
Academic directors and IPO initial returns

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Abstract: This study examines the impact of academic directors on IPO initial returns. With a sample of 208 Malaysian IPOs over the period of 2005 to 2015 and applying a quantile regression (QR) technique, this study finds that the academic directors are significantly and negatively associated with IPO initial returns, indicating IPOs with more directors from the academia can better serve as a signal of a company's quality. Such directors are perceived by potential investors as intellectuals capable of providing knowledgeable skills in complex decision-making, like IPO, as well as advising and monitoring the management. These findings indicate that IPO issuers can demonstrate their quality through a highly educated board.

Keywords: academic directors; corporate governance; IPO initial returns; quantile regression; Malaysia.

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1 Introduction

In the Asian equity market, initial public offering (IPO) is a common means of raising capital and is among the important drivers of economic development (Ng, 2016). Additionally, the market has been subjected to substantial risks and volatility, which could manifest in higher IPO initial returns on the first trading day (Vithessonthi, 2014). The occurrence of high initial returns on the first trading day is often attributed to agency cost arising from information asymmetry between issuer and prospective investors (Ritter and Welch, 2002). These costs result in adverse selection and moral hazard problems for prospective investors, leading to improper valuation of the company value. In order to mitigate the agency cost that arises due to information disparities, academic scholars have suggested that observable corporate governance characteristics, such as board composition, can convey hidden information and actions which signal the IPO quality, thereby reducing the level of IPO initial returns (Certo, 2003; Certo et al., 2001).

Despite the role of corporate governance mechanisms in explaining IPO initial returns, only a few empirical studies have considered this issue in the Asian market, for example, Darmadi and Gunawan (2013) for the Indonesian and Yatim (2011) for the Malaysian IPO markets. These two studies have focused only on the general composition of the board of directors (e.g., board size, board independence, board leadership structure and board ownership) and its relationship with IPO initial returns. Moreover, recent corporate governance literature has established that governance quality has a positive impact on the value of IPO companies (Bertoni et al., 2014).

One important way to identify a board with strong corporate governance quality is the educational background of directors (Anderson et al., 2011). The educational background of directors can make an important difference in such directors' abilities to contribute to strategic decision-making (Carpenter and Westphal, 2001) and signal a company's legitimacy by improving the board's prestige (Certo, 2003; D'Aveni, 1990; Reeb and

Zhao, 2013; Wang et al., 2017). A director's education signals his/her intellect and ability to better handle challenges (Bhagat et al., 2010). In fact, highly educated directors (Haniffa and Cooke, 2002; Wang et al., 2017) and academic directors provide better governance to the company in terms of advising and monitoring functions, thereby contributing to the corporate information environment (Cho et al., 2017; Francis et al., 2015; Huang et al., 2016; White et al., 2014). Therefore, this study considers the presence of academic directors on the board at the time of an IPO as an important signalling mechanism that can be used strategically to reduce the degree of risks and uncertainties surrounding the IPO, leading to lower initial returns in the Malaysian IPO market.

The Malaysian IPO market deserves consideration because the agency problem in the Malaysian IPO market is severe (Klapper and Love, 2004), due to the fact that ownership is concentrated and characterised by family control (Claessens et al., 2000). In this regard, strong corporate governance is expected to reduce agency cost and cost of capital to increase the chance of the company's accessibility to finance in the capital market (Claessens and Yurtoglu, 2013). In addition, the Malaysian Code on Corporate Governance (MCCG)¹ 2012 does not specify the competencies of directors (e.g., experience and qualifications); rather, it indicates that companies should have a well-balanced and effective board of directors that is both credible and independent (Yusoff and Armstrong, 2012). Similarly, with the aim of becoming an industrialised, developed and high income economy, the Malaysian government in recent times has recognised the importance and unique benefit that collaboration between industry and university can provide for the economy. Universities are often positioned as central actors in the knowledge-based economy. Their industry collaboration has become a catalyst for human capital development, which is considered crucial for both national and regional economic development, in general, and development of a company's innovative process, in particular. Universities help to upgrade skills and knowledge through education and training of the future labour force and provide technical support and expertise for a company's research and development (R&D) activities (Hamdan et al., 2011). Given the role of universities in encouraging innovation through technology transfer, this study argues that having a number of academic directors may add value to a company's board of directors, resulting in reduction in ex-ante uncertainties surrounding the IPO value. Therefore, this study tests whether academic directors at the time of an IPO, can explain IPO initial returns, which has not been explored hitherto.

Furthermore, unlike prior studies (Darmadi and Gunawan, 2013; Yatim, 2011) that have employed only the traditional regression technique [ordinary least squares (OLS)], which relies on the conditional mean or central tendency between board characteristics and IPO initial returns, the present study applies a more robust technique, i.e., quantile regression (QR) to test the association between academic directors and IPO initial returns. The use of QR allows the study to identify the heterogeneity in the association between academic directors in addition to other likely variables and IPO initial returns across quantiles. With the application of the OLS on a sample of 208 Malaysian IPOs, no significant association is found between academic directors and IPO initial returns. However, when the QR technique is employed, academic directors, in particular, the proportion of university lecturers on the board appears to have a significant and negative association with IPO initial returns in the upper quantile (.75th). This implies that academic directors have the intellectual capacity and training to play a signalling role through their advisory and monitoring functions that could mitigate the information

asymmetry and uncertainties surrounding the IPO value, thereby reducing the IPO initial returns. Thus, IPO companies can benefit from recognising the potential impact of including academic directors on their corporate board structure at IPO stage as this could add to the value of the board and increase the board's reputation in the eyes of prospective investors.

The remainder of the paper proceeds as follows. Section 2 discusses the literature review and hypotheses development. Section 3 explains the data, the sample selection and methods of statistical analysis. Section 4 presents the regression results and discussion and Section 5 provides the conclusion of the study.

2 Literature review and hypotheses development

Information asymmetry between parties (issuers and prospective investors) is common in the IPO market, because prospective investors have limited publicly available information. This information asymmetry leads to moral hazard and adverse selection problems, which creates substantial agency costs, making it difficult for prospective investors to distinguish IPO quality (Leland and Pyle, 1977). To mitigate the agency cost and adverse selection problems, IPO issuers use idiosyncratic signals, like structure of board of directors, to provide useful information to prospective investors, like the true value of the company and associated IPO initial returns (Certo et al., 2001; Chahine and Filatotchev, 2008; Filatotchev and Bishop, 2002). Thus, board structure can be considered as a key determinant of what board members can do and what roles the directors can play in a company (Petrovic, 2008).

During the IPO process, the directors have enormous responsibilities, which include: choice of underwriters to undertake the company going public; ensuring that the company adheres to regulatory policies; controlling and monitoring procedures of listing; establishing an appropriate corporate governance structure; and overseeing the preparation of registration documents, filing and approval of the IPO (Judge et al., 2015). Other important responsibilities of the board of directors include monitoring the company's operations and executing and evaluating strategic decisions that make a company remain a going concern.

