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Board financial expertise and dividend-paying behavior of firms

New insights from the emerging equity markets of China and Pakistan

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Abstract

Purpose – Numerous researchers have developed theories and studies to uncover the issues pertinent to dividend policy dynamics, but it is still one of the unresolved problems of finance. The purpose of this paper is to focus on a new dimension, i.e., financial expertise on the corporate board for explaining the dividend policy dynamics in the emerging equity markets of China and Pakistan.

Design/methodology/approach – The study employs static (fixed effect (FE) and random effect (RE)) and dynamic models – two-step generalized method of moments (GMM) estimation techniques by Arellano and Bond (1991) and Arellano and Bover (1995) – during the timespan from 2009 to 2014. Further, this study re-estimated FE, RE and GMM two-step estimation techniques by excluding the non-dividend-paying companies, and also employed instrumental variable regression by using two instrumental variables – industry average financial expertise of the board and board size – as proxies for board financial expertise to control the possible endogeneity.

Findings – The study reveals that Chinese firms having more financial expertise on the board do not take dividends as a control mechanism (substitution hypothesis), while Pakistani firms support the complement hypothesis and use dividends as a control mechanism to mitigate agency conflict to protect shareholders' interests and keep additional funds from the manager's opportunism. Further robustness models also confirm the presence of a significant association between dividend policy and board financial expertise in both equity markets.

Originality/value – This study introduces the financial expertise on a board as a determinant of dividend policy. To the best of the authors' knowledge, no previous studies have focused on board-level financial expertise as a contributing factor toward dividend policy.

Keywords Dividend policy, Emerging market, Financial expertise, Board composition

Paper type Research paper

1. Introduction

Dividend policy behavior is at the core of finance theories and is still the most debatable and prominent issue in the corporate finance literature for both developed and developing markets. Numerous researchers have devised theories and studies to uncover the issues pertinent to dividend policy dynamics, but Black (1976) refers to the dividend as a puzzle. Brealey and Myers (2005) argue that the dividend is among the top ten unresolved problems of finance. Lintner (1956) proposes the dividend partial adjustment model and suggests that current year profits and previous year dividends are the only two contributing factors for a



firm's dividend. Later, many researchers introduced their works to suggest the key factors that drive a firm's dividend policy.

A plethora of literature identifies debt financing, earning measures, free cash flows, firm growth, investment opportunities, firm size, large shareholders, firm risk level, etc., as potential contributors for determining a firm's dividend policy for both developed and developing markets (Bhattacharya, 1979; Ho, 2003; Kale and Noe, 1990; Charitou, 2000; Al-Malkawi, 2007; Anil and Kapoor, 2008; Juma'h and Pacheco, 2008; Ahmed and Javid, 2009; Ramli, 2010; Mehrani *et al.*, 2011; Al-Shabibi and Ramesh, 2011; Hashemi and Zadeh, 2012; Appannan and Sim, 2011). In addition to these factors, researchers have also identified board size, board composition, board independence, board gender, ownership concentration, outside directors, audit type, CEO power, institutional ownership, investor protection and shareholder rights as the key determinants of dividend policy under the umbrella of corporate governance (Adjaoud and Ben-Amar, 2010; Abor and Fiador, 2013; Setia-Atmaja, 2010; Erol and Tirtiroglu, 2011; Al-Shabibi and Ramesh, 2011; La Porta *et al.*, 2000). The literature on dividend policy is too extensive to survey here, but Baker *et al.* (2011) argue that dividend policy still vexes financial economists. Despite the ample literature published on the dividend behavior of firms, there is still room to understand what factors drive the dividend pay-out decision.

