guo et al., 2021). Next, Jia et al. (2014) found the relationship between inappropriate financial predictions and masculine-faced CEOs to be a negative assessment point for investors when looking to future periods due to the volatility of stock prices. Finally, the opinion expressed by Guo et al. (2021) on the dominance, charm, and character of the CEO is measured through the Facial Attractiveness Score (FAS) with an assessment of the firmness of a masculine facial line. This also explains the quality of a solid and dominant personality in the presence of the hormone testosterone in a person.

Information from facial shapes representing masculinity is emphasized in Guo et al. (2021) to examine the risk of predicting errors in financial statements. Regarding the image and behavior of the CEO in decision making, the dominant CEO characteristic has a higher risk of restatement of financial statements due to misinformation and negative wording (Ahmed et al., 2019; Al Mamun et al., 2020). In the context of the company's bound risk, Kamiya et al. (2019) state that CEO dominance is a reinforcing composition of the sensitivity of reported financial information, including the quality of future financial projections and the volatility of stock price movements. Gomulya et al. (2017) found that the new CEO turnover is characterized by a less masculine face and a lower level of attractiveness, which contrasts the typical face shape of the previous CEO and its associated higher masculinity and beauty. Therefore, the hypothesis of this research is constructed as follows:

H_1: A CEO with a more masculine face is positively associated with the risk of falling stock prices

With the diversity of personalities and experiences between CEOs, the interaction between masculine and feminine characters explains the relatively similar corporate identities in taking risky financial steps (Meier-Pesti & Penz, 2008; Mohsni et al., 2021; Perryman et al., 2016). An understanding of gender focuses the CEO's personal identification as male or female, not on the primary measures of masculinity and femininity that typically influence personality traits. In-depth research from Meier-Pesti and Penz (2008) details the differences in character between males and females. The research looks at how women typically prefer actualization at a lower risk more than men. Cain and McKeon (2016) also found that many men's hobbies are risky and associated with higher corporate risk.

Leaders manage the fundamental differences between men and women to produce an ideal state of leadership that balances risk and security (Perryman et al., 2016). With the demands of a strong and dominant character to act upon financial decisions, elements of masculinity are typically always present (Jia et al., 2014). The uniqueness of gender characteristics makes us want to investigate more deeply the differences in masculinity for the male and female genders. Therefore, two hypotheses of this research are constructed, as follows:

H_{2a}: For male CEOs, facial masculinity is positively associated with the risk of falling stock prices
H_{2b}: For female CEOs, facial masculinity is positively associated with the risk of falling stock prices

Research Method

This study used purposive sampling criteria to determine the final sample from 5,843 initial samples. The initial model of this study was determined based on data from companies listed on the Indonesia Stock Exchange during the period 2010-2019. The decision to take a sample over a long term considers the possibility of a CEO serving more than three years. Therefore, we tried to increase the CEO turnover rate to obtain a larger sample of masculine faces in our test. This also adds to the richness of the model in building sensitivity robustness.

Table 1. Panel A Sample Selection

Selection criteria	Observations
Initial observations	5,843
Excluded: firms with missing data	
DUVOL	(795)
MASCULINITY	(901)
CEOBUSY	(244)
CEOTENURE	(53)
FIRMAGE	(12)
FIRMSIZE	(0)
RND	(11)
RET	(23)
MTB	(392)
LEV	(427)
ROA	(16)
Final observations	2,969

We excluded incomplete data from the entire sample and were left with 2,969 samples. We resized all continuous variables at the 1st and 99th percentiles to reduce the effect of unwanted outliers. For details of this sample selection process, see Table 1 Panel A.

As mentioned above, we used the entire sample of companies listed on the Indonesia Stock Exchange. Table 2 Panel B displays details of the 2,969 sample distributions by industry classification and year. From this panel, we can see that the largest sample distribution in this study was in the construction industries (N=816), followed by the manufacturing (N=533) and mining industries (N=962).