Considering the multifaceted responsibilities of the board in the IPO process, the expertise and competencies of the board may be very relevant in the valuation of the company. This is because the competence of the board would strengthen the overall function of the board and increase its quality. Therefore, the composition of the board of directors may influence the quality of board deliberations and decisions (Finkle, 1998). This can also proxy as a signal of the company's quality (Certo et al., 2001), and serve as non-financial information that may influence the decision-making process of prospective investors when subscribing to the IPO (Certo, 2003; Li and Naughton, 2007).

For these reasons, the board of directors should comprise directors from diverse backgrounds. This can be achieved by appointing academicians, because such individuals possess valuable knowledge needed for making strategic decisions and have better communication and management skills (Anderson et al., 2011; Huang et al., 2016). The appointment of intellectuals as board members can also signal to potential investors that the company is a legitimate one, worthy of support, which could help to reduce the cost of external capital (Hillman and Dalziel, 2003). For instance, legitimacy is important in the case of an IPO company that seeks to establish itself as a viable publicly listed

company (Certo et al., 2001). In addition, legitimacy, through a prestigious board, may help the company to reduce information asymmetry that may deter prospective investors. Thus, prestigious or legitimate persons on the company's board provide confirmation to the rest of the world of the value and worth of the company (Pfeffer and Salancik, 1978).

2.1 Academic directors as a signalling mechanism

Academic directors are often considered as outside directors with relatively high reputation. These individuals are tutored to be independent and critical thinkers with their own opinions and judgements and less influenced by others (Jiang and Murphy, 2007). Academic directors play an important governance role through their advising and monitoring functions (Francis et al., 2015; White et al., 2014). For the advisory role, Francis et al. (2015) find that companies with academic directors are more innovative due to their specialised expertise; while for the monitoring role, Francis et al. (2015) and Trainor and Finnegan (2013) find that academic directors are associated with less discretionary accruals, indicating that academic directors improve the financial reporting quality of the company. In a similar vein, Huang et al. (2016) report that academic directors, specifically accounting academics as outside directors, improve financial reporting quality and enhance corporate transparency. More importantly, greater value relevance of reported earnings appears in companies where accounting academics serve as financial experts on the board. Additionally, Francis et al. (2015) find that companies with academic directors have more informative stock price, suggesting that such companies' share price always reflects more company-specific information. In fact, the market reacts positively to the appointment of academic directors, which indicates that the market perceives the incremental value of academic directors (White et al., 2014). Similarly, Audretsch and Lehmann (2006) contend that directors with an academic background can enhance the competitive advantage of companies by facilitating access to and absorption of external knowledge spill-over. In fact, Huang et al. (2016) find that academic directors who are accounting academics can substitute auditors' monitoring role in financial reporting. A study by Cho et al. (2017) also finds that companies with professors as directors are associated with higher corporate social responsibility (CSR) performance rating indicating that university professors possess some high ethically and socially responsible standards which may constitute an important factor that can affect corporate policy, like CSR activities.

In a similar vein, Carpenter and Westphal (2001) argue that the educational background of directors creates important differences in their abilities to contribute to strategic decision-making. Therefore, a highly educated board signals organisational legitimacy by improving the board's prestige (D'Aveni, 1990; Certo, 2003; Reeb and Zhao, 2013).

When appointing directors, their educational qualification may play an important role, because education contributes to knowledge and ability to understand technical and abstract concepts (Bhagat et al., 2010). Empirical evidence on educational qualification of directors have had little (Darmadi, 2013) or no effect (Bhagat et al., 2010) on long-term company performance, while others have found a positive impact on company performance (Haniffa and Cooke, 2002; Ujunwa, 2012; Reeb and Zhao, 2013). Wang et al. (2017) provide evidence that companies with highly educated directors on the board, tend to hold more cash and are associated with higher value of cash, most

especially in financially constrained companies. This implies that a highly educated board provides better monitoring and advising functions and thus complements corporate governance. Similarly, Dalziel et al. (2011) argue that advanced degrees, such as PhD, could equip directors with extra skills that could be beneficial for the company, especially in their R&D efforts. Empirical evidence by Kuo et al. (2018) reveals that higher education of directors has a positive effect on R&D investments in a company. In fact, Francis et al. (2015) indicate that academic directors with innovative capabilities sit on the boards of research-intensive companies. Using a sample of biotechnology IPOs, Audretsch and Stephan (1996) identify that university-based scientists perform three primary functions: first, is the provision of knowledge transfer to new biotechnology companies; second, is to signal the quality of the company to scientific and investment communities, which is referred to as bait to investment communities; and third, is to chart the scientific direction of the company. Considering these primary functions of university-based scientists, Stephan (1994) shows that the reputation of a university-based scientist affiliated with a company is positive and significantly related to the amount of capital raised from IPO and the value of the company on the first trading day.

Similarly, based on a sample of 499 high-tech SMEs that went public on the stock markets of Germany, the UK, France and Italy during the period of 1995 to 2003, Bonardo et al. (2011) find that the presence of academic directors on the top management team of companies at the time of IPO enhances the company's valuation. This suggests that investors value the presence of academic directors and may consider this before making investment decisions. In addition, since academic directors hold higher level degrees in various subject matters, academic directors may simply be referred to as subject matter experts who can provide independent judgement in various strategic decisions (Trainor and Finnegan, 2013). In fact, academic directors are generally viewed as role models, mentors and intellectual leaders in their given disciplines or areas of expertise (Macfarlane, 2011). Considering all these factors, such as expertise, independence and experience of academic directors, academics are better placed to contribute to the overall governance of the company, which could mitigate information asymmetry and uncertainties surrounding the IPO value.

2.1.1 Hypothesis development

Since IPO companies are mostly small and growth-oriented companies with high degree of uncertainties, the presence of highly educated individuals and/or individuals with strong academic backgrounds, may instil some confidence in potential investors that the company has competent directors with good standing. As such, issuers may leverage on academic directors' expertise at the time of the IPO (Certo, 2003). For instance, directors with higher level degrees, such as PhD and/or professorial qualifications, signal superior quality of human capital on the board (Audretsch and Lehmann, 2006), because such degrees reveal that these directors have spent a substantial amount of time in the academic environment which could have provided the directors valuable knowledge necessary for strategic decision-making (Carpenter and Westphal, 2001). Therefore, directors from the academic environment with higher level degrees may influence investors' perceptions of the company's value, thus reducing the level of IPO initial returns. In fact, a growing company considers the appointment of knowledgeable

directors as a viable source of outside expertise when expanding the board. Likewise, high growth established companies with high information costs and R&D investment tend to appoint academic directors with specialised expertise as the market reacts positively to their appointment (White et al., 2014). Therefore, this study argues that academic directors, or the percentage of academicians to the total number of directors on the board, number of PhD holders and the presence of professors on the board at the time of an IPO, may be negatively associated with IPO initial returns.

H1 Academic directors are negatively associated with IPO initial returns.