This study focuses on a new dimension, i.e., financial expertise on the board, to explain the dividend policy dynamics in emerging markets. This study is motivated by the following two reasons: first, the confidence of shareholders has been shaken by various accounting scandals and financial crises since the 1990s, such as Enron, HealthSouth, Tyco, WorldCom and the financial crisis of 2007-2008, which has stressed the regulators and market makers to the need for board members to have financial expertise. Kirkpatrick (2009) and Walker (2009) argue that the lack of financial expertise on corporate boards played a major role during the financial crisis. Therefore, the presence of more financial expertise on a board ultimately influences the board's decisions, including dividend policy. Having financial expertise on the board will keep them from being accused of failure in their watchdog role and will better serve the shareholders' interests. Second, there is a growing body of literature on how financial expertise on boards improves the board's efficiency (Karamanou and Vafeas, 2005; Agrawal and Chadha, 2005; Krishnan, 2005; Beasley, 1996; Dechow *et al.*, 1996; Anderson *et al.*, 2004), leads to better corporate practices (Krishnan, 2005; Robinson *et al.*, 2012) and improves firm performance (Dionne and Triki, 2005; Francis *et al.*, 2012; Fernandes and Fich, 2013). Therefore, given the significance of financial expertise of board members, there is a need to analyze how the financial expertise on a board affects the dividend policy, which is considered an important factor in mitigating agency conflict and improving corporate governance.

This study introduces the financial expertise on a board as a determinant of dividend policy. To the best of our knowledge, no previous studies have focused on board-level financial expertise as a contributing factor toward dividend policy. This study answers whether the proportion of financial expertise on a board affects the corporate dividend policy for the emerging markets of China and Pakistan. For this purpose, we selected 561 and 165 non-financial listed firms from the equity markets of China and Pakistan, respectively. This study estimates the results in both static and dynamic panel settings using fixed effect (FE), random effect (RE) and two-step generalized method of moments estimation techniques by Arellano and Bond (1991) and Arellano and Bover (1995). For robustness purposes, we re-estimate the regression model for dividend-paying firms and employed the instrument variable approach to control the possible endogeneity. The result reveals that financial expertise on a board has a negative influence on the dividend yield (*DY*) in the Chinese equity market, while it has a positive influence on the *DY* in the

emerging equity market of Pakistan. In addition to other control factors, return on asset, market-to-book value of equity and market return also contribute toward DY in both emerging equity markets.

This study contributes by documenting board financial expertise as one potential determinant of dividend behavior to improve corporate governance. However, Chinese firms support the substitution hypothesis, considering firms having more financial expertise on a board do not take dividends as a control mechanism because of the cost associated with dividend payments and the cost of forgone positive net present value (NPV) projects. Conversely, Pakistani firms support the compliment hypothesis and use dividends as control mechanism to mitigate agency conflict to protect shareholder interests and to keep additional funds from the manager's opportunistic behavior (La Porta *et al.*, 2000). Therefore, the study contributes to the existing literature by documenting that the presence of financial expertise on a corporate board affects real corporate policies such as dividend policy, but it is only meant for the accuracy of financial reporting in emerging markets.

The rest of paper is organized as follows: Section 2 describes the theoretical framework and hypothesis development of the study, Section 3 discusses the sample countries, and financial expertise requirements in the emerging equity markets of China and Pakistan, Section 4 is about the data and empirical methods, Section 5 reveals the empirical findings and Section 6 provides the conclusion, which is followed by the limitations of study.

2. Theoretical framework and hypothesis development

Many economists have been captivated by corporate dividend policy behavior because of several market imperfections that exist: information asymmetry, agency conflict among managers and shareholder leads to agency cost, bankruptcy, clientele effect and financial distress. Therefore, many arguments have bearing on the issues pertaining to dividend decisions. However, the dividend puzzle still needs to be resolved. The next section includes the discussion of the conceptual framework and hypothesis of the study.

2.1 Financial expertise of corporate board

Generally, companies prefer to have more financial experts on the corporate board, but this demand for financial experts on the board increased after the Sarbanes-Oxley Act (SOX) of 2002. Expertise can be defined as "skillfulness by virtue of processing special knowledge." It is evaluated based on standards discussing the aptitude to perform a task. The corporate governance reports of CalPERS in 1997, Blue Ribbon Commission report in 1998, SOX in 2002 and NYSE in 2004 also suggest some guidelines regarding the expertise of board members. These reports were issued in response to various accounting scandals that have occurred since the 1990s, such as Enron, HealthSouth, Tyco, WorldCom and different financial crises. Reports further include the significance of financial expertise of directors in performing their central function of monitoring the firm's financial performance. According to the SOX (Section 407), a financial expert is a person who has experience in accounting or finance or has supervisory expertise. DeFond *et al.* (2005) and Krishnan and Visvanathan (2008) use SOX of 2002 to explain financial expertise.

