

The Impact of CEO Characteristics and Political Connections on Investment Efficiency: Evidence from an Emerging Market

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ABSTRACT

This study examined the influence of CEO characteristics including age, gender, honorific title, ethnicity, and founding role on investment efficiency. This study also investigated whether political connections moderated the relationship between CEO characteristics and investment efficiency. The sample included 1,572 firm-year observations from Malaysia during the period–2014–2018. Financial data were retrieved from the Thomson Reuters database, while CEO attributes were collected from corporate annual reports. The findings suggested that firms with more experienced CEOs or Chinese CEOs had a higher investment efficiency. Firms led by experienced CEOs were less likely to engage in underinvestment or overinvestment strategies. Similarly, firms managed by Chinese CEOs exhibited higher investment efficiency but may have a higher tendency to either overinvest or underinvest. Furthermore, this study indicated that politically connected firms mitigate the negative impact of more experienced CEOs and Chinese CEOs on the likelihood of overinvestment. These findings have practical implications for investors by emphasising the importance of considering CEO traits and politically connected firms when making investment decisions.

Keywords: CEO characteristics, Political connections, Investment efficiency, Underinvestment, Overinvestment.

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INTRODUCTION

Efficient investment decisions play a critical role in determining a firm's overall performance (Yang & Liu, 2017). However, making wise investment decisions can be difficult, especially when it involves strategic investments which are influenced by the psychological characteristics of a firm's executives, as stated by the upper echelon theory (Hambrick & Mason, 1984). Notably, research indicates that executive characteristics impact the quality of information available to investors and are linked to their investment choices (Chemmanur et al., 2009; Lai & Liu, 2018; Malmendier & Tate, 2008). The CEO, as the highest administrative official responsible for a firm's daily operations, plays a pivotal role in shaping a firm's future performance within the realm of business organisations (Altarawneh et al., 2020). CEOs may exhibit a tendency to overestimate future cash flows and demonstrate high confidence in their firms' prospects, leading to an overinvestment strategy (Lai et al., 2021; Malmendier & Tate, 2005).

While investment efficiency is crucial for sustainable growth, it is often hindered by information asymmetry between managers and external capital providers, as highlighted in the literature (Lai et al., 2014; Biddle et al., 2009; Lai & Liu, 2018). Moreover, the agency problems encountered by firms may exacerbate investment inefficiency (Ghaleb et al., 2020). Consequently, CEO characteristics are crucial in mitigating information asymmetry and improving investment efficiency. High-performing CEOs have the ability to address agency problems with external capital providers, foster positive net present value investments, and mitigate underinvestment. Therefore, this study aimed to investigate the impact of CEO characteristics on investment efficiency in Malaysia.¹

However, in Malaysia and other emerging economies, political connections pose a pervasive problem in the business landscape (Chaney et al., 2011; Faccio, 2006; Leuz et al., 2003; Zarefar et al., 2023). These connections are particularly advantageous in countries with interventionist governments and weak protection of property rights, amplifying the concerns (Faccio, 2006). However, politically connected (PCON) firms tend to have lower-quality financial information because of the protection

¹ In the Malaysian context, the Securities Commission Malaysia requires every firm listed on the Main Market of Bursa Malaysia to disclose the executives' personal information in the firm's annual reports, hence reducing the self-selection bias in conducting this study.

afforded to politicians, resulting in high agency problems between agents and investors (Chaney et al., 2011; Zarefar et al., 2023). Furthermore, PCON firms often benefit from political support and networks, which may result in low-quality financial information being reported to deceive investors (Leuz et al., 2003). Cherkasova and Ivanova (2019) suggested that PCON firms have a detrimental effect on investment efficiency. This is because the government's influence encourages firms to act in their interests and achieve their goals through management, which may lead managers to engage in opportunistic behaviour that is not aligned with the goal of value maximisation. Therefore, this study investigated whether political connections moderated the relationship between CEO characteristics and investment efficiency.

This study focused on a sample of 1,572 firm-year observations of Malaysian firms from the period of 2014-2018. The study concentrated on five key CEO characteristics, including age, gender, honorific title, ethnicity, and founding role, and measured investment efficiency based on the McNichols and Stubben (2008) model. Our results provide robust evidence that firms led by more experienced CEOs exhibited higher investment efficiency because of their cautious investment decisions. Furthermore, firms managed by CEOs of Chinese ethnic backgrounds displayed higher investment efficiency than firms managed by CEOs of other ethnicities. This finding may be attributed to greater investment knowledge and experience gained through mentoring by senior family members. In contrast, the possession of honorific titles had a negative impact on investment efficiency. Additionally, our research found that politically connected firms weakened the positive effects of more experienced CEOs and Chinese CEOs in reducing over investment. This study contributes to the literature by examining the impact of CEO characteristics on investment efficiency in the context of underinvestment and overinvestment. Moreover, it adds to the limited empirical research on the moderating effect of political connections, especially in emerging markets, such as Malaysia. Finally, our study highlights the implications of CEO characteristics on firms' investment decisions and provides insights for policymakers and society.

The remainder of this paper is organised as follows. Section 2 reviews the literature and the research hypotheses. Section 3 provides the data and research methods. Section 4 reports the findings, discussion, and additional analyses. Finally, conclusions are presented in Section 5.

LITERATURE REVIEW & RESEARCH HYPOTHESES

Effective investment decisions are crucial for business success because poor investment decisions can lead to decreased firm value, low financial performance, and harm to the firm's reputation (Cherkasova & Ivanova, 2019). Studies have shown that a reputable and high-quality top management team is negatively associated with inefficient investments caused by overinvestment and underinvestment (Lai & Liu, 2018).

Another area of research focused on the CEO's role in investment decision-making. Yang and Liu (2017) documented that higher CEO power is associated with high investment efficiency. Ullah et al. (2021) found that Chinese female CEOs paid more attention to restraining overinvestment than underinvestment. Gan (2019) found evidence that CEOs with superior management ability are more likely to invest efficiently, especially in mitigating underinvestment or overinvestment. Khedmati et al. (2020) observed that CEOs who have a close relationship with independent board members are associated with inefficient labour investment. Xie (2015) discovered that CEOs with long-term career concerns can enhance investment efficiency. From a review of prior research, we found that issues relating to CEO characteristics and investment efficiency have become more critical. However, the evidence on the effect of CEO characteristics such as age, gender, honorific title, ethnicity and founding role on investment efficiency is limited, especially from the emerging market, hence demanding more investigation.

CEO Age and Investment Efficiency

Numerous studies have suggested that CEO age has a significant impact on a firm's success, particularly concerning investment efficiency. For instance, Prendergast and Stole (1996) discovered that younger CEOs are more receptive to new information and make assertive investment decisions to showcase their abilities. Additionally, previous studies have found that younger CEOs are more likely to announce acquisition strategies (Yim, 2013; Zhang et al., 2016), establish new business lines while closing others (Li et al., 2017; Xie, 2015), and adopt risky investment policies (Yim, 2013; Zhang et al., 2016; Serfling, 2014; Xie, 2015).