2.2 Other board characteristic variables

Other instruments that can be used to resolve agency and adverse selection problems arising from an IPO decision are board independence, board size and chief executive officer (CEO) duality (Roosenboom, 2005; Howton et al., 2001). In the case of board independence, the resource-dependence theory suggests that non-executive directors provide valuable scarce information or resources to the company (Hillman and Dalziel, 2003; Pfeffer and Salancik, 1978), and participate actively in board discussion, most especially discussion related to corporate strategic decisions (Chahine and Filatotchev, 2008; Finkle, 1998). Similarly, the signalling theory suggests that investors use board independence as a market sorting criteria in the IPO market and such companies are premium-priced compared to their counterparts with more insiders (Gompers, 1995). Following these two arguments, a number of studies has found that board independence is negatively associated with IPO initial returns, meaning that board independence can serve as a signalling means to mitigate the information asymmetries associated with agency cost at the time of IPO (Chiraz and Jarboui, 2016; Chahine and Filatotchev, 2008; Dolvin and Kirby, 2016; Filatotchev and Bishop, 2002; Hearn, 2012).

In contrast, Certo et al. (2001) and Howton et al. (2001) find that board independence is positively and significantly related to IPO initial returns, which means that initial returns is higher for company boards dominated by independent directors. These results are consistent with the argument that high-quality companies intentionally underprice their IPO in order to signal their quality to other market participants, which low quality companies find difficult to imitate. Based on this evidence, this study argues that an IPO company with a higher number of non-executive directors on the board is likely to set the offer price close to its fair value, thus reducing the level of IPO initial returns. Hence, this study posits that board independence is negatively associated with IPO initial returns.

Similar to the independence of the board, board size is another widely used measure of resource-dependence role and effectiveness of the board (Howton et al., 2001; Jensen, 1993). According to the resource-dependence theory, larger boards increase the chances of a company to pool resources from the external environment (Badru et al., 2017a; Finkle, 1998; Pfeffer and Salancik, 1978). Large boards can also increase the power of directors in governing the company, thereby discouraging management from any act that could lead to extraction of private benefits (Boone et al., 2007; Zahra and Pearce, 1989). In fact, a company may benefit from large board size because such a company would have directors from diverse educational and industrial backgrounds and skills, which could improve the quality of board deliberations and decisions as well as quality of advice given to managers (Coles et al., 2008).

Considering the likely implication of board size on resource-dependence and monitoring effectiveness, one may suggest that board size can play a signalling role at the time of an IPO. Empirical evidence by Certo et al. (2001) shows that board size is negatively associated with IPO initial returns, which means that larger boards are associated with less IPO initial returns. On the contrary, Chiraz and Jarboui (2016), Hearn (2012) and Li and Naughton (2007) find that board size is positively associated with IPO initial returns in French, West African and Chinese company IPOs. Despite the contradictory evidence, Hearn (2012) claims that the positive impact of board size on IPO initial returns is a signal that a large board can be considered as a reflection of the company's quality. Hence, this study suggests that board size is negatively associated with IPO initial returns.

Another important signal of a company's quality through board structure is the separation of the position of the CEO and chairperson of the board. A dual leadership role occurs when the CEO jointly serves as the board chairperson, which means power of decision management and decision control in a single individual (Fama and Jensen, 1993). This provides too much power to one individual, which consequently impairs board oversight and governance roles (Howton et al., 2001; Jensen, 1993). However, proponents of the stewardship theory argue that CEO duality encourages managers to be honest and good stewards of corporate assets (Li and Naughton, 2007). Similar arguments from resource-dependence theorists suggest that CEO duality provides the company several potential benefits, such as increasing the company's responsiveness and its ability to secure critical resources, most especially in a complex environment (Pfeffer and Salancik, 1978). For instance, an individual, as both the chairperson and CEO, is believed to have company-specific and superior knowledge than independent directors, in formulating company strategy and policy (Bédard et al., 2008). Therefore, prospective investors can view and value clarity of strategic decisions of an IPO company when a single individual serves as both the chairperson and CEO, thus resulting in lower initial returns. This is because CEO duality may have a positive impact on company value and reduce the uncertainties surrounding the intrinsic value of the company's shares (Certo et al., 2001). Li and Naughton (2007) find a negative but insignificant association between CEO duality and IPO initial returns in China, suggesting that CEO duality results in lower initial returns.

However, Yatim (2011) finds a significantly positive association between CEO duality and IPO initial returns in the Malaysian IPO market, which indicates that investors consider the separation of the two roles as a negative signal of company value. Most other prior empirical studies on IPOs in the US (Dolvin and Kirby, 2016; Howton et al., 2001), West Africa (Hearn, 2012) and Canada (Bédard et al., 2008) have documented a non-significant positive association between CEO duality and IPO initial returns. Thus, one can conclude that the separation of the two roles does not mitigate asymmetric information and may engender costs in monitoring the Chairperson and information sharing between CEO and Chairperson. Based on these conflicting results, this study relies on the arguments of Bédard et al. (2008), Li and Naughton (2007) and Certo et al. (2001), that CEO duality reduces the uncertainties surrounding the intrinsic value of shares. This is most especially so in IPO companies which are potential growth companies that are risky and difficult to value, and which often require being managed by incumbent directors rather than independent directors. As a result, the study predicts that CEO duality is negatively associated with IPO initial returns.

2.3 Company-specific variables

In order to avoid omitted variable biasness, the study considers other factors that have a strong influence on IPO initial returns, i.e., company age, company size, pre-IPO financial performance, underwriter's reputation, audit quality and technology industry.

Lowry et al. (2010) suggest that young and small companies tend to have higher initial returns due to the difficulty and the uncertainties associated with the valuation of such a company's shares. It is assumed that the longer the operating history of the company, the more likely the information about the company is available for public consumption, thereby leading to lower information asymmetry and ex-ante uncertainty. Consistent with this line of argument, several empirical studies have reported the existence of a negative association between company age and IPO initial returns (Chahine and Filatotchev, 2008; Engelen and van Essen, 2010; Loughran and Ritter, 2004). Therefore, this study posits that company age is negatively associated with IPO initial returns. Similarly, company size, proxied by pre-IPO sales revenue, has been found to be negatively associated with IPO initial returns (Chahine and Filatotchev, 2008). Hence, this study predicts that company size is negatively associated with IPO initial returns. Technology-related IPOs are also considered to be associated with higher initial returns due to hype and riskiness of such IPOs (Bhattacharya et al., 2009). Studies have argued that technology IPOs are associated with high degree of uncertain future cash flow streams, which may increase the level of information asymmetry between IPO parties (Leone et al., 2007). Therefore, this study suggests that IPOs that belong to the technology industry are positively associated with IPO initial returns.

Companies rely on reputation of financial intermediaries (underwriters and audit firms) to reduce the asymmetric information problem in equity offerings. These categories of financial intermediaries have greater incentives to provide credible information on valuation of IPOs because of potential lawsuit and risks to their reputation capital (Aharony et al., 1993). For instance, Booth and Smith (1986) argue the reputation of underwriters who certify the IPO, can be used as a signal of the company's quality and to infer to investors the likely outcome of the future performance of such an IPO. Similarly, Beatty and Ritter (1986) and Ritter (2003) indicate that because of reputational capital and legal risk, underwriters prefer to certify less risky companies and balance the interests of investors and issuers. Consistent with these arguments, studies have found a negative association between underwriter reputation and IPO initial returns (Darmadi and Gunawan, 2013; Michaely and Shaw, 1994). Therefore, this study posits that underwriter reputation is negatively associated with IPO initial returns.