The relationship between board financial expertise and firm performance is studied by researchers, such as Booth and Deli (1999), Francis *et al.* (2012) and Francis *et al.* (2012). The financial expertise of board members lessens the problems of internal control and reporting restatements (Benston and Hartgraves, 2002; Krishnan, 2005; Agrawal and Chadha, 2005); additionally, it affects a firm's investment (Güner *et al.*, 2008), taxes (Robinson *et al.*, 2012), hedging (Dionne and Triki, 2005) and earning management (Karamanou and Vafeas, 2005). Furthermore, there is extensive literature on corporate governance and board of directors of firms (Shleifer and Vishny, 1997; Daily *et al.*, 2003).

Johnson *et al.* (1996) categorize a board's role into three broadly defined roles, i.e., control, services and resource dependence roles. Under the control role, directors monitor the managers as the shareholders' trustee (Fama, 1980; Jensen, 1993), and Boone *et al.* (2007) term the role as the "monitoring hypothesis." Lorsch and MacIver (1989) document that service roles entail directors to counsel and advise the CEO, and as per Mintzberg (1983), it is one of the prevailing functions that the directors perform. The resource dependence role views the board as an open channel to facilitate management to access critical resources (Pfeffer and Salancik, 1978). These three explicit roles of the board are not mutually exclusive and are reinforced by the presence of financial expertise. The presence of board members with financial expertise will likely be more critical in analyzing a firm's financial reporting and to advise managers in the financial announcement strategy, and financial expertise on the board will reassure potential investors and creditors, which would make it easier to attract financial resources.

2.2 Board financial expertise and dividend policy

Dividend policy is one of the firm's major financial decisions primarily taken by the board of directors. Rozeff (1982) documents that the agency cost is a potential driver of dividend policy and argues that firm managers are in favor of retaining more cash to reduce dividends and to avoid costly external financing. Due to the separation of ownership and control, managers are not always in favor of approving dividend payments for maximizing the value for shareholders rather than their own benefits of wealth maximization. Shareholders prefer dividend payments over retaining earnings because inside managers may squander cash retained within firms. Dividend payment can be an area of conflict between these two conflicting groups within the firm (White, 1996).

Baker (2009) documents that in the agency problem framework, certain firm characteristics can affect the dividend expectation behavior of owners (outside shareholders). If firms have strong corporate governance and good investment opportunities, then managers are less pressured to pay a dividend, and shareholders are satisfied with cash squandering because of the non-availability of extra cash. Agency cost arises due to imperfect agency assumptions, such as the cost of monitoring managers, and the risk aversion behavior of managers. Monitoring managers is even more costly in the presence of a wide ownership base in firms. Monitoring shareholders must bear the cost, and other shareholders enjoy the benefits at their cost. Thus, shareholders prefer external managers to monitor the firm's agents (managers) and to use dividend payments as the control mechanism. Dividend payments as the control mechanism subjects a firm to more frequent monitoring by capital markets, and managers dislike this approach because of the frequent monitoring by primary markets.

Another agency cost that occurs because of the imperfect agency assumption is the risk averse behavior of managers. Because their wealth is entwined with the firm's, they may be unwilling to take risky projects that maximize the shareholder wealth. Returns would be lower if they continue to invest in less risky projects and managers could decrease the firm risk by decreasing the debt-equity ratio and relying on internally generated funds that could transfer the wealth of shareholders to bondholders. This risk averse approach of managers gives undue benefit to bondholders because firms have already scheduled a high-risk level payoff structure for them (Easterbrook, 1984). The risk-taking behavior of managers would be reflected in new security prices because their risk-taking behavior is evaluated by stock underwrites or lenders, while issuing new security in market by taking services of a financial intermediary, such as investment bankers. This type of manager would dislike the payment of dividends.