Previous research has produced conflicting findings on the impact of CEO age on investment decisions. One argument suggests that younger CEOs are more risk-averse because of concerns about job security, which may result in excessive spending (Hirshleifer & Thakor, 1992; Holmstrom, 1999; Serfling, 2014). Additionally, younger CEOs may lack a track record and face greater scrutiny from the market, leading them to avoid unique investments and focus on easily appraisable options (Zwiebel, 1995). On the other hand, some studies have suggested that younger CEOs may overstate their convictions and engage in excessive risk-taking to prove their abilities (Serfling, 2014). Conversely, older CEOs may be more likely to be reluctant to change their investment strategies, potentially due to fear of exposing past mistakes. Therefore, our hypothesis was as follows.

H1: Firms managed by experienced CEOs are associated with investment efficiency.

Female CEO and Investment Efficiency

Research has shown that the presence of women in top management teams can help alleviate conflicts between managers and owners (Chen et al., 2018; Ullah et al., 2021). Many studies have suggested that women are more hard-working and less likely to engage in opportunistic behaviour (Hassan & Marimuthu, 2016; Krishnan & Parsons, 2008). Moreover, female board members can bring a diversity of opinions, enhance information availability, and improve decision-making quality (Kılıç & Kuzey, 2016; Gul et al., 2011). According to Gul et al. (2011), female directors can enhance investment decision making, enrich financial disclosure, increase shareholder value, and ultimately lead to more informative stock prices.

Numerous studies have investigated the impact of female CEOs on firms' decision-making and behaviour, with many suggesting that female CEOs are risk-averse and tend to engage in conservative decision-making (Palvia et al., 2015; Faccio et al., 2016). Skała and Weill (2018) found that female CEOs' risk-averse behaviour can reduce information and operational risks, thus decreasing the cost of debt. Moreover, female CEOs are less likely to engage in aggressive investment decisions, thus minimising the likelihood of overinvestment (Ullah et al., 2021). Frye and Pham (2018) found that female CEOs have a positive effect on corporate governance mechanisms

and firms' investment decisions. Consequently, we hypothesised that female CEOs play a critical role in reducing agency costs, managing opportunism, and ultimately improving investment decision-making. Therefore, we tested the following alternative hypothesis:

H2: Firms managed by female CEOs have a positive association with investment efficiency.

CEO Honorific Title and Investment Efficiency

We posited that CEOs with honorific titles demonstrate effective leadership, and focus on efficient investment strategies. In Malaysia, these titles are bestowed by the King or Sultan of a state to recognise individuals who have made significant contributions to the nation at the federal or state level (Ismail & Manaf, 2016). These titles, including Datuk, Datuk Sri, Tan Sri, or Tun, are equivalent to the British honorific 'Sir' (High Commission of Malaysia, Wellington, 2019). Moreover, a CEO's honorific title is considered a signal for PCON CEOs.

The elevated social status of individuals with honorific titles has been shown to garner high respect and consideration from society, who view them as experienced and knowledgeable figures who hold sway with important stakeholders. This social status can be advantageous when making decisions, as it allows individuals to influence others to adopt their opinions (Ismail & Manaf, 2016; Lee, 2013). Additionally, Janggu et al. (2014) revealed that companies with directors holding honorific titles exhibit superior performance. The presence of honorific titles among CEOs may instill a sense of esteem among investors, potentially influencing their confidence in pursuing prudent investment strategies. As the impact of honorific titles on investment efficiency is relatively unexplored, we investigated this phenomenon by testing the following hypothesis:

H3: Firms managed by CEOs with honorific titles are not associated with higher investment efficiency.

CEO Ethnicity and Investment Efficiency

The relationship between CEO ethnicity and investment efficiency is an interesting topic that can be explored within the context of Malaysia's historical and legal framework. The 1969 race riots had a significant impact on the country and resulted in the introduction of policies aimed at addressing ethnic imbalances and promoting social cohesion (Faaland et al., 1990; Gomez et al., 2021; Gomez et al., 2013; Jomo, 2004). The riots occurred following the general elections and were primarily fuelled by ethnic tensions between Malay and Chinese communities. The violence and unrest that ensued led the Malaysian government to implement affirmative action policies known as the New Economic Policy (NEP) in 1971 (Gomez et al., 2013; Jomo, 2004). The NEP was introduced to address economic disparities between ethnic groups, particularly to improve the socioeconomic status of the Malay community. It included measures such as the implementation of quotas in business ownership, employment, and education to promote greater participation of Malays in the economy (Faaland et al., 1990; Gomez et al., 2021).

NEP and subsequent policies can have implications in the context of CEO ethnicity and investment efficiency (Jomo, 2004). Quotas and preferential treatment of business ownership based on ethnicity may impact the diversity and composition of CEOs in Malaysian companies (Ahmad-Zaluki, 2012). Because the Chinese community dominates the economy, corporate boards are predominantly led by Chinese directors, with Malays and Indians accounting for less than 30% (Ahmad-Zaluki, 2012). Research in psychology has suggested that people tend to be attracted to others from the same ethnic group (Huston & Levinger, 1978; Alesina & La Ferrara, 2000). The knowledge and networks gained from the Chinese community would benefit Chinese CEOs more than those who do not belong to business-controlling ethnic groups such as Malay or Indian CEOs.

There is significant literature on investment and financial behaviour, supporting the idea that certain ethnic groups tend to delay investment and take more risks. However, research on the effect of Chinese CEOs on investment efficiency is limited. Ethnicity can lead to less effective social supervision and cause friction (Alesina & La Ferrara, 2000), which can negatively affect a firm's investment efficiency. In a recent study on listed

Chinese firms, Zou et al. (2021) found that ethnicity has a negative impact on investment efficiency.

The ethnicity of CEOs in the Malaysian market, particularly Chinese CEOs, is likely to affect investment efficiency. Past research has suggested that an ethnic Chinese leadership style can lead to improved firm performance (Ananda et al., 2021). However, it is essential to understand the underlying mechanisms, work ethics, behaviours, and leadership styles of this group (Mulyani, 2016; Ananda et al., 2021). The economic and social disparities between the largest ethnic group, Malays, and the economically dominant Chinese community suggest that there may be differences in their approaches to investment. Ethnic Chinese are known to be cautious with money and have strong work ethics when making investments (Snodgrass, 1995; Gomez, 2012). Therefore, we hypothesised that CEO ethnicity, particularly Chinese CEOs, would have a significant impact on investment efficiency in the Malaysian market.

H4: Firms managed by Chinese CEOs exhibit high investment efficiencies. Founding CEOs and Investment Efficiency

Studies have found that the presence of a founding CEO in a firm can have a significant impact on decision-making and firm performance (Buyl et al., 2011; Nelson, 2003). Founding CEOs possess both ownership and positional power, which makes them more dominant in decision-making and strategy formulation (Buyl et al., 2011). They also hold a significant management post and maintain a considerable share of the firm's ownership, which is highly valued by firms because of their inventive characteristics, firm-specific familiarity, and knowledge (Certo et al., 2001; Wu & Hsu, 2018).