Due to greater information asymmetry that characterises the IPO market, the reputation of the audit firm that certifies the financial statement may convey important information to investors, and investors may rely on the audit firm reputation as a proxy for financial statement quality presented in the prospectus (Sarath, 2016). According to signalling theorists, higher quality audit firms play a significant role in signalling the quality of a company's value (Beatty, 1989; Titman and Trueman, 1986). Most especially, when a Big Four audit firm monitors the financial reporting process of a company, corporate equity financing becomes cheaper and significantly associated with ex-ante cost of capital (El Ghoul et al., 2016). Thus, the quality of audit to mitigate information failure in the market becomes crucial. Several studies have confirmed that companies certified by high quality audit firms have negative association with IPO initial

returns (Beatty, 1989; Michaely and Shaw, 1995). Hence, this study predicts that the reputation of the audit firm is negatively associated with IPO initial returns.

3 Data and research methods

The primary source of data collection is the prospectus. The prospectuses of the sampled companies are downloaded from the Bursa Malaysia's website. The prospectuses contain all ex-ante information related to the IPO. This includes data related to the offer price, governance structure of the company prior to the IPO, financial data, audit quality and underwriter's reputation. Data related to the closing price on the first trading day for each IPO stock is obtained from the DataStream database of Universiti Utara Malaysia's library. Based on the statistics available on the Bursa Malaysia's website, a total of 301 IPOs were issued during the period of January 2005 to December 2015. Consistent with prior IPO studies (Ammer and Ahmad-Zaluki, 2016; Badru et al., 2017a, 2017b; Rashid et al., 2014), the study excludes IPOs that are categorised as real estate investment trusts (REITs), special purpose acquisition companies (SPACs) and close-ended fund IPOs due to their regulatory requirements, which are different from the general population of the IPOs. In addition, the study eliminates IPOs with missing data needed to measure some of the variables (like Altman Z-score), that serve as a comprehensive measure of pre-IPO performance. As a result, the final sample of the study is 208 IPOs, which is 69% of the total IPOs issued during the sample period. This study uses the binary score of 1 for IPOs with Z-SCORE value less than 1.23, and 0 if otherwise. This is represented as Z-SCOREDM.

3.1 Research method

The dependent variable in the study is IPO initial returns and this is calculated as the percentage difference between the closing pricing of IPO shares on the first trading day and the pre-IPO offer price (Badru and Ahmad-Zaluki, 2018; Certo et al., 2001; Darmadi and Gunawan, 2013).

To test the relationship between IPO initial returns and academic directors and other board structure variables as well as other influential variables, IPO initial returns (IRC) is regressed on the presence of professors on the board (PROFDUM), percentage of PhD degree holders on board (PHD), percentage of university lecturers on the board (LEC), board size (BSIZE), board independence (BINDEP), CEO duality (CEODUA), company age (LNAG), underwriter's reputation (UNDERQ), audit quality (AUDITQ), technology industry (HITECH), company size (LNSALES) and pre-IPO performance (Z-SCOREDM). The relationships of all the variables are examined using OLS regression and QR technique. The use of the QR technique addresses the non-normality of the IPO initial returns (see Table 2), as the traditional technique may not be able to capture the extreme upper or lower tails (Badru et al., 2017a; Koenker and Bassett, 1978; Raji et al., 2017). In addition, the Jarque-Bera normality test results show that the IPO initial returns data are not normally distributed ($\chi^2(2) = 17.96$ and $p\text{-value} = 0.00$). As such, the QR enables the study to provide a detailed and complete picture of the association between academic directors and other influential variables and IPO initial returns across quantiles. The quantile distributions are categorised into the low (.25),

medium (.50) and extreme (.75) quantile levels. By so doing, Model 1 estimates the OLS regression model, while Model 2 presents the QR model.

- Model 1

$$\begin{aligned} IRC_i = & \beta_0 + \beta_1 PROFDUM_i + \beta_2 PHD_i + \beta_3 LEC_i + \beta_4 LNBSIZE_i + \beta_5 BINDEP_i \\ & + \beta_6 CEODUA_i + \beta_7 LNAG_i + \beta_8 UNDERQ_i + \beta_9 AUDITQ_i + \beta_{10} HITECH_i \\ & + \beta_{11} LNSALES_i + \beta_{12} Z - SCOREDM_i + \varepsilon_i \end{aligned} \quad (1)$$

- Model 2

$$\begin{aligned} IRC_q = & \beta_{0q} + \beta_{1q} PROFDUM_i + \beta_{2q} PHD_i + \beta_{3q} LEC_i + \beta_{4q} LNBSIZE_i \\ & + \beta_{5q} BINDEP_i + \beta_{6q} CEODUA_i + \beta_{7q} LNAG_i + \beta_{8q} UNDERQ_i \\ & + \beta_{9q} AUDITQ_i + \beta_{10q} HITECH_i + \beta_{11q} LNSALES_i + \beta_{12q} Z - SCOREDM_i \\ & + \varepsilon_i \end{aligned} \quad (2)$$

where q indicates a quantile in the conditional distribution of initial returns. The $q(s)$ values are 0.25, 0.50 and 0.75.

In the estimated Models 1 and 2, IRC is IPO initial returns and this is calculated as:

$$IRC_{i,t} = \left(\frac{P_{i,t} - P_{i,0}}{P_{i,0}} \right) * 100 \quad (3)$$

where $IRC_{i,t}$ is the first closing day initial returns for company i on the first day of trading; $P_{i,t}$ is the closing price of company i at the end of the first day of listing; and $P_{i,0}$ is the offer price of company i at the time of issue.

PROFDUM is a binary number of 1 for IPO that has a professor on the board, and 0, if otherwise; PHD is the percentage of directors that have PhD qualification to total number of directors on the board at the time of IPO; LEC is the percentage of directors who were previously or presently lecturers at the time of IPO; BSIZE is the total number of directors on the board at the time of IPO; BINDEP represents the proportion of non-executive directors on the board to total number of directors on the board at the time of IPO; CEODUA is a dummy variable equal to 1 when the positions of chairperson and CEO are held by a single individual at the time of IPO; LNAG is the natural logarithm of one plus the company age in years measured as the year of establishment to listing date. UNDERQ represents a dummy variable equal to 1 if the IPO is certified by one of the top five reputable underwriters, and 0, if otherwise. The top five reputable underwriters are identified using the Megginson and Weiss's (1991) method of classifying reputable underwriters based on their market share. Therefore, the five reputable underwriters based on their market share in terms of IPO proceeds raised are CIMB, AM Merchant Bank, Affin/Hwang Investment Berhad, Maybank Securities and Alliance Merchant Bank. Similarly, AUDITQ is a dummy variable equal to 1 if the auditor who certifies the financial statement at the time of IPO belongs to the Big4 audit firms in Malaysia, and 0, if otherwise. The Big4 audit firms, as defined by Carlin et al. (2009) and Lee and Ali (2008) in Malaysia, include PricewaterhouseCoopers (PWC), Klynveld Peat Marwick Goerdeler (KPMG), Ernst & Young and DeloitteKassimChan. Other variables used in this study include HITECH, which represents a dummy variable of 1 for IPOs in the

technology industry, and 0, if otherwise. LNSALES is the natural logarithm of the pre-IPO sales and finally, the Z-SCORE is estimated as follows:

$$Z_i = 0.717X_{1i} + 0.847X_{2i} + 3.107X_{3i} + 0.420X_{4i} + 0.998X_{5i} \quad (4)$$

where Z is the overall financial performance of the company; X_1 represents the net assets of the company's liquidity relative to total assets, which is calculated as current assets minus current liabilities scaled by total assets; X_2 represents the total amount of reinvested earnings calculated as retained earnings scaled by total assets; X_3 represents the productivity of the company's assets calculated as earnings before interest and taxes divided by total assets; X_4 represents the gearing capacity of the company calculated as book value of equity scaled by book value of liabilities; and X_5 represents income generating ability and management capacity in dealing with competitive conditions. This is calculated as sales divided by total assets.