To combat the agency conflict, dividend payouts are argued to reduce the level of free cash flow available to managers for their own personal wealth maximization rather than the maximization of shareholder wealth (Jensen, 1986; DeAngelo *et al.*, 2006). Firms that have

better corporate governance incur fewer agency conflicts because firm managers are unlikely to adopt a suboptimal dividend pay-out policy to safeguard the shareholder interests. Therefore, corporate governance quality has an impact on the dividend policy. This link has been widely examined by researchers, but mixed evidence has been found.

In general, for the cross-country analysis, La Porta *et al.* (2000) document that strong corporate governance is associated with high dividend payments, whereas the country-specific sample from US results are opposite (John and Knyazeva, 2006). Further, La Porta *et al.* (2000) provide evidence that dividends are higher in firms with strong investor protection by using country-specific minority shareholders protection and the legal regime index. The theory behind higher dividends is that minority shareholders have legal support and they can take certain actions, such as voting out ineffective managers or forcing managers to pay extra cash as dividends. For the US country-specific sample, John and Knyazeva (2006) found a negative association because dividends are costly and better corporate governance lowers agency costs associated with free cash flows. Dividends are considered costly because they not only impose taxes on dividend-paying firms, but there is also the cost of forgone positive NPV projects. Jo and Pan (2009) showed that firms with stronger governance are less likely to pay dividends. Jo and Pan (2009) find an inverse relationship between dividends and governance quality. Agrawal and Nasser (2012) also find a negative relationship between DY and the presence of a block holder on the board.

A significant association between board financial expertise and dividend pay-out policy is expected because both board characteristics and dividend pay-out help firms in mitigating agency conflict. Similarly, the financial expertise of the board can serve as control mechanism because their presence on the board will be more critical in analyzing firm financial reporting to accentuate the board's monitoring role. However, the direction of the underlying theoretical relationship is not clear because board financial expertise and dividend pay-out policy can either be substitutes or complements.

The substitution hypothesis claims that dividend pay-out can be used as a control mechanism. Firms with strong governance are less likely to pay dividends as a device for mitigating agency conflicts. Dividends are considered costly due to the imposition of taxes on dividend-paying firms and due to the cost of forgone positive NPV projects (John and Knyazeva, 2006; Jiraporn *et al.*, 2011). Therefore, firms having strong governance are less likely to pay dividends, and a negative relationship is predicted between board financial expertise and dividend pay-out. Despite considering dividend payment as a control mechanism, they can monitor cash management and the risk-taking behavior of managers. In contrast to the substitution hypothesis, the outcome hypothesis argues that corporate governance and dividend pay-out are complements. La Porta *et al.* (2000) indicate that a firm with better corporate governance will protect their shareholders, which forces the managers to pay dividends to increase shareholder wealth rather than using cash for their own personal benefits. Therefore, firms with better governance are more likely to pay dividends, and a positive relationship between board financial expertise and dividend pay-out is predicted.

A recent group of studies focused on the board-level financial expertise from the outcry of many accounting scandals occurring since the 1990s, and few researchers have investigated board-level financial expertise and as per the researchers' knowledge, no previous researchers have focused on the board-level financial expertise as one of the contributing factors for dividend policy. To analyze the financial expertise impact on dividend policy, we develop the following hypothesis:

H_0 . Financial expertise of a board is positively related to dividend payments.

H_{11} . Financial expertise of a board is negatively related to dividend payments.