However, the entrenchment issue can also arise with the founding CEO, who has a high equity stake, more significant influence, and strong motivation to maintain their position and decision-making dominance (Fahlenbrach, 2009; Nelson, 2003). This may lead to overinvestment and inefficient resource allocation (Fahlenbrach, 2009). Nonetheless, a founding CEO's competence and influence can encourage a firm's strategies and structure, leading to better firm performance (Nelson, 2003; He, 2008).

Given the above discussion, the presence of a founding CEO may affect a firm's investment efficiency. The alternative hypothesis was that the founding CEO's presence will positively impact a firm's investment efficiency, as they possess unique knowledge and familiarity with the firm's operations and industry, which can lead to better investment decisions. However, an entrenchment issue may also arise, leading to overinvestment and inefficient resource allocation. Thus, it is essential to understand the potential impact of a founding CEO's presence on a firm's investment efficiency. Hence we tested the following alternate hypothesis:

H5: Firms managed by founding CEOs are positively associated with higher investment efficiency

The Moderating Effect of PCON Firms on the Relationship Between CEO Characteristics and Investment Efficiency

The special privileges attributed to politicians are commonly used to protect cronies in the corporate sector to gain their benefits; hence, politicians tend to abuse their power which negatively affects society and firms (Gomez, 1990). Compared to non-PCON firms, prior studies have found that PCON firms are linked to higher audit fees (Gul, 2006), higher perceived market risk (Bliss & Gul, 2012), lesser financial transparency (Bushman et al., 2004), higher forecast dispersion (Kamarudin et al., 2021) and lower accounting quality (Chaney et al., 2011; Zarefar et al., 2023). Moreover, these previous studies provide strong empirical evidence that PCON firms have higher agency costs than non-PCON firms, affecting other aspects of the firms, including investment efficiency.

Based on the findings and arguments from previous studies, we argued that PCON firms have higher agency costs than non-PCON firms. This problem leads to lower investment efficiency. The main reason for this is that PCON firms have poor corporate governance practices compared to non-PCONs, thereby negatively affecting the investment decisions made by the top management of the firms, that is, the CEO. Taken together, we hypothesised that PCON firms would moderate the relationship between CEOs' characteristics and investment efficiency. Therefore, we tested the following hypothesis.

H6: PCON firms moderate the relationship between CEOs' characteristics and investment efficiency.

METHODOLOGY

Data and Sample

Our sample covered Malaysian listed firms for the period 2014-2018. We retrieved the financial data from the Thomson/Refinitiv database while CEO attributes data were hand-collected from the corporate annual reports.

We excluded financial institutions (SIC codes between 6000 and 6999), similar to prior research (Francis & Wang, 2008; Ismail & Kamarudin, 2012). We also deleted observations with missing or incomplete data and winsorize observations that fell in the top and bottom 1% to mitigate the influence of outliers. These procedures resulted in a final sample comprising 1,572 firm-year observations. The list of all variables, the definition and data sources are reported in Table 1.

Table 1: Variable Description

Variable	Definition	Data Source
Dependent Variables		
<i>INVEFF1</i>	The absolute value of residuals derived from (McNichols & Stubben, 2008) estimated based on four quartiles multiplied by negative one.	Thomson
<i>INVEFF2</i>	The absolute value of residuals derived from (McNichols & Stubben, 2008) estimated based on ten deciles multiplied by negative one.	Thomson
<i>OVER_INV1</i>	The value of the residual derived from (McNichols & Stubben, 2008) estimated based on four quartiles if the residual is positive, and 0 otherwise.	Thomson
<i>OVER_INV2</i>	The value of the residual derived from (McNichols & Stubben, 2008) estimated based on ten deciles if the residual is positive, and 0 otherwise.	Thomson
<i>UNDER_INV1</i>	The value of the residual derived from (McNichols & Stubben, 2008) estimated based on four quartiles if the residual is negative, and 0 otherwise.	Thomson
<i>UNDER_INV2</i>	The value of the residual derived from (McNichols & Stubben, 2008) estimated based on ten deciles if the residual is negative, and 0 otherwise.	Thomson

Independent Variable

<i>CEOAGE</i>	The natural logarithm of the CEO age during the year	Annual report
<i>FEMALE</i>	A dummy variable that takes value 1 if the CEO is a female, and 0 otherwise	Annual report
<i>TITLE</i>	A dummy variable that takes value 1 if the CEO has an honorific title such as Datuk, Datuk Sri, Tan Sri or Tun, and 0 otherwise	Annual report
<i>CHINESE</i>	A dummy variable that takes value 1 if the CEO comes from Malaysian Chinese ethnic, and 0 otherwise	Annual report
<i>FOUNDER</i>	A dummy variable that takes value 1 if the CEO is the company founder, and 0 otherwise	Annual report

Moderating Variable

<i>PCON</i>	A dummy variable that takes value 1 if the firm is politically connected, and 0 otherwise.	Annual report
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Control variables (firm level)

<i>SIZE</i>	The natural logarithm of total assets	Thomson
<i>ROA</i>	The ratio of net income to the total assets	Thomson
<i>LEV</i>	The ratio of total debts divided by total assets	Thomson
<i>ALTMANZ</i>	The Z-score based on Altman (1968)	Thomson
<i>FIRMAGE</i>	The natural logarithm of number of years since the year of incorporation	Thomson
<i>TANGI</i>	The ratio of total tangible assets to total assets	Thomson
<i>SDSALE</i>	The standard deviation of the total sales per total assets over a lag of a six-year period.	Thomson
<i>SDCFO</i>	The standard deviation of the cash flow from the operations per total assets over a lag of a six-year period.	Thomson
<i>BDSIZE</i>	The total number of directors on the board.	Thomson
<i>ACSIZE</i>	The total number of audit committee members.	Annual report
<i>ACIND</i>	The proportion of independent audit committee members to total number of audit committee members.	Annual report

Measurements

Following prior studies (e.g. Nasih et al., 2022; Ngelo et al., 2022), we determined excess investment as an investment that differs from the amount predicted given a firm’s investment opportunities using a model by McNichols and Stubben (2008). We estimated the investment model separately for each industry and year. This approach implicitly assumes that the responsiveness of investments to investment opportunities is constant across firms in the same industry and year. Following McNichols and Stubben (2008), we included incremental coefficients for Tobin’s Q quartiles.

$$INV_{it} = \alpha_0 + \beta_1 Q_{i,t-1} + \beta_2 Q_QRT2_{i,t-1} + \beta_3 Q_QRT3_{i,t-1} + \beta_4 Q_QRT4_{i,t-1}$$

$$+ \beta_5 CF_{it} + \beta_6 GROWTH_{i,t-1} + \beta_7 INV_{i,t-1} + \varepsilon_{it} \tag{1}$$

where INV_{it} is the investment level for firm i in year t ; $Q_{i,t-1}$ is the beginning of year t market value of assets divided by the book value of assets; $Q_QRT2_{i,t-1}$ ($Q_QRT3_{i,t-1}$, $Q_QRT4_{i,t-1}$) equals $Q_{i,t-1}$ times an indicator variable that equals 1 if $Q_{i,t-1}$ is in the second (third, fourth) quartile of its industry-year distribution; CF_{it} is a measure of firm-level cash flows; $GROWTH_{i,t-1}$ equals the natural log of total assets at the end of year $t-1$ divided by total assets at the end of year $t-2$.