4 Empirical results

4.1 Descriptive statistics

Table 1 presents the descriptive statistics of initial returns data across years of listing. The mean (median) level of IPO initial returns varies over the years. For the total sample period, the mean (median) is 6.94% (4.55%). The mean (median) level of IPO initial returns found in this study is lower than IPO initial returns reported by prior IPO studies in Malaysia. For example, Ammer and Ahmad-Zaluki (2016) report a mean (median) level of initial returns of 21.22% (12.92%), Rashid et al. (2014) document average initial returns of 29.44% and Yatim (2011) reports mean (median) level of initial returns as 28.37% (17.50%).

Table 1 Distribution of IPO initial returns for a sample of 208 IPOs

<i>Year</i>	<i>N</i>	<i>Min</i>	<i>Mean</i>	<i>Median</i>	<i>Maximum</i>	<i>Std. dev.</i>
2005	54	-66.67	3.63	0.00	86.76	33.98
2006	30	-78.44	8.63	14.47	41.95	26.75
2007	18	-42.73	14.17	14.15	70.34	29.13
2008	18	-70.69	-18.99	-16.00	5.52	21.57
2009	11	-10.00	14.13	10.77	61.11	20.56
2010	21	-13.28	2.99	0.91	30.00	10.97
2011	16	-48.39	14.70	7.95	96.67	33.19
2012	10	-15.00	3.55	1.69	23.61	12.43
2013	12	-13.79	21.30	14.50	76.00	24.98
2014	10	-25.38	12.44	7.71	55.20	19.87
2015	8	-0.55	31.24	28.93	93.33	30.17
2005–2015	208	-78.44	6.94	4.55	96.67	28.52

However, the mean initial returns found in the study is comparable to initial returns reported in advanced markets, like the US, which is between 10% and 25% (e.g., Boulton et al., 2011; Engelen and van Essen, 2010) and France, whose mean (median) level of

IPO initial returns is 6.7% (5.00%) (Chiraz and Jarboui, 2016). This indicates that Malaysian IPOs are gradually moving towards an efficient market. In addition, the greatest level of IPO initial returns was experienced in 2013 and 2015, which is between 21.30% and 31.24%, respectively. On the other hand, there was presence of overpricing in the year 2008, which indicates that prospective investors achieved no positive initial returns in 2008 (-18.99). This suggests that the financial contagion of the 2008 global financial crises was reflected in the Malaysian IPO market. This caused a fall in equity prices and a negative investment environment. Hence, there is a strong correlation between the changes in share prices of IPO companies and the global financial crisis.

In Table 2, the summary statistics of all variables used in the study are presented. Similar to Yatim (2011) who presents a mean (maximum) board size of 7 (16), the mean (maximum) number of directors on the board at the time of IPO is 6.85 (13.00). Compared to Yatim (2011) who shows that the mean (maximum) proportion of non-executive directors is 53% (100%), the mean (maximum) proportion of non-executive directors on the board of IPO companies at the time of IPO in Malaysia is 60.84% (100%). This result is slightly similar to the mean proportion of non-executive directors of mature companies, which is 63% as reported by Yatim et al. (2006). The difference occurs because the proportion of board independence increases over time as the company becomes a listed company. By implication, the agency's cost of equity for IPO companies is likely to increase over time in case there is no monitoring provided by alternative governance mechanisms (Yatim, 2011).

The mean (maximum) proportion of directors with PhD qualification is 5.71% (37.50%), while that of academic directors is 4.83% (60%). In addition, the mean (maximum) age that a company issues an IPO is approximately six years (38 years). Similarly, the mean (1.99) pre-IPO financial performance is above the standard rule of Altman (2000) Z-score model, which is 1.23. The mean (maximum) value for the total sales is RM 222.15 million (RM 7,474.85 million).

Further statistics in Panel B indicates that the mean of underwriter's reputation and audit quality is 43.27% and 40.87%, respectively. This shows that less than half of the IPOs are underwritten by reputable underwriters and have their financial statement audited by Big Four audit firms. CEO duality and presence of professors on the board have mean of 25% and 10%, respectively. By implication, 75% of the IPOs in the sample period have the role of CEO/chairperson separated, a result that is slightly higher than that reported by Yatim (2011). The low percentage of companies that have an individual holding the position of CEO and Chairperson implies that the separation of the two positions is prevalent in the Malaysian IPO market. This increases the monitoring capacity of the board to constrain management rent seeking behaviour and managerial opportunism (Dowell et al., 2011).

4.2 Correlation analysis

The result of the correlation analysis presented in Table 3 indicates that two variables (HITECH and CEODUA) are significantly and negatively correlated with IPO initial returns at 5% and 1%, respectively, suggesting that IPOs that belong to the technology industry are less likely to experience higher initial returns. This type of IPO is characterised by low pre-IPO financial performance (Z-SCOREDM), smaller company size (LNSALES), smaller board size (BSIZE), lower proportion of non-executive

directors (BINDEP) and with CEO duality (CEODUA). In addition, the negative correlation between CEODUA and IPO initial returns implies that companies with the same individual holding the position of chairperson and CEO of the company are less likely to experience higher initial returns. This evidence supports Certo et al.'s (2001) argument that investors value CEO duality as a positive signal that reduces the uncertainties surrounding the intrinsic value of the company shares, especially IPO companies that are mostly growth-oriented with uncertain future cash flow streams. Notably, the proportion of non-executive directors and the number of directors on the board of companies at the time of IPO are positively correlated to company size. Similarly, the likelihood of having the presence of a professor (PROFDUM) on the board correlates with the proportion of PhD holders (PhD) and academic directors (LEC) on the board of IPO companies. Although these variables (PROFDUM, PhD and LEC) are insignificantly correlated with IPO initial returns, they all display negative correlation with IPO initial returns.

In addition to the correlation results, a paired t-test of differences is conducted to test whether there is a significant difference in IPO initial returns of companies with academic directors and those without academic directors.² Based on the independent sample t-test, the results show that average initial returns (0.93) of IPOs with academic directors is significantly lower than average initial returns (8.80) of IPOs without academic directors (t-value = 1.71). This indicates that academic directors can better serve as a signal of IPO quality, thereby leading to lower IPO initial returns.