3. Two rising power of Asia – China and Pakistan

Our selection of equity market of two emerging Asian countries is motivated due to following reasons. First, unlike worldwide practices, there exist no legal requirement demanding a financial expert on the corporate board of firms in the emerging Asian equity markets of China and Pakistan. However, there exist a legal requirement to have a minimum of one member with finance or accounting degree in the audit committee in both neighboring countries. The SOX of 2002 has stressed the need of financial literacy, and most of the major developed markets have introduced listing requirement for the financial expertise of board. The corporate governance code in China and Pakistan provide guidelines regarding the number of board members, board meeting, controlled shareholdings, independence of non-executive directors and minority shareholders. Nevertheless, in the emerging markets of China and Pakistan, there is no corporate governance code that governs the financial literacy or minimum number of financial expertise on board. It makes us more prudent about the need and potential role of more financial expertise on board to help understand both policy makers and corporate governance evaluators to consider board member financial expertise as the determinant of better corporate governance. The Organization for Economic Cooperation and Development (2011) reported that Chinese listed companies have developed their corporate governance system successfully, which is attributed to outstanding representatives of their enterprises. The development in corporate governance system has consolidated grounds for the Chinese capital market; strengthen its attractiveness; and given an effective boost to the steady and healthy development of the Chinese equity market. Therefore, it would be interesting to know about the board member financial expertise of China, and to make comparison with the neighbor emerging Asian country.

Secondly, the friendship between China and Pakistan has its own meanings and strengths (Rabbi, 2017). It started when Pakistan became the first Muslim country to accept People's Republic of China in 1950. Since then, Pakistan and China have strong bilateral relations, and signed a series of economic uplift agreement within the bilateral framework (Kataria and Naveed, 2014). Moreover, our choice of Chinese and Pakistani markets is also motivated due to vast multi-dimensional associations in the field of trade, investment, infrastructure and energy. The recent milestone achieved in bilateral framework is the construction of China-Pakistan Economic Corridor (CPEC). With the cost amounting up to USD75 billion, it is a 3,218-kilometer-long corridor residing a large number of agricultural projects, pipelines, highways, railways and massive energy projects. The idea of CPEC is inspired from the success achieved by One-Belt, One-Road initiative. The Pakistani Government came up with the proposition to use Chinese yuan as a currency to be exchanged for trade between the two countries, and Chinese were more than happy to accept. Since, trade on a massive scale was already taking place between the two countries, this new mono currency policy also result in increased and better cross-border investment opportunities. This would also help the investors to understand the role of financial expertise of board members toward the dividend-paying behavior of firms before making any investment or financing decision in two rising powers of Asia.

4. Data and research methodology

The initial sample of study consists of 955 Chinese and 384 Pakistani non-financial listed companies. The sample period spans from 2009 to 2014 on a yearly basis. The Chinese companies sampled are listed on the Shanghai and Shenzhen Stock Exchanges, while the Pakistani companies are listed on the Pakistan Stock Exchange. We have used the China Stock Market and Accounting Research (CSMAR) database for the data collection of Chinese companies, while Pakistani companies' data are collected from the Bloomberg database and the companies' annual reports. Since financial companies have different requirements for capital structure and profit, we have excluded the financial sector.

Additionally, the companies for which data were not available were excluded. Due to the exclusion of financial sector companies and the non-availability of board members profiles for targeted companies, complete data for 561 non-financial Chinese firms and 165 non-financial Pakistani firms are available for this study.

4.1 Empirical model

4.1.1 Board financial expertise and dividend policy. We measure the board financial expertise by considering the proportion of financial expertise on the corporate board of a company. The SOX of 2002, Section 407, defines a financial expert as a person who has an experience in accounting or finance or has supervisory expertise with financial responsibilities. Different researchers have used the SOX definition to define financial expertise (DeFond *et al.*, 2005; Krishnan and Visvanathan, 2008). This study classifies a financial expert as a person having degree in accounting, finance and economics or experience working as accountant, auditor, chief financial officer, finance manager, financial advisor or financial analyst in any financial or non-financial firm. For Chinese firms, the data for financial expertise on the corporate board are collected from the CSMAR database, including their educational background and work experience, and for Pakistani firms, the director's profile is available on the websites and annual reports of the companies, which include their educational background and work experience.