For alternative measurements, we used ten deciles to replace the four quartiles, as follows:

$$INV_{it} = \alpha_0 + \beta_1 Q_{i,t-1} + \beta_2 Q_DEC2_{i,t-1} + \beta_3 Q_DEC3_{i,t-1} + \beta_4 Q_DEC4_{i,t-1} + \beta_5 Q_DEC5_{i,t-1} + \beta_6 Q_DEC6_{i,t-1} + \beta_7 Q_DEC7_{i,t-1} + \beta_8 Q_DEC8_{i,t-1} + \beta_9 Q_DEC9_{i,t-1} + \beta_{10} Q_DEC10_{i,t-1} + \beta_{11} CF_{it} + \beta_{12} GROWTH_{i,t-1} + \beta_{13} INV_{i,t-1} + \varepsilon_{it} \tag{2}$$

where $DEC2$ to $DEC10$ are the second to tenth deciles of the industry-year distribution, and the other variables are as previously defined.

We determined the efficient investments from the above equations, measured by $INVEFF1$ and $INVEFF2$, from the absolute value of the residuals derived from equations (1) and (2), respectively, multiplied by the negative one. We also determined overinvestment, particularly $OVER_INV1$ and $OVER_INV2$, using the value of the residuals of equations (1) and (2), respectively, if the residual was positive and 0 otherwise. Finally, we calculated the under-investment variables $UNDER_INV1$ and $UNDER_INV2$ using the residual values in equations (1) and (2), respectively, if the residual was negative, and 0 otherwise.

Regression Model

We used cluster regression with year- and industry-fixed effects to test the hypotheses. The results of data collection were analysed using statistical descriptive, pair-wise correlation, univariate differences between samples, regression testing for the primary analysis, and additional analysis. Furthermore, we also performed regression using the Heckman test to

test the robustness of the model. Our basic specifications for testing the hypotheses were as follows:

$$\begin{aligned} \text{INVEST} = & \alpha_0 + \beta_1 \text{CEOAGE} + \beta_2 \text{FEMALE} + \beta_3 \text{TITLE} + \beta_4 \text{CHINESE} \\ & + \beta_5 \text{FOUNDER} + \beta_6 \text{SIZE} + \beta_7 \text{ROA} + \beta_8 \text{LEV} + \beta_9 \text{ALTMANZ} + \beta_{10} \text{AGE} \\ & + \beta_{11} \text{TANGI} + \beta_{12} \text{SDSALE} + \beta_{13} \text{SDCFO} + \beta_{14} \text{BDSIZE} + \beta_{15} \text{ACSIZE} + \\ & \beta_{16} \text{ACIND} + \theta_{1-n} \text{Fixed_effects}_i + \varepsilon_{it} \end{aligned} \quad (3)$$

All the variables are defined in Table 1.

Following previous studies, we included various firm-level control variables associated with investment efficiency (Bae et al., 2017; Biddle et al., 2009; Cheng et al., 2013). Specifically, we included *SIZE*, *LEV*, *MTB*, *ALTMANZ*, *TANGI*, *SDSALE*, *SDCFO*, *ROA*, *FIRMAGE*, *BDSIZE*, *ACSIZE*, and *ACIND*.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 presents the descriptive statistics for the dependent and independent variables. The mean values of residuals for *INVEFF1* and *INVEFF2* were -0.043 and -0.042, respectively. For overinvestment, the mean values of the residuals were 0.010 for both *OVER_INV1* and *OVER_INV2*. For underinvestment, *UNDER_INV1* was slightly higher than *UNDER_INV2*, with mean values of -0.031 and -0.033, respectively. We also found that the mean values for *CEOAGE*, *FEMALE*, *TITLE*, *CHINESE* and *FOUNDER* were 1.742, 0.037, 0.398, 0.8 and 0.246, respectively. From the total number of CEOs, the statistics reported that only 3.7 per cent were female, almost 40 per cent were ethnic Chinese and 24.6 per cent were firm founders. In addition, 32.6 per cent of the observations were PCON firms. For the control variables, the mean values for *SIZE*, *ROA*, *LEV*, *ALTMANZ*, *FIRMAGE*, *TANGI*, *SDSALE*, *SDCFO*, *BDSIZE*, *ACSIZE*, and *ACIND* were 18.657, 0.054, 0.191, 3.451, 8.868, 0.354, 0.474, 0.092, 7.508, 3.256, and 0.896, respectively. These results were consistent with those of previous studies, such as Bae et al. (2017) and Cheng et al. (2013), and accommodated the Malaysian environment. For example, on average,

the size of the audit committee (ACSIZE) was three, and almost 90 per cent of the audit committee members were independent directors. This is consistent with the 2017 Malaysian Code of Corporate Governance which requires all members of audit committees to be independent directors (Ismail & Kamarudin, 2017).

The univariate differences between the PCON and non-PCON samples are shown in Panel B of Table 2. Among CEO characteristics, four variables exhibited significant differences in mean values between the PCON and non-PCON samples, namely, *CEOAGE*, *FEMALE*, *TITLE*, and *FOUNDER*, as shown in Table 2.

We performed pairwise correlations on the dependent and independent variables. The untabulated results showed that *INVEFF1* was positively and significantly associated with *INVEFF2*, *UNDERINV1*, *UNDERINV2*, *CEOAGE*, *CHINESE*, *SIZE*, *ROA*, *LEV*, *TANGI* and *BDSIZE*. Although the results showed significant correlations between several independent variables, none showed any concern for multicollinearity.²

Table 2: Descriptive Statistics (n=1,572)

Variable	Mean	Std. Dev.	Min	Max
INVEFF1	-0.043	0.028	-0.220	0.000
INVEFF2	-0.042	0.028	-0.221	0.000
OVER_INV1	0.010	0.028	0.000	0.220
OVER_INV2	0.010	0.028	0.000	0.221
UNDER_INV1	-0.033	0.026	-0.093	0.000
UNDER_INV2	-0.031	0.026	-0.120	0.000
CEOAGE	1.742	0.071	1.462	1.929
FEMALE	0.037	0.189	0.000	1.000
TITLE	0.398	0.490	0.000	1.000
CHINESE	0.800	0.400	0.000	1.000
FOUNDER	0.246	0.431	0.000	1.000
PCON	0.326	0.469	0.000	1.000
SIZE	18.657	1.411	15.608	23.806
ROA	0.054	0.087	-0.794	0.503
LEV	0.191	0.153	0.000	0.764
ALTMANZ	3.451	4.386	-2.525	69.885

² The correlations are not tabulated in the paper in the interest of brevity. They are available on request from the authors.