4.3 Regression results

Before embarking on the regression analysis presented in Table 5, the study tests for the presence of multicollinearity among the variables. Based on the variance inflation factors (VIFs) presented in Table 5, the VIF results indicate that multicollinearity is not an issue in the study as most of the variables have VIFs below two, which is lower than the critical value of 10 (Tabachnick and Fidell, 1996).

Table 5 provides the results of the OLS and the QR analysis on the association between initial returns and all explanatory variables. Based on the OLS results as shown in column two, only CEO duality is negatively and significantly (at 1% level) associated with IPO initial returns, while other variables are found to be insignificantly associated with IPO initial returns. However, when the QR is applied to test the association between all the explanatory variables and IPO initial returns, some level of significant associations are established. This provides that if not for QR, other variables would have been reported to be insignificantly associated with IPO initial returns.

Detailed results presented in Table 5, in columns 3, 4 and 5, show that the signs of technology IPOs and company size change in the lower (.25th) and upper quantile (.75th) levels of IPO initial returns. In the lower quantile, technology IPOs are negatively associated with IPO initial returns at the 1% significance level, whereas in the upper quantile, a significantly positive association is presented. The significantly positive association reflects the assertion of ex-ante uncertainty hypothesis by Beatty and Ritter (1986), that technology IPOs are characterised by a greater degree of uncertainty because of uncertain future cash flow streams from investment in growth opportunities, which makes the valuation of technology IPOs more complex. As a result, issuers try to compensate prospective investors with high initial returns on the first trading day by

setting a lower offer price in order to encourage them to subscribe to the companies' shares.

Table 2 Descriptive statistics of all research variables

<i>Panel A: continuous variables</i>							
<i>Variable</i>	<i>Min</i>	<i>Mean</i>	<i>Median</i>	<i>Maximum</i>	<i>Std. dev.</i>	<i>Skewness</i>	<i>Kurtosis</i>
IRC	-78.44	6.94	4.38	96.67	28.59	0.30	4.31
AG	1.30	5.92	3.00	38.00	6.80	2.57	9.80
LNAG	0.26	1.39	1.10	3.64	0.79	1.09	3.17
Z_SCORE	0.18	1.99	1.82	6.71	0.98	1.06	5.41
TS (in millions)	1.17	222.15	53.73	7474.85	756.80	7.06	57.99
LNTS	14.37	17.81	17.79	22.73	1.53	0.32	3.31
BSIZE	4.00	6.85	7.00	13.00	1.53	0.90	4.33
LNBSIZE	1.37	1.90	1.95	2.56	0.22	0.20	3.11
BINDEP	2.00	4.20	4.00	13.00	1.86	1.37	5.40
BINDEP (in %)	33.33	60.84	57.14	100.00	0.20	0.62	2.36
PhD (in %)	0.00	5.71	0.00	37.50	0.09	1.41	3.98
LEC (in %)	0.00	4.83	0.00	60.00	0.10	2.42	9.60
<i>Panel B: dichotomous variables</i>							
<i>Variables</i>	<i>1</i>	<i>%</i>	<i>0</i>	<i>%</i>			
PROFDUM	21	10.10	187	89.90			
CEODUA	52	25.00	156	75.00			
UNDERQ	90	43.27	118	56.73			
AUDITQ	85	40.87	123	59.13			
HITECH	53	25.48	155	74.52			
Z-SCOREDM	50	24.04	158	75.96			

Notes: IRC represents initial returns. AG represents the company age, measured as the year of establishment to listing date, while LNAG is the natural logarithm of one plus the company age in years. Z-SCORE is the continuous value derived from Altman Z-score model in model 4. TS represent the company size, which is measured by pre-IPO sales, while LNTS is the natural logarithm of pre-IPO sales. BSIZE represents board size, which is the total number of directors on the board at the time of IPO, while LNBSIZE is the natural logarithm of BSIZE. BINDEP represents board independence, measured as the proportion of non-executive directors on board to total number of directors. PhD is the proportion of directors that have PhD qualification to total number of directors. LEC represents academic directors, measured as the percentage of directors that were previously or presently lecturers at the time of IPO. PROFDUM is a binary number of 1 for IPO that has a professor on board, and otherwise, 0. CEODUA is a dummy variable equal to 1 when the positions of chairperson and CEO are held by a single individual at the time of IPO, and otherwise, 0. UNDERQ represents a dummy variable equal to 1 for reputable underwriter, and otherwise, 0. AUDITQ is a dummy variable equal to 1 for reputable audit firm, and otherwise, 0. HITECH represents a dummy variable of 1 for IPOs in the technology industry, and otherwise, 0. Z-SCOREDM represents a binary figure of 1 for IPOs with Altman Z-score value less than 1.23, and otherwise, 0. IPOs given the value of 1 are considered as companies with weak pre-IPO financial performance.

Table 3 Correlation results

<i>Variables</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
IRC(1)	1.00												
HITECH(2)	-0.14**	1.00											
LNTS(3)	0.15**	-0.53***	1.00										
LNAG(4)	0.03	-0.16**	0.28***	1.00									
UNDERQ(5)	-0.07	-0.13*	0.23***	0.16**	1.00								
AUDITQ(6)	0.06	-0.10	0.24***	0.07	0.08	1.00							
Z-SCOREDM(7)	-0.07	-0.20***	0.12*	0.18***	0.14**	0.24***	1.00						
LNBSIZE(8)	-0.03	-0.16**	0.29***	0.19***	0.19***	0.21***	0.04	1.00					
BINDEP(9)	0.01	-0.17**	0.29***	0.18***	0.14**	0.10	0.21***	0.12*	1.00				
CEODUA(10)	-0.17**	0.15**	-0.26***	-0.15**	-0.10	0.02	-0.09	-0.14**	-0.26***	1.00			
PROFDUM(11)	-0.07	0.06	-0.09	-0.05	0.09	-0.02	0.07	0.14**	-0.06	0.10	1.00		
PhD(12)	-0.04	0.00	0.03	0.05	0.09	0.00	0.00	0.03	0.03	-0.01	0.42***	1.00	
LEC(13)	-0.10	0.10	-0.18***	-0.11	-0.15**	0.04	0.07	-0.06	-0.00	0.02	0.28***	0.42***	1.00

Notes: IRC represents IPO initial returns. HITECH represents a dummy variable of 1 for IPOs in the technology industry, and otherwise, 0. LNTS is the natural logarithm of the pre-IPO sales. LNAG is the natural logarithm of one plus the company age. UNDERQ is a dummy variable equal to 1 for reputable underwriter, and otherwise, 0. AUDITQ is a dummy variable equal to 1 for reputable audit firm, and otherwise, 0. Z-SCOREDM represents a binary figure of 1 for IPOs with Altman Z-score value less than 1.23, and otherwise, 0. Specifically, IPOs given the value of 1 are considered as companies with weak pre-IPO financial performance. LNBSIZE is the natural logarithm of the total number of directors on the board at the time of IPO. BINDEP is the proportion of non-executive directors on the board to total number of directors. CEODUA is a dummy variable equal to 1 when the positions of chairperson and CEO are held by a single individual at the time of IPO, and otherwise, 0. PROFDUM is a binary number of 1 for an IPO that has a professor on board, and otherwise, 0. PhD is the proportion of directors that have PhD qualification to total number of directors. LEC is the proportion of directors that were previously or presently lecturers in a university at the time of IPO. In addition, the statistical significance level of variables are represented as *, **, *** for 10, 5 and 1% levels, respectively.