Table 2. Panel B Sample Distribution by Industry and Year

Sample Distribution by Industry and Year for Male CEO

US SIC, Core code	YEAR										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
(0) Agriculture, Forestry and Fisheries	11	10	16	17	14	16	15	14	8	13	134
(1) Mining	27	35	45	52	51	53	49	53	33	52	450
(2) Construction Industries	63	73	80	80	78	84	79	92	54	85	768
(3) Manufacturing	40	45	42	50	55	58	57	64	33	52	496
(4) Transportation, Communications and Utilities	26	33	45	51	46	49	47	54	26	49	426
(5) Wholesale & Retail Trade	17	19	23	24	28	28	28	31	15	31	244
(7) Service Industries	18	18	23	24	23	26	25	31	19	30	237
(8) Health, Legal and Educational Services & Consulting	0	2	1	1	3	3	5	5	0	7	27
Total	202	235	275	299	298	317	305	344	188	319	2,782

Sample Distribution by Industry and Year for Female CEO

US SIC, Core code	YEAR										
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
(0) Agriculture, Forestry and Fisheries	0	0	0	0	0	0	0	1	1	0	2
(1) Mining	1	2	2	2	0	0	1	1	2	1	12
(2) Construction Industries	2	3	4	4	5	6	6	7	3	8	48
(3) Manufacturing	3	3	4	3	4	4	4	4	2	6	37
(4) Transportation, Communications and Utilities	0	1	0	1	2	1	3	7	4	5	24
(5) Wholesale & Retail Trade	2	2	4	4	4	4	4	5	1	6	36
(7) Service Industries	1	1	2	0	0	0	0	1	1	0	6
(8) Health, Legal and Educational Services & Consulting	0	1	2	2	2	2	2	4	3	4	22
Total	9	13	18	16	17	17	20	30	17	30	187

Variable Measurement

The study used the following measurements from Hao et al. (2018), Dai et al. (2019) and Lee et al. (2019) to build the variable interpretation from the stock price crash risk, especially for the data. The variable uses return volatility below the mean and return above the mean (DUVOL) for each company's year. The DUVOL is the natural logarithm of the weekly ratio from the standard deviation of returns below the annual average divided by the weekly standard deviation of returns above the annual average.

$$DUVOL_{j,k} = log\left[\left[(n_u - 1)\sum_{down} W_{j,k}^2\right]\middle/\left[(n_d - 1)\sum_{up} W_{j,k}^2\right]\right]$$

The independent variable in this study is CEO Masculinity (MASCULINITY) which was calculated according to research from Jia et al. (2014) and Kamiya et al. (2019) using the facial width-to-height ratio (FWHR). Our measurements were taken from photos shared by companies in their annual report section of the profiles of the boards of directors. First, we collected the CEO's name and CEO's photo from each company. At this stage, our problem was that not all annual reports included a photo of the CEO or a photo with the exact detail we needed. Our alternative was to use another source that could replace or fulfill the photo we needed, namely the company

website or Google image.

Second, we measured the width and height of each CEO's face using Image-J. Looking at our limited find photos, sorting on photos remains to be done. The photos containing an image of a face turned forward with a visible boundary between the ear and the cheek could be processed. Also, to keep the results representative of our needs, the quality of the photos needed to be reasonable and not too small. Third, we measured the width and height of the face and divided the width (bizygomatic width) by the upper facial height to determine the FWHR value.

The control variables are based on previous research studies representing CEO, company, and financial characteristics. The features of the CEO, Busy CEO (CEOBUSY), were measured using a binary variable, which is one of the numbers of them serving is above the average sample CEO serving, and 0 otherwise the following (Lee & Lok, 2020). CEOTENURE follows Jia et al.'s (2014) research. It is calculated by using the number of CEOs serving since the first year of a company's operations. Company characteristics are represented by FIRMAGE and are measured using the difference between the number of years of observation and the year the company was established. FIRM SIZE is calculated using the logarithm of total assets, following research from Kamiya et al. (2019). At the financial level, RND is obtained from the logarithm of comprehensive research and development expenses divided by sales. Return (RET) is calculated as the mean of firm-specific monthly return; MTB is market-to-book value; LEV is total debt divided by total assets; and ROA is calculated by net income divided by total assets (Lee et al., 2019; Wu & Hu, 2019).

Results and Discussion

Classic Assumption Test

It is difficult for us to fulfil the classical assumptions in this study. We followed the directions from Foster (1986) to perform data transformation, trimming and winsorizing when the data did not show a normal distribution. First, we cut out the trimming action from the outset, as we would lose more than half of the sample if we followed this step. In our opinion, this is unreasonable. Second, we have transformed and winsorized (either separately or together) but our data still shows an abnormal distribution. Similar results also apply to the heteroscedasticity assumption test but not to the multicollinearity test, which shows that VIF<10 (mean VIF=01.11) and tolerance>0.1 (minimum 1/VIF=0.7545). Our data is free from multicollinearity problems. In the end, we believe our test is valid considering that some studies (Ahmed et al., 2019; Kamiya et al., 2019) do not recommend testing classical assumptions on panel data characteristics.