FIRMAGE	8.868	0.577	6.565	10.494
TANGI	0.354	0.216	0.001	0.957
SDSALE	0.474	5.598	0.005	165.757
SDCFO	0.092	0.799	0.003	26.517
BDSIZE	7.508	1.994	2.000	18.000
ACSIZE	3.256	0.523	2.000	6.000
ACIND	0.896	0.148	0.333	1.250

Main Result

Table 3 presents the regression estimates of the effects of CEO characteristics on investment efficiency. The dependent variables in columns (1) and (2) were INVEFF1 and INVEFF2, respectively. As reported in columns (1) and (2), the coefficients for CEOAGE were both significant, with values of 0.023 ($p < 0.01$) and 0.032 ($p < 0.01$), respectively, suggesting that firms with more experienced CEOs were associated with higher investment efficiency, consistent with Hypothesis 1. According to these findings, it can be inferred that the level of experience of a CEO affected investment efficiency, as it was likely that older CEOs possessed greater knowledge and experience. Additionally, it has been suggested that more experienced CEOs tend to be more risk-averse, which may lead to more effective investment decisions (Bamber et al., 2010; Troy et al., 2011; Hambrick & Mason, 1984). These results supported the notion that more experienced CEOs are more likely to exhibit higher levels of investment efficiency.

Table 3: Regression Estimates of the Effect of CEO Characteristics and Investment Efficiency

DV	(1) INVEFF1	(2) INVEFF2
Intercept	-0.181*** (-8.337)	-0.181*** (-8.078)
CEOAGE	0.023** (2.176)	0.032*** (2.934)
FEMALE	-0.001 (-0.165)	-0.001 (-0.304)
TITLE	-0.003* (-1.728)	-0.003 (-1.635)
CHINESE	0.006*** (3.181)	0.006*** (3.265)

FOUNDER	-0.001 (-0.845)	-0.002 (-0.976)
SIZE	0.004*** (6.454)	0.003*** (4.504)
ROA	0.035*** (3.904)	0.033*** (3.596)
LEV	0.030*** (5.454)	0.027*** (4.765)
ALTMANZ	0.000 (0.252)	-0.000 (-0.150)
FIRMAGE	0.000 (0.320)	0.001 (0.461)
TANGI	0.009** (2.375)	0.010*** (2.741)
SDSALE	-0.000 (-1.300)	-0.000 (-1.634)
SDCFO	0.003 (1.606)	0.004* (1.736)
BDSIZE	-0.001 (-1.512)	-0.001 (-1.364)
ACSIZE	0.001 (0.823)	0.001 (0.949)
ACIND	-0.003 (-0.659)	0.002 (0.377)
Fixed Effects	Included	Included
Adj.R2	0.10	0.08
N	1572	1572
F-stat	7.132	5.955

*, ** and *** represent significance at $p < 0.10$, < 0.05 and < 0.01 , respectively. t-values are reported in the parentheses. See Table 1 for the variable definitions.

We found that the coefficients for *CHINESE* were positive and significant (0.006, $p\text{-value} < 0.01$) for both columns (1) and (2), hence supporting hypothesis 4. This finding suggested that Chinese CEOs demonstrated superior investment efficiency compared with CEOs from other ethnic groups, which is in line with the argument that Chinese CEOs are more familiar with the business environment than other ethnicities (Mamman, 2002). Chinese CEOs are often mentored by senior family members with extensive business expertise and knowledge, leading to more efficient investment decisions than their counterparts from other ethnicities in Malaysia.

For *FEMALE* and *FOUNDER*, the coefficients were insignificant in both columns ($p > 0.10$). For the CEO's title, the coefficient for *TITLE* was negatively significant ($p < 0.10$) in column (1) but insignificant in column (2). Of the five hypotheses, only H_1 and H_4 were supported, consistent with the notion that more experienced CEOs and Chinese CEOs were associated with high investment efficiency. The results suggested that more experienced CEOs applied less aggressive or risky investment decisions and policies than younger CEOs (Prendergast & Stole, 1996; Serfling, 2014), which increases firms' investment efficiency (Xie, 2015). As the upper echelons theory proposes that older CEOs are more embraced by ethical beliefs (Huang et al., 2012), and they have low motivation to undertake risky investments, thereby resulting in high firms' investment efficiency.

Our findings supported the argument that Chinese CEOs in Malaysia possess superior investment knowledge because of their dominance in the Malaysian business scene, including holding prominent positions as firm directors (Ahmad-Zaluki, 2012). Furthermore, their extensive commercial and economic expertise, as well as their networks within the family and Chinese business chambers, were likely contribute to their ability to make more efficient investment decisions. For the control variables, *SIZE*, *ROA*, *LEV*, and *TANGI* were positively and significantly associated with investment efficiency in both models ($p < 0.01$). However, the other control variables were insignificant in both models, except for *SDCFO*, which was weakly positive and significant at a p -value < 0.10 .

Additional Analysis: Over and Under-investment

We performed a battery of additional analyses to test whether our main results were robust to alternative measurements of the dependent variables. Table 4 summarises the results for underinvestment and overinvestment using the four models.

Columns (1) and (2) show that the coefficients for *CEOAGE* were negatively significant (-0.036 , p -value < 0.01 for both columns), implying that more experienced CEOs had a lower tendency to pursue an overinvestment strategy. This finding is consistent with the argument that more experienced CEOs would make less aggressive investment decisions because they are less sensitive to new information (Prendergast & Stole, 1996).

Table 4: Regression Estimates of the Effect of CEO Characteristics on Overinvestment and Underinvestment

DV	(1) OVER_INV1	(2) OVER_INV2	(3) UNDER_INV1	(4) UNDER_INV2
Intercept	0.054** (2.470)	0.055** (2.488)	-0.126*** (-7.498)	-0.125*** (-7.241)
CEOAGE	-0.036*** (-3.314)	-0.036*** (-3.308)	-0.013 (-1.520)	-0.004 (-0.453)
FEMALE	-0.002 (-0.466)	-0.002 (-0.628)	-0.002 (-0.819)	-0.004 (-1.198)
TITLE	-0.001 (-0.986)	-0.002 (-1.010)	-0.004*** (-3.505)	-0.004*** (-3.407)
CHINESE	-0.000 (-0.086)	0.000 (0.022)	0.006*** (3.976)	0.006*** (4.244)
FOUNDER	0.001 (0.792)	0.001 (0.701)	-0.000 (-0.053)	-0.000 (-0.362)
SIZE	0.002*** (3.042)	0.002*** (3.011)	0.006*** (12.258)	0.005*** (9.679)
ROA	0.044*** (4.927)	0.045*** (4.963)	0.079*** (11.437)	0.078*** (11.009)
LEV	0.018*** (3.333)	0.017*** (2.973)	0.048*** (11.351)	0.043*** (9.966)
ALTMANZ	-0.000 (-0.630)	-0.000 (-0.811)	-0.000 (-0.497)	-0.000 (-1.234)
FIRMAGE	-0.002 (-1.533)	-0.002* (-1.678)	-0.002 (-1.586)	-0.002 (-1.556)
TANGI	0.026*** (6.923)	0.027*** (7.028)	0.035*** (12.072)	0.037*** (12.553)
SDSALE	-0.000 (-0.798)	-0.000 (-0.785)	-0.001*** (-2.710)	-0.001*** (-3.117)
SDCFO	0.002 (0.734)	0.002 (0.877)	0.005*** (3.020)	0.006*** (3.366)
BDSIZE	0.000 (0.816)	0.000 (0.619)	-0.000 (-0.880)	-0.000 (-0.969)
ACSIZE	-0.000 (-0.178)	0.000 (0.125)	0.001 (0.826)	0.002 (1.386)
ACIND	-0.000 (-0.081)	-0.000 (-0.029)	-0.004 (-0.952)	0.002 (0.450)
Fixed Effects	Included	Included	Included	Included
Adj.R2	0.09	0.09	0.35	0.32
N	1572	1572	1572	1572
F-stat	6.283	6.156	30.481	25.997