Table 4 Paired t-test results on the comparison between IPOs with academic directors and IPOs without academic directors

<i>Grouping</i>	<i>Observations</i>	<i>Average initial returns (%)</i>
IPOs with academic directors	50	0.93
IPOs without academic directors	158	8.80
t-statistics/P-value	1.71/0.04	

As for company size, a significantly positive association at the 1% level of significance is reported at the lower quantile, while the association between company size and IPO initial returns is negative at the upper quantile level of IPO initial returns. The result implies that bigger companies experience less IPO initial returns because such IPOs are generally less risky and often characterised by a low degree of ex-ante uncertainty. This evidence is consistent with prior IPO studies in the UK (Filatotchev and Bishop, 2002) and Arabian countries (Chahine and Tohmé, 2009) as well as Malaysia (Yatim, 2011) which have found that larger companies tend to have lower initial returns. However, unlike prior scholars who have documented a significantly negative association between company age and IPO initial returns (Chahine and Tohmé, 2009; Loughran and Ritter, 2004; Engelen and van Essen, 2010), the findings in this study indicate that company age is positively associated with IPO initial returns at the lower quantile level at the 10% level.

Interestingly, underwriter reputation and audit quality are significantly associated with IPO initial returns at the upper quantile level (.75). Specifically, a significantly negative association is found between underwriter reputation and IPO initial returns, while a significantly positive association is documented between audit firm reputation and IPO initial returns. The negative association between underwriter reputation and IPO initial returns is consistent with previous empirical literature, suggesting that underwriter reputation plays a significant role in mitigating information asymmetry between issuers and prospective investors (Beatty and Ritter, 1986; Darmadi and Gunawan, 2013). This result demonstrates that the signalling power of underwriter reputation exists in the Malaysian IPO market.

In contrast to Beatty (1989) and Titman and Trueman (1986), this study finds that signalling assertion of reputable audit firms (Big Four) plays a significant role in mitigating information asymmetry between issuers and prospective investors, hence leading to lower IPO initial returns. The significantly positive association recorded in this study implies that Big Four audit firms are associated with higher IPO initial returns in Malaysian IPO market. This implies that prospective investors view audited reports by reputable auditors' as a reflection of true and fair value, thereby increasing the demand of IPO and subsequently lead to an increase in closing price of the company shares that manifest in IPO initial returns.

Furthermore, pre-IPO performance is significantly and negatively associated with IPO initial returns at the 5% level of significance at the upper quantile level (.75th), indicating that companies with low pre-IPO performance experience less IPO initial returns. This means that investors in the Malaysian IPO market perceive low level of pre-IPO performance as a negative signal about company value, which may indicate that such IPOs are of low quality.

Table 5 OLS and QR results

<i>Variables</i>	<i>OLS</i>	<i>Quantile</i>			<i>VIF</i>
		<i>.25</i>	<i>.50</i>	<i>.75</i>	
HITECH	-0.07 (1.27)	-0.18 (5.43)***	-0.05 (0.85)	0.08 (2.16)**	1.45
LNTS	0.02 (0.94)	0.03 (2.73)***	0.00 (0.01)	-0.02 (1.77)*	1.80
LNAG	0.00 (0.15)	0.04 (1.87)*	0.02 (0.66)	-0.01 (0.61)	1.16
UNDERQ	-0.06 (1.49)	-0.03 (1.25)	-0.06 (1.35)	-0.07 (2.48)***	1.15
AUDITQ	0.05 (1.26)	0.04 (1.56)	0.00 (0.08)	0.07 (2.41)**	1.18
Z-SCOREDM	-0.07 (1.47)	-0.04 (1.10)	-0.00 (0.07)	-0.08 (2.25)**	1.20
LNBSIZE	-0.13 (1.26)	-0.10 (1.28)	-0.05 (0.44)	0.00 (0.05)	1.20
BINDEP	-0.06 (0.61)	-0.14 (2.13)**	-0.06 (0.51)	-0.06 (0.79)	1.19
CEODUA	-0.12 (2.48)***	-0.08 (2.82)***	-0.09 (1.80)*	-0.14 (4.17)***	1.15
PROFDUM	0.01 (0.20)	0.06 (1.22)	0.04 (0.49)	-0.06 (1.13)	1.34
PhD	-0.01(0.04)	-0.23 (1.39)	-0.22 (0.80)	0.35 (2.12)**	1.45
LEC	-0.26 (1.12)	0.07 (0.46)	-0.18 (0.72)	-0.44 (2.87)***	1.38
Constant	0.14 (0.41)	-0.35 (1.50)	0.22 (0.61)	0.67 (2.92)***	
Observation	208	208	208	208	
R ² %	9.07				
Adjust. R ² %	3.48				
Pseudo R ² %		13.25	2.62	6.09	
Mean VIF					1.30
Ramsey test/_hatsq	0.46/0.53				

Notes: IRC represents IPO initial returns. HITECH represents a dummy variable of 1 for IPOs in the technology industry, and otherwise, 0. LNTS is the natural logarithm of the pre-IPO sales. LNAG is the natural logarithm of one plus the company age. UNDERQ is a dummy variable equal to 1 for reputable underwriter, and otherwise, 0. AUDITQ is a dummy variable equal to 1 for reputable audit firm, and otherwise, 0. Z-SCOREDM represents a binary figure of 1 for IPOs with Altman Z-score value less than 1.23, and otherwise, 0. Specifically, IPOs given the value of 1 are considered as companies with weak pre-IPO financial performance. LNBSIZE is the natural logarithm of the total number of directors on the board at the time of IPO. BINDEP is the proportion of non-executive directors on the board to total number of directors. CEODUA is a dummy variable equal to 1 when the positions of chairperson and CEO are held by a single individual at the time of IPO, and otherwise, 0. PROFDUM is a binary number of 1 for an IPO that has a professor on board, and otherwise, 0. PhD is the proportion of directors who have PhD qualification to total number of directors. LEC is the proportion of directors who were previously or presently lecturers in a university at the time of IPO. In addition, the statistical significance level of variables are represented as *, **, *** for 10, 5 and 1% levels, respectively. The figures in parenthesis are the t-statistics, while figures out of parenthesis are the coefficient values.

Moving to the board characteristic variables, board size is found to be insignificantly associated with IPO initial returns, suggesting that the number of directors on the board at the time of the IPO does not affect the initial returns attributable to IPOs on the first trading day. Nevertheless, the proportion of non-executive directors on the board at the time of the IPO is significantly and negatively associated with IPO initial returns in the lower quantile level (.25th) at the 5% significance level. This indicates that IPOs with a greater proportion of non-executive directors on the board, which is an indication of board independence, experience low IPO initial returns. This evidence is consistent with prior studies that have used a sample of French (Chahine and Filatotchev, 2008; Chiraz and Jarboui, 2016), Sub-Saharan African (Hearn, 2012), Taiwan (Lin and Chuang, 2011), UK (Filatotchev and Bishop, 2002) and USA (Dolvin and Kirby, 2016) IPOs. Thus, one can conclude that a greater proportion of non-executive directors on the board at IPO may help to reduce the information asymmetry between parties (the issuer and prospective investors) in the IPO process, thereby facilitating the reduction of investors' ex-ante uncertainty at the time of the IPO, subsequently affecting the pricing of the IPO positively.