To econometrically analyze the relationship between the financial expertise of a board and the dividend policy, we estimate the following equation for both Chinese and Pakistani firms:

$$DY_{i,t} = \beta_0 + \beta_1 DY_{i,t-1} + \beta_2 FIN + \beta_3 LnTA + \beta_4 ROA + \beta_5 TAX + \beta_6 Leverage + \beta_7 RE + \beta_8 MBV + \beta_9 MarketReturn + \varepsilon_{i,t} \quad (1)$$

Here, $DY_{i,t}$, dividend yield; FIN , proportion of financial experts on board, $DY_{i,t-1}$, lagged dividend yield; $LnTA$, natural logarithm of total assets; ROA , net income/total assets ratio; Tax , income tax/total assets ratio; $Leverage$, total debt/total assets ratio; RE , retained earnings/total assets ratio; MBV , market-to-book value of equity; $MarketReturn$, yearly return on the main index of market in which companies are listed.

We use DY , i.e., dividend per share to share price ratio, instead of the pay-out ratio. This is mainly due to the negative earning values within the sample firms. Consistent with the literature, such as DeAngelo and Masulis (1980), Titman and Wessels (1988), Mehran (1992) and Petersen and Michael (2006), Naceur *et al.* (2006) and Jabbouri (2016), we use the firm size ($LnTA$), return on asset (company profitability), tax (tax efficiency), retained earnings, *leverage*, market-to-book value and market return as control variables for the dividend policy model of Chinese and Pakistani firms.

4.2 Econometric modeling

Broad available empirical work on the dividend policy is likely to suffer from two sources of inconsistency, i.e., endogeneity bias and the omitted variable issue. It is likely that a lagged dividend variable is correlated with the firm-specific characteristics and gives inconsistent and biased estimates by using OLS (Hsiao, 1986). By taking these two biases into consideration, this study first summarizes how these affect panel data estimators. In response to these biases, we also employed the GMM estimators. The GMM technique allows us to consider the dynamics of the dividend policy and address the potential problems arising from the use of panel data estimator techniques. The combination of cross-section and time-series data is more lucrative for non-financial firms because a firm's dividend policy varies over the time, and time-series data do provide more potential

information that possibly ignore in the cross-section data. Further, it takes into consideration the firm-specific effects and endogeneity of regressors. The following equation considers a basic regression model:

$$Y_{it} = \mathbf{Z}_i' \boldsymbol{\varphi} + \mathbf{X}_{it}' \boldsymbol{\delta} + e_{it} \quad (2)$$

Here \mathbf{X}_{it} contains M independent variables without any constant term. Totality of individual variables, group specific variables and constant term are enclosed in \mathbf{Z}_i . The study considers the two alternatives, namely, FE and RE.

4.2.1 FE. The least square estimator of $\boldsymbol{\delta}$ becomes inconsistent and biased only if \mathbf{Z}_i is unobserved and associated with \mathbf{X}_{it} . Therefore, Equation (2) takes the form:

$$Y_{it} = \varphi_i + \mathbf{X}_{it}' \boldsymbol{\delta} + e_{it} \quad (3)$$

The FE model assumes that constant term is group specific. Therefore, it estimates constant term for each group. Assume \mathbf{Y}_i and \mathbf{X}_i be Q observation for any i th unit, i represents a column of one having order $Q \times 1$, each φ_i is unknown parameters that need to be estimated, and \mathbf{e}_i shows the $Q \times 1$ matrix of error term, then we have:

$$Y_i = \mathbf{i}\varphi_i + \mathbf{X}_i\boldsymbol{\delta} + e_i \quad (4)$$

The matrix notation can be illustrated as follows:

$$\begin{bmatrix} Y_1 \\ Y_2 \\ \vdots \\ Y_m \end{bmatrix} = \begin{bmatrix} X_1 \\ X_2 \\ \vdots \\ X_m \end{bmatrix} \boldsymbol{\delta} + \begin{bmatrix} \mathbf{i} & 0 & \dots & 0 \\ 0 & \mathbf{i} & \dots & 0 \\ \vdots & \vdots & \vdots & 0 \\ 0 & 0 & \dots & \mathbf{i} \end{bmatrix} \begin{bmatrix} \varphi_1 \\ \varphi_2 \\ \vdots \\ \varphi_m \end{bmatrix} + \begin{bmatrix} e_1 \\ e_2 \\ \vdots \\ e_m \end{bmatrix}$$