*, ** and *** represent significance at p<0.10, <0.05 and <0.01, respectively. t-values are reported in the parentheses. See Table 1 for the variable definitions.

We also observed that the coefficients for *TITLE* were significant (-0.004, p -value<0.01) and negative in columns (3) and (4), suggesting that CEOs with an honorific title had a lower tendency to be involved in underinvestment strategy. These findings are consistent with the notion that CEOs with honorific titles are less likely to engage in underinvestment strategies to improve their performance. Furthermore, our results corroborate previous empirical studies demonstrating that directors with honorific titles exhibit superior performance (Janggu et al., 2014).

We found that the coefficients of *CHINESE* were positive and significant (0.006, p <0.01) for both columns (3) and (4), implying that firms managed by Chinese CEOs had a higher tendency to pursue underinvestment strategies. Since Chinese CEOs were more experienced and competent in the business sector and dominated the economy, we conjectured that they chose a less aggressive investment approach than other ethnicities, such as Malays, who push for a faster growth plan (Yap, 1997). We found that other CEO characteristics were insignificant. For the control variables, *SIZE*, *ROA*, *LEV*, and *TANGI* were positive and significant in all models (p <0.01). However, *SDSALE* and *SDCFO* were negative and positive in both under-investment models (p <0.01). The other control variables were not significant.

Additional Analysis: The Moderating Effect of PCON Firms

Table 5 includes *PCON* as a moderating variable in the investment efficiency model. Only two independent variables of CEO characteristics, *CEOAGE* and *CHINESE*, were tested in the analyses. In previous results, the *CEOAGE* and *CHINESE* variables had significant relationships with investment efficiency, as reported in Table 3.

The results in column (1) showed that the coefficient of *PCON*CHINESE* was negatively significant (-0.012, p <0.01), suggesting that *PCON* weakened the positive relationship between *CHINESE* and investment. This result implied that Chinese CEOs in PCON firms were associated with lower investment efficiency compared to other firms. Similarly, the results in column (2) showed that the coefficient for *PCON*CHINESE* was positive (0.011, p <0.01). In contrast, the coefficient for *CHINESE* was negative (-0.004, p <0.10), indicating that *PCON* weakened the negative relationship

between *CHINESE* and overinvestment, suggesting that Chinese ethnic CEO in PCON firms were associated with higher firm overinvestment.

Both results proved that Chinese CEOs had less investment efficiency and higher overinvestment in PCON firms. This might be because PCON firms distorted their investment behaviour, leading to investment inefficiency and overinvestment. This is consistent with the empirical evidence that PCON firms harm investment efficiency (Chen et al., 2011). Therefore, Chinese CEOs in PCON firms had lower investment efficiency and higher overinvestment. Furthermore, PCON firms’ investment efficiency had worsened because of politicians’ or the government’s involvement in the corporate sector, particularly distorting firms’ investment behaviour (Chen et al., 2011). This is in line with the agency hypothesis, which states that agency costs are higher in PCON firms than in non-PCON firms, thereby reducing investment efficiency.

Table 5: Regression Estimates of the Effect of CEO Characteristics and Politically Connected Firms on Investment Efficiency

DV	(1) <i>INVEFF1</i>	(2) <i>OVER_INV1</i>	(3) <i>UNDER_INV1</i>
Intercept	-0.209*** (-8.320)	0.085*** (3.337)	-0.124*** (-6.301)
CEOAGE	0.031** (2.520)	-0.050*** (-3.956)	-0.019* (-1.919)
CHINESE	0.011*** (4.809)	-0.004* (-1.862)	0.007*** (3.728)
PCON	0.022 (0.612)	-0.067* (-1.798)	-0.044 (-1.555)
PCON*AGE	-0.009 (-0.416)	0.034 (1.597)	0.025 (1.543)
PCON*CHINESE	-0.014*** (-3.873)	0.011*** (2.910)	-0.003 (-1.169)
FEMALE	0.001 (0.303)	-0.003 (-0.840)	-0.002 (-0.704)
TITLE	-0.002 (-1.582)	-0.002 (-1.164)	-0.004*** (-3.536)
FOUNDER	-0.001 (-0.719)	0.001 (0.695)	-0.000 (-0.016)
SIZE	0.004*** (6.841)	0.002*** (2.806)	0.006*** (12.395)
ROA	0.034***	0.045***	0.079***

	(3.843)	(5.023)	(11.443)
LEV	0.029***	0.019***	0.048***
	(5.394)	(3.408)	(11.327)
ALTMANZ	0.000	-0.000	-0.000
	(0.294)	(-0.714)	(-0.552)
FIRMAGE	0.001	-0.002*	-0.001
	(1.011)	(-1.721)	(-0.943)
TANGI	0.008**	0.026***	0.034***
	(2.060)	(7.041)	(11.786)
SDSALE	-0.000	-0.000	-0.001***
	(-1.402)	(-0.683)	(-2.680)
SDCFO	0.003*	0.001	0.005***
	(1.691)	(0.636)	(2.988)
BDSIZE	-0.001	0.000	-0.000
	(-1.583)	(0.851)	(-0.917)
ACSIZE	0.001	-0.000	0.001
	(0.756)	(-0.180)	(0.732)
ACIND	-0.002	-0.002	-0.003
	(-0.336)	(-0.347)	(-0.880)
Fixed Effects	Included	Included	Included
Adj.R2	0.11	0.10	0.35
N	1572	1572	1572
F-stat	7.291	6.188	27.927

*, ** and *** represent significance at $p < 0.10$, < 0.05 and < 0.01 , respectively. t-values are reported in the parentheses. See Table 1 for the variable definitions.