Besides the proportion of non-executive directors on the board, which serves as an indication of board independence, CEO duality is also found to be significantly and negatively associated with IPO initial returns at the lower (.25th) and upper (.75th) quantile levels. By implication, IPOs with a single individual serving as the chairperson and CEO produce low initial returns. This means that the dual role during the IPO is viewed by investors as a positive signal of company value. In fact, some of the potential benefits of CEO duality that could have accounted for the negative association are:

- 1 The CEO may be the founder of the company who is likely to have deeper knowledge of the company (Dolvin and Kirby, 2016).
- 2 Having a single individual simultaneously holding the position of CEO and chairperson might increase the company's responsiveness, if agency problems can be kept in check and there is ability to secure critical resources (Pfeffer and Salancik, 1978).
- 3 CEO duality might also reflect investors' belief that a newly-listed or growth-oriented company is better served by an incumbent manager who happens to be familiar with the company and its growth opportunities (Yatim, 2011).

Therefore, considering the nature of IPO companies being young and mostly striving for market share, CEO duality is perhaps important and can act as a credible signal of future performance of the IPO companies.

With regards to the main explanatory variables, i.e., proportion of PhD holders, presence of professors on the board and academic directors' influence on IPO initial returns, Table 5 presents the existing relationships. From Table 5, the proportion of PhD holders on the board is significant (at the 5% level) and positively associated with IPO initial returns, while the presence of professors on the board at the time of IPO is insignificantly associated with IPO initial returns. However, the proportion of academic directors on the board at IPO is significantly (at 1% level) and negatively associated with IPO initial returns at the upper quantile level (.75th). This result suggests that the presence of academic intellectuals on the board signals the company's quality. Consistent with the signalling theory, academics are assumed to be better monitors who can mitigate

the level of information asymmetry and agency cost that may be present in the initial returns. Therefore, a board consisting of professionals, like academic directors, plays a better governance role between a company and its investors. This finding is consistent with Anderson et al.'s (2011) argument that investors place valuation premium on the heterogeneous nature of the board, such as educational qualification of directors, because such individuals have skills and experiences that would enhance the monitoring of the board. Other studies have also indicated that highly educated board directors complement corporate governance through their enhanced monitoring and advising functions (Haniffa and Cooke, 2002; Reeb and Zhao, 2013).

Similarly, in line with the legitimacy role of the board, higher educational qualification of directors is recognised as a signal of a company's legitimacy by improving board prestige (Certo, 2003; D'Aveni, 1990). In fact, when accessing external funds, legitimate companies may experience lower cost of capital (Wang et al., 2017). Francis et al. (2015) provide that academic directors have some unique characteristics (e.g., expertise, social connection, network and reputation), which can serve as a signal of board quality. On this note, one can relate the findings of the current study to the studies of Certo et al. (2001) and Filatotchev and Bishop (2002) that show a significantly negative association between initial returns and the reputation of the board members at the time of the IPO. This can simply imply that the resource-dependence function of academic directors is crucial in an environment, like the IPO, where most companies at this stage are in search of innovation and growth activities.

For this reason, the need for a company to open up its boundaries to attain valuable knowledge and resources from the external environment is important. In fact, academicians can play a vital role in resource provision because universities are considered as important sources of innovation (Moon et al., 2017). A university is a source of technology transfer, R&D and innovation (Hamdan et al., 2011). Therefore, academic directors' presence on the board at the time of IPOs, can enhance the board's prestige and thus increase the company's reputation and legitimacy, the consequences of which can lead to better facilitation of resources needed for the company's survival and to further signal to potential investors that the company is worthy of investing and reducing IPO initial returns. The overall results suggest that academic directors and certain characteristics of the board of directors can act as credible signals of IPO companies' quality.

5 Conclusions

The study provides explanation on the influence of academic directors on IPO initial returns in the Malaysian IPO market, using a sample of IPOs issued between the period of 2005 and 2015. With the application of a more sophisticated regression technique (QR) in addition to the OLS, the results show that the proportion of academic directors on the board is significantly and negatively associated with IPO initial returns at the upper quantile level of IPO initial returns. This indicates that academic directors play an important signalling role that tends to reduce potential investors' uncertainty at the time of IPO and positively affects the pricing of the IPO, resulting in lower IPO initial returns.

Other board characteristic variables are also found to have a significant influence on IPO initial returns. These include CEO duality, which is negatively associated with IPO initial returns on average and in the lower and upper quantile levels, while proportion of

non-executive directors is significantly and negatively associated with IPO initial returns only in the lower quantile level. Therefore, this study presents that IPO companies can mitigate agency problems, uncertainty and associated cost of capital by advocating attributes and actions that would signal their quality to external investors. Such attributes, in particular, include having higher proportion of academic directors and non-executive directors on the board at the time of the IPO. Hence, potential investors can place greater value on academic directors in addition to other characteristics of the board as signals of a good quality company, which may reduce the level of information asymmetry and the degree of uncertainty surrounding the value of the company shares, thereby resulting in low level of IPO initial returns.

Other influential variables, like underwriter reputation, pre-IPO financial performance and company size are significantly and negatively associated with IPO initial returns. In particular, contrary to most studies on Malaysian IPO market that could not find an association between underwriter reputation and IPO initial returns, this study finds a significant and negative association between underwriter reputation and IPO initial returns. This suggests that underwriter reputation has a signalling role. These results can help academicians, issuers, investors and policymakers to identify the appropriate board structure that can reduce agency problems and uncertainties that manifest themselves in IPO underpricing. As for the IPO scholars, this study is an eye-opener that a link can be established between academic directors and IPO initial returns, which may imply that academic directors can be considered as a good signal of a company's quality. Similarly, issuers of IPOs can deem it fit to consider having university lecturers as academic directors on the board, when selecting individuals to be appointed to the board of IPO companies. Investors can also use academic directors as an investment screening criteria before making investment decisions. Likewise, market regulators can find it appropriate to introduce some corporate governance rules that would motivate companies to consider the inclusion of academic directors on the board, mostly of IPO companies. However, this study is not without some limitations. One of the limitations of this study is that the specialised skills and the gender composition of academic directors are not considered, whereas, this might have contributed to the significant influence of academic directors on IPO initial returns. For instance, Huang et al. (2016) suggest that accounting academics can contribute to the efficiency of the capital market. Therefore, future studies can investigate whether or not the specialisation and gender composition of academic directors contribute to the signalling role of academic directors on the board.

References

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Notes

- 1 The code sets out the broad principles and specific recommendations on structure and processes companies should adopt in creating a good corporate governance culture in their business dealings. It also encourages companies to put in place corporate disclosure policies that embody good disclosure.
- 2 The authors appreciate the anonymous reviewers for recommending this test.