Empirical Result

Our study was conducted on 2,969 companies that met the sample selection requirements described in section 3, which discusses the research methodology. We present descriptive statistics for the entire sample, namely the stock price crash risk value, represented in DUVOL, which has a minimum value of -2,097, a maximum of 1,829, and an average of -0.081. The risk shown in the event of a stock price crash varies widely, especially in the emerging market of Indonesia. The masculine level of CEOs in our study showed an average value of 2,199, with a standard deviation of 0.232. As a result, as shown in the FWHR model that we use, the companies in our sample have CEOs with masculine levels in the mean range. Other variables display an overall variation with the characteristics of each piece of data.

Table 3. Statistic Descriptive - All Sample (N=2,969)

	Mean	Median	Std. Deviation	Minimum	Maximum
DUVOL	-0.081	-0.071	0.270	-2.097	1.829
MASCULINITY	2.199	2.196	0.232	1.447	3.423
CEOBUSY	0.313	0.000	0.464	0.000	1.000
CEOTENURE	8.404	5.000	8.610	1.000	49.000
FIRMAGE	31.882	30.000	18.498	1.000	118.000
FIRMSIZE	26.457	27.682	3.884	13.940	33.495
RND	0.000	0.000	0.002	0.000	0.019
RET	-0.003	-0.002	0.010	-0.065	0.071
MTB	1.059	0.765	1.372	-4.189	6.773
LEV	0.521	0.493	0.325	0.048	2.432
ROA	5.472	4.500	11.785	-36.910	49.770

In Table 4, we present the Pearson correlation which examines the relationship between variables. As we hypothesized, a masculine-faced CEO should show a significant correlation with the level of risk of a stock price crash, but this was not the case. We were not disappointed, because our test was a form of equation modeling and

involved more variables with control. Others, such as RET (co.) and ROA, showed a correlation with the dependent variable.

Table 4. Pearson Correlation Matrix

		[1]	[2]	[3]	[4]	[5]
[1]	DUVOL	1.000				
[2]	MASCULINITY	0.027	1.000			
		(0.142)				
[3]	CEOBUSY	0.010	-0.013	1.000		
		(0.590)	(0.485)			
[4]	CEOTENURE	0.006	-0.060***	0.031*	1.000	
		(0.749)	(0.001)	(0.093)		
[5]	FIRMAGE	-0.002	-0.048***	-0.047**	0.100***	1.000
		(0.897)	(0.009)	(0.011)	(0.000)	
[6]	FIRMSIZE	0.003	0.070***	0.012	0.017	0.100***
		(0.888)	(0.000)	(0.513)	(0.353)	(0.000)
[7]	RND	-0.005	0.079***	-0.008	0.016	0.133***
		(0.782)	(0.000)	(0.670)	(0.372)	(0.000)
[8]	RET	-0.462***	0.016	-0.018	-0.016	0.020
		(0.000)	(0.386)	(0.321)	(0.378)	(0.285)
[9]	MTB	0.041**	-0.084***	-0.007	0.076***	0.033*
		(0.024)	(0.000)	(0.699)	(0.000)	(0.074)
[10]	LEV	0.016	0.050***	0.049***	0.016	0.052***
		(0.374)	(0.006)	(0.008)	(0.390)	(0.004)
[11]	ROA	-0.107***	0.015	-0.043**	-0.013	0.076***
		(0.000)	(0.409)	(0.019)	(0.473)	(0.000)

		[6]	[7]	[8]	[9]	[10]
[6]	FIRMSIZE	1.000				
[7]	RND	0.092***	1.000			
		(0.000)				
[8]	RET	0.051***	0.015	1.000		
		(0.006)	(0.400)			
[9]	MTB	-0.125***	-0.064***	-0.176***	1.000	
		(0.000)	(0.001)	(0.000)		
[10]	LEV	-0.102***	-0.062***	-0.019	-0.390***	1.000
		(0.000)	(0.001)	(0.305)	(0.000)	
[11]	ROA	0.179***	0.192***	0.162***	-0.177***	-0.295***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

p-values in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Main Result

This study examines the relationship between masculine-faced CEOs and the level of risk of falling stocks in the Indonesian market. The Indonesian market provides a traditional view that is closely related to the selection of strong and assertive male leaders, as reflected through masculine faces - where they are considered more competent and more able to face the challenges of making risky decisions. Under patriarchal settings, masculine CEOs are more likely to make bold decisions that can affect stock volatility. Our test focuses on masculinity measured by the ratio of facial width to height (FWHR), which is related to testosterone levels, tolerance levels, risk, and self-confidence, thus influencing decision making. To test our hypothesis, we use a regression analysis model involving dependent, independent and batteries of control variables, as follows:

$$DUVOL = \alpha + \beta_1\ MASCULINITY + \beta_2\ CEOBUSY + \beta_3\ CEOTENURE + \beta_4\ FIRMAGE \\ + B_5\ FIRMSIZE + \beta_6\ RND + \beta_7\ RET + \beta_8\ MTB + \beta_9\ LEV + \beta_{10}\ ROA + \varepsilon$$

We present the results of our hypothesis testing using the equation in Table 5. Specification (1) shows the results of the whole sample regardless of CEO gender. We believe that women also contribute by exhibiting a masculine side in leadership. However, to be sure, we will conduct separate tests on specifications (2a) and (2b) to distinguish the two samples. In specification (1), masculine-faced CEOs generally have a significant (t=2.03) and positive (coeff. = 0.039) relationship at the 5% level with the risk of falling stock prices.

Table 5. Regression Result

	(1)	(2a)	(2b)
	(All Sample)	*(Male CEO)*	*(Female CEO)*
	DUVOL	DUVOL	DUVOL
MASCULINITY	0.039**	0.038*	0.054
	(2.03)	(1.90)	(0.62)
CEOBUSY	0.000	0.001	-0.001
	(0.01)	(0.06)	(-0.03)
CEOTENURE	-0.000	-0.000	0.001
	(-0.08)	(-0.01)	(0.27)
FIRMAGE	0.000	0.000	-0.000
	(0.34)	(0.36)	(-0.25)
FIRMSIZE	0.002	0.002*	-0.007
	(1.61)	(1.87)	(-1.37)
RND	0.540	0.559	2.004
	(1.39)	(1.41)	(0.68)
RET	-12.029***	-11.815***	-17.031***
	(-27.76)	(-26.57)	(-8.62)
MTB	-0.001	-0.001	0.010
	(-0.64)	(-0.64)	(0.58)
LEV	-0.013	-0.013	0.095
	(-1.60)	(-1.57)	(1.30)
ROA	-0.001***	-0.001**	-0.004
	(-2.68)	(-2.55)	(-1.36)
_cons	-0.237***	-0.246***	-0.049
	(-4.62)	(-4.62)	(-0.20)
r2	0.217	0.213	0.335
r2_a	0.215	0.211	0.297
N	2,969	2,782	187

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Overall, this test yields interesting results regarding CEOs with masculine faces and the risk of falling stock prices. First, we concur with previous studies, such as Anderl et al. (2016), Haselhuhn and Wong (2012), Lefevre et al. (2013) and Ormiston et al. (2017), showing that masculinity reflected on the face is related to testosterone levels in men. Men, where the magnitude of the masculine level affects the level of risk tolerance. So far, our analysis is based on the explanation that masculine CEOs tend to accept higher levels of risk because they believe in their risk preferences. This is in line with the image theory that argues masculine CEOs will make decisions that they think are right and override risk assessments, causing stock prices to fall.

Second, masculine CEOs tend to have a strong sense of competitiveness that influences their decisions. Masculine CEOs tend to defend their decisions because they believe that the decisions are right and will improve the company's performance. However, we believe such types of decisions will bring about a domino effect for the company and lead the company to accept consequences beyond the norm. The impact of enhanced competitiveness gives the company the potential to reach a higher level and receive more rewards. Still, on the other hand, it leads the company to accept the risk of bad events occurring. Our argument can be seen in the explanations for potential profitability from Wong et al. (2011) and the increased risk of banks by Kamiya et al. (2019). Finally, an explanation of masculine CEOs and their relationship to stock price risk will complement the results of research from Kamiya et al. (2019), which shows an increase in stock return volatility and the pursuit of dominance. Our study is the first to complement the development of the stock market literature by associating masculine-faced CEOs with certain personality traits and characteristics to the risk of falling stock prices, calculated using the DUVOL proxy.