Endogeneity Issue

This study found that firms led by Chinese CEOs tend to make more effective investment decisions. However, it is important to acknowledge that there may be an endogenous relationship between investment decisions and CEO appointments. This means that companies with successful investment strategies may have a higher likelihood of selecting Chinese CEOs, which could introduce a self-selection bias into our findings. To address this issue, we employed Heckman's (1979) two-stage estimation approach to mitigate the potential self-selection bias. In the first stage, we used probit regression to identify the determinants of Chinese CEOs selection. We then used the estimated parameters from the probit regression to calculate the inverse Mills ratio (IMR), which was included as an additional explanatory variable in the second-stage OLS regression model. This allowed us to control for the possible self-selection bias and obtain more accurate estimates of the

effect of Chinese CEOs on investment decisions. The first stage of probit regression was estimated as follows:

$$CHINESE = \alpha_0 + \beta_1 ROA + \beta_2 LEV + \beta_3 FIRMAGE + \beta_4 TANGI + \beta_5 BDSIZE + \text{fixed effect} + \varepsilon_{it} \quad (4)$$

Where ROA is the ratio of net income to total assets, LEV is the ratio of total debt divided by total assets, FIRMAGE is the natural logarithm of the number of years since the year of incorporation, TANGI is the ratio of total tangible assets to total assets, and BDSIZE is the total number of directors on the board.

The results of the first- and second-stage estimations are presented in Table 6. Column (1) of Table 5 showed the probit regression estimates for the probability of firms with Chinese CEOs.³ We found that firms with Chinese CEOs were associated with SIZE, FIRMAGE and TANGI.

The regression estimates in columns (2)–(4) showed that our inferences remain unchanged. We found that the coefficient for *CEOAGE* was positively significant (0.032, $p < 0.01$) in column (2), showed robust evidence that firms with more experienced CEOs exhibit greater investment efficiency. The coefficients of *CEOAGE* in columns (3) and (4) were negatively significant (-0.050, $p < 0.01$, and -0.018, $p < 0.10$, respectively), indicating that firms managed by more experienced CEOs were less likely to be involved in underinvestment or overinvestment strategies. For *CHINESE*, we found that the coefficients in columns (2) and (4) were positively significant (0.011, $p < 0.01$; and 0.007, $p < 0.01$, respectively), showing robust evidence that firms managed by Chinese CEOs exhibited greater investment efficiency but had a higher propensity to overinvest. The coefficient of *CHINESE* in column (3) was negatively significant (-0.004, $p < 0.10$), showing that firms managed by Chinese CEOs were less likely to underinvest.

3 The probit estimation excluded 10 observations due to convergence issue. Since estimating the parameters of the probit regression model involves an iterative optimization process, in some cases, the optimization algorithm may encounter convergence issues, probably due to the dataset complexity.

Table 6: Regression Results Using Propensity Score Matching Procedure of the Effect of CEO Characteristics and Politically Connected Firms on Investment Efficiency

First Stage		Second Stage			
DV	(1) CHINESE	DV	(2) INVEFF1	(3) OVER_INV1	(4) UNDER_INV1
<i>Intercept</i>	4.723*** (6.037)	<i>Intercept</i>	-0.234*** (-8.393)	0.107*** (3.775)	-0.127*** (-5.816)
<i>SIZE</i>	-0.133*** (-3.853)	<i>CEOAGE</i>	0.032*** (2.594)	-0.050*** (-4.017)	-0.018* (-1.904)
<i>ROA</i>	-0.913* (-1.685)	<i>CHINESE</i>	0.011*** (4.867)	-0.004* (-1.917)	0.007*** (3.725)
<i>LEV</i>	0.160 (0.515)	<i>PCON</i>	0.026 (0.722)	-0.070* (-1.890)	-0.044 (-1.532)
<i>FIRMAGE</i>	-0.333*** (-4.399)	<i>PCON*CEOAGE</i>	-0.011 (-0.502)	0.036* (1.669)	0.025 (1.526)
<i>TANGI</i>	-0.894*** (-4.234)	<i>PCON*CHINESE</i>	-0.016*** (-4.147)	0.012*** (3.144)	-0.004 (-1.213)
<i>BDSIZE</i>	0.028 (1.258)	<i>FEMALE</i>	0.001 (0.229)	-0.003 (-0.774)	-0.002 (-0.713)
		<i>TITLE</i>	-0.003* (-1.802)	-0.001 (-0.960)	-0.004*** (-3.546)
		<i>FOUNDER</i>	-0.001 (-0.630)	0.001 (0.637)	0.000 (0.023)
		<i>SIZE</i>	0.006*** (5.831)	0.000 (0.325)	0.006*** (7.868)
		<i>ROA</i>	0.043*** (4.361)	0.038*** (3.793)	0.080*** (10.494)
		<i>LEV</i>	0.028*** (5.053)	0.020*** (3.605)	0.048*** (11.132)
		<i>ALTMANZ</i>	0.000 (0.211)	-0.000 (-0.646)	-0.000 (-0.570)
		<i>FIRMAGE</i>	0.005** (2.269)	-0.006** (-2.450)	-0.000 (-0.284)
		<i>TANGI</i>	0.018*** (2.899)	0.018*** (2.858)	0.035*** (7.413)
		<i>SDSALE</i>	-0.000 (-1.443)	-0.000 (-0.646)	-0.001*** (-2.681)
		<i>SDCFO</i>	0.004* (1.724)	0.001 (0.606)	0.005*** (2.987)
		<i>BDSIZE</i>	-0.001** (-2.175)	0.001 (1.377)	-0.000 (-0.989)
		<i>ACSIZE</i>	0.001	-0.000	0.001

			(0.740)	(-0.167)	(0.728)
		ACIND	-0.001	-0.002	-0.003
			(-0.292)	(-0.382)	(-0.869)
		IMR	-0.030	0.026	-0.004
			(-0.805)	(0.754)	(-0.385)
Fixed Effects	Included	Fixed Effects	Included	Included	Included
Pseudo R2	0.11	Adj.R2	0.11	0.10	0.35
N	1,562	N	1562	1562	1562
LR chi2	233.32	F-stat	6.940	6.247	27.289

*, ** and *** represent significance at $p < 0.10$, < 0.05 and < 0.01 , respectively. t-values are reported in the parentheses. See Table 1 for the variable definitions.

For the moderating variable, as reported in column (3), the coefficients of $PCON*CEOAGE$ and $PCON*CHINESE$ were negatively significant (0.036, $p < 0.01$, and 0.012, $p < 0.01$, respectively). The results suggested that PCON weakened the negative effects of $CEOAGE$ and $CHINESE$ on the propensity to overinvest. In column (2), the coefficient of $PCON*CHINESE$ was negatively significant (-0.016, $p < 0.01$), suggesting that PCON reduced the positive relationship between firms managed by Chinese CEOs and investment efficiency. These findings indicated that PCON played a substantial role in moderating the association between CEO characteristics (specifically $CHINESE$ and $CEOAGE$) and investment efficiency. Additionally, the insignificant coefficients of IMR provided reassurance that the self-selection bias was not a concern.

Discussion of Result

This study offers empirical evidence that CEO characteristics impact investment choices, affirming the idea that a firm’s leader’s attributes affect strategic decision-making (Hambrick & Mason, 1984). The findings showed that older CEOs and Chinese CEOs were associated with high investment efficiency, thereby supporting H1 and H4, respectively. Further examination of the findings revealed that experienced CEOs are less inclined to pursue an overinvestment strategy, indicating a more conservative approach to their investment decisions. These findings support the notion that CEOs with more experience opt for less aggressive, lower-risk investments (Prendergast & Stole, 1996; Serfling, 2014), leading to superior investment decisions compared to their less experienced counterparts. Meanwhile, Chinese CEOs exhibited higher underinvestment efficiency, suggesting a

preference for less growth-oriented strategies compared to other ethnicities. In contrast, CEOs with honorific titles are less prone to underinvestment efficiency because they face greater pressure to deliver superior financial outcomes than their counterparts without such titles (Janggu et al., 2014). The results indicated that PCON firms with Chinese CEOs demonstrated lower investment efficiency, as shown by the high levels of overinvestment, suggesting that political connections moderate the influence of CEOs' ethnicity on investment efficiency. This involvement of PCON firms in moderating the link between Chinese CEOs and investment efficiency aligns with the agency theory.

CONCLUSION

This study investigated the impact of CEO characteristics on investment efficiency, and the results indicate that firms led by experienced CEOs or Chinese CEOs exhibit higher investment efficiency than those led by other CEOs. The findings showed that more experienced CEOs are less prone to overinvestment strategies, while Chinese CEOs tend to favour underinvestment strategies. Additionally, political connections moderated the effect of Chinese CEOs on investment efficiency, with a strong aversion to overinvestment. The probable reason for this is that the CEO's experience, particularly in Chinese families, involves close coaching by senior family members, leading to more efficient investments and reducing the temptation to underinvest or overinvest. The significance of this study lies in demonstrating how different CEO characteristics influence investment efficiency and that political connection moderates the relationship between CEO characteristics and investment efficiency due to high agency costs and information asymmetry. The findings revealed that in PCON firms, experienced and Chinese CEOs had less impact on enhancing investment efficiencies than in non-PCON firms.

Despite several sensitivity analyses, our findings should be interpreted with caution. Our sample only covered the period between 2014 and 2018, and since May 2018, there have been significant changes in government administration, starting with the defeat of the long-serving party, 'Barisan Nasional', in the general election, followed by several coalition party changes. To gain a deeper understanding of the impact of

CEO characteristics on investment decisions during times of high political tension, further studies utilising more recent data are needed. In addition, researchers should incorporate other institutional variables and consider cross-country studies. This study provides fresh insights into the influence of various CEO characteristics on a firm's investment decisions.

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Appendix 1: Pairwise Correlation Matrix
(Continue to next page)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) INVEFF1	1.000											
(2) INVEFF2	0.950*	1.000										
(3) OVER_INV1	-0.583*	-0.593*	1.000									
(4) OVER_INV2	-0.570*	-0.597*	0.991*	1.000								
(5) UNDER_INV2	0.427*	0.454*	0.439*	0.444*	1.000							
(6) UNDER_INV1	0.451*	0.385*	0.462*	0.467*	0.948*	1.000						
(7) CEOAGE	0.089*	0.106*	-0.095*	-0.094*	0.013	-0.006	1.000					
(8) FEMALE	-0.017	-0.022	-0.016	-0.020	-0.047	-0.037	-0.021	1.000				
(9) TITLE	0.023	0.015	-0.001	-0.002	0.014	0.024	0.163*	0.020	1.000			
(10) CHINESE	0.069*	0.081*	-0.068*	-0.061	0.022	0.001	0.116*	-0.045	-0.119*	1.000		
(11) FOUNDER	0.001	0.002	-0.014	-0.017	-0.016	-0.015	0.214*	-0.112*	-0.037	0.186*	1.000	
(12) PCON	0.007	0.017	0.016	0.018	0.038	0.025	0.111*	0.087*	0.114*	-0.039	-0.063	1.000
(13) SIZE	0.231*	0.175*	0.115*	0.113*	0.320*	0.378*	0.120*	-0.036	0.275*	-0.135*	-0.028	0.284*
(14) ROA	0.074*	0.061	0.082*	0.082*	0.159*	0.170*	-0.007	-0.040	-0.080*	-0.026	0.049	-0.005
(15) LEV	0.176*	0.143*	0.101*	0.093*	0.263*	0.303*	-0.035	0.033	0.199*	-0.021	0.013	0.060
(16) ALTMANZ	-0.039	-0.039	-0.018	-0.021	-0.067*	-0.062	0.010	-0.033	-0.146*	0.002	0.043	-0.073*
(17) FIRMAGE	0.058	0.052	-0.059	-0.060	-0.009	-0.002	0.167*	0.069*	0.149*	-0.051	-0.207*	0.354*
(18) TANGI	0.097*	0.108*	0.158*	0.165*	0.304*	0.279*	0.067*	0.014	0.044	-0.047	-0.120*	-0.001
(19) SDSALE	0.004	-0.008	-0.016	-0.008	-0.017	-0.013	-0.003	-0.012	-0.024	0.030	0.046	-0.041
(20) SDCFO	0.011	0.002	-0.007	0.002	0.005	0.004	-0.031	-0.008	-0.007	0.018	0.024	-0.033
(21) BDSIZE	0.089*	0.077*	0.063	0.059	0.152*	0.166*	0.170*	-0.063	0.103*	-0.019	-0.010	0.112*
(22) ACSIZE	0.060	0.050	0.047	0.052	0.113*	0.117*	0.020	-0.044	0.068*	-0.104*	-0.077*	0.041
(23) ACIND	-0.037	-0.010	-0.048	-0.048	-0.065	-0.093*	-0.002	-0.106*	0.102*	0.097*	0.007	0.012

* shows significance at the .01 level

Appendix 1: Pairwise Correlation Matrix
(Continue to from previous page)

Variables	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
(13) SIZE	1.000										
(14) ROA	0.056	1.000									
(15) LEV	0.370*	-0.273*	1.000								
(16) ALTMANZ	-0.148*	0.404*	-0.417*	1.000							
(17) FIRMAGE	0.235*	-0.021	-0.022	-0.096*	1.000						
(18) TANGI	0.031	-0.181*	0.076*	-0.177*	0.060	1.000					
(19) SDSALE	-0.026	0.001	0.014	0.000	-0.120*	-0.051	1.000				
(20) SDCFO	-0.033	0.010	-0.019	0.010	-0.089*	-0.043	0.911*	1.000			
(21) BDSIZE	0.369*	0.084*	0.180*	-0.015	0.084*	0.016	-0.005	-0.017	1.000		
(22) ACSIZE	0.207*	0.068*	0.073*	-0.012	0.045	0.004	-0.027	-0.021	0.329*	1.000	
(23) ACIND	-0.029	-0.053	-0.005	-0.002	0.007	-0.115*	0.030	0.026	0.063	-0.124*	1.000

* shows significance at the .01 level