Specifications (2a) and (2b) tested the masculine CEO effect separately with a total of 2,782 and 187 observations, respectively. In our findings, only male-CEO masculine faces were significantly associated at the 10% level (t=1.90) and were positive (coeff=0.38) related to the dependent variable, DUVOL. In contrast, masculine-faced female CEOs were not related. Even though it's true what we say about women also have a small percentage of masculine side to their faces. Given the limited sample of female CEOs, the statistical power to detect significant relationships is reduced. Additionally, it is possible that the masculinity reflected in women's faces does not fully capture the assertiveness and dominance typically associated with male CEOs. This happens because the masculinity of testosterone reflected on the face only occurs in men. In our case, these results reinforce significantly masculine-faced CEO traits in males and imply an increased risk of falling stock prices. These results follow our research hypothesis.

Table 6. Robustness Test

	(1)	(2a)	(2b)
	(All Sample)	*(Male CEO)*	*(Female CEO)*
	DUVOL	DUVOL	DUVOL
MASCULINITY	0.039*	0.038*	0.054
	(1.79)	(1.65)	(0.59)
Control Variables	*Included*	*Included*	*Included*
_cons	-0.237***	-0.246***	-0.049
	(-4.23)	(-4.18)	(-0.19)
r2	0.217	0.213	0.335
r2_a	0.215	0.211	0.297
N	2969	2782	187

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Next, we perform robustness tests on the same equation to increase confidence in our results. This test shows similar results by revealing that the masculine CEO with a FWHR measurement is significantly related to stock price crash risk, as shown in Table 6. The masculine CEO, on this occasion, was significant at 10% (t=1.79), down from the previous result and positive (coeff. = 0.039) relationship to the dependent variable (see specification [1]). The separate test for specification 2 is not different from the previous test (shown in Table 5) that reveals how only male CEO's masculine faces are associated with a higher risk of stock prices falling.

Coarsened Exact Matching

Given that individual characteristics in corporate governance mechanisms behave too sensitively to be associated with significant corporate consequences, it is good for us to examine further. This study continues to use the Coarsened Exact Matching (CEM) approach as the sensitivity of our independent variable, which we believe has a behavioral bias. We chose CEM because this test is not susceptible to random matching rates and our results provide confidence. Table 7 displays the results of CEM and follows the initial test at the regression and robust levels.

Table 7. Coarsened Exact Matching

	(All Sample)	*(Male CEO)*	*(Female CEO)*
	DUVOL	DUVOL	DUVOL
MASCULINITY	0.044**	0.043*	0.054
	(2.00)	(1.85)	(0.58)
Control Variables	*Included*	*Included*	*Included*
_cons	-0.233***	-0.241***	-0.049
	(-4.09)	(-4.04)	(-0.19)
r2	0.217	0.212	0.335
r2_a	0.214	0.210	0.297
N	2957	2770	187

t statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conclusion

This study represents the innate individual characteristics of masculine-faced CEOs with the risk of falling stock prices. This study uses 2,696 samples of companies listed on the Indonesia Stock Exchange over a period of ten years (2010-2019). This study finds that masculine-presenting CEOs are correlated to an increased risk of falling stock prices. Our documentation shows that masculine CEOs have a risk-acceptance preference because of the predominance of confidence and aggression that they exhibit. In our review, the CEO's decision to be riskier is also influenced by the competitive characteristics that masculine CEOs instinctively possess. These characteristics can drive a company to pursue higher goals but also increase exposure to potential adverse outcomes. However, our findings indicate that the likelihood of taking higher risks is more associated with masculine CEO characteristics, although the underlying mechanisms warrant further exploration. This aligns with image theory, which suggests that a CEO's confidence in their decisions is based on what they perceive as correct, often overlooking comprehensive future risk assessments and making stock price declines more probable. In addition, these findings suggest a significant association between masculine CEOs and the increased risk of stock price reductions, a trend

not found for female CEOs. These results underscore the need for further research to validate this association and explore alternative explanations.

This study is the first to examine the characteristics of the CEO's face against the risk of falling stock prices in the stock market and supports previous research on risk in general. However, we are aware of the limitations of this study, especially in data that only focuses on one measurement of the CEO's face shape without further examining the background characteristics, abilities and cognitive aspects that are also involved in risk formation. Finally, our research contributes to the literature development from the point of view of stock market conditions. This study also documents how necessary risk-taking at the corporate level is influenced by the presence of individual characteristics in and of the CEO. This study also provides reasons for stakeholders to ensure the CEO's decision by paying attention to their facial structure so that the company avoids excessive risk. However, rather than focusing solely on facial structure, stakeholders should adopt a more comprehensive approach by considering factors such as professional experience, leadership style, and decision-making history, to ensure a more balanced and well-informed form of risk management. This approach will help reduce excessive risk while encouraging sustainable company growth.

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