Or:

$$Y = \begin{bmatrix} X & f_1 & f_2 & \dots & f_m \end{bmatrix} \begin{bmatrix} \boldsymbol{\delta} \\ \boldsymbol{\varphi} \end{bmatrix} + \mathbf{e}$$

Assuming the $mQ \times m$ matrix $\mathbf{D} = [f_1 \ f_2 \ \dots \ f_m]$ such that f_m depicts a dummy variable, then we arrive at the below FE model:

$$Y = \mathbf{X}\boldsymbol{\delta} + \mathbf{D}\boldsymbol{\varphi} + \mathbf{e} \quad (5)$$

Since Equation (5) uses dummy variables in order to allow for different constants for each group, therefore, it is also called least square dummy variable estimator.

4.2.2 RE. RE model considers the constant for each section as a random parameter as opposes in FE. If \mathbf{l}_i denotes any random parameters, then basic RE model can be written as:

$$Y_{it} = \mathbf{X}_{it}' (\boldsymbol{\delta} + \mathbf{l}_i) + (\varphi + \mu_i) + e_{it} \quad (6)$$

The potential problem in panel data analysis arises during the selection between FE and RE estimation. In fact, both of these estimations address one of the two potential reasons

of inconsistency. The endogeneity issue is addressed by introducing the instrumental variables in *RE* estimation but simultaneously it also assumes that there is no association among the individual firm's effect and exogenous variables. Whereas, the FE estimator fails to take into account the possible endogeneity of regressors but it deals successfully with the correlated effect issue. FE estimation comes with the inconsistent parameters because degree of association among time varying component of error term and lagged dependent variable in a finite dynamic panel model with fixed time effect T (Nickell, 1981).

Hausman's (1978) procedure is followed to select an appropriate model among FE and RE. We test the null hypothesis that there is no correlation between stochastic error term and the explanatory variable. Hausman's (1978) procedure can be considered as a distance measure between FE and RE model (Ahn and Moon, 2014). A greater value of Hausman's statistics lead toward the rejection of null hypothesis that *RE* model is consistent.

For this purpose, we use the following statistics:

$$H = \left(\hat{\beta}^{FE} - \hat{\beta}^{RE} \right) \left[\text{Var} \left(\hat{\beta}^{FE} \right) - \text{Var} \left(\hat{\beta}^{RE} \right) \right]^{-1} \left(\hat{\beta}^{FE} - \hat{\beta}^{RE} \right) \sim \chi^2(k)$$

The GMM technique allows us to consider the dynamics of the dividend policy and address potential problems, i.e. heteroscedasticity and endogeneity, arising from the use of panel data estimator techniques. We also apply the Wald test and endogeneity test for endogenous regressor for the vulnerability of the FE estimations. We use the Arellano and Bond (1991) and Arellano and Bover (1995) two-step estimation techniques, which uses lag dependent and explanatory variables as instruments by considering the dynamic nature of the dividend policy, and it also overcomes the issues of autocorrelations, multi-correlations, unobservable heterogeneity and endogeneity.

Arellano and Bond (1991) suggest the use of GMM in first difference when we have the panel data with limited years and considerable observations. This estimation removes the time variant \mathbf{u}_i and the instrumental variables make the equation more estimable:

$$\mathbf{y}_{it} - \mathbf{y}_{it-1} = \alpha_i(\mathbf{y}_{it-1} - \mathbf{y}_{it-2}) + \beta(\mathbf{x}_{it} - \mathbf{x}_{it-1}) + (\mathbf{u}_i - \mathbf{u}_i) + (\mathbf{v}_{it} - \mathbf{v}_{it-1})$$

In the first difference equation, variables with lagged values can be used as the instrument. Additionally, by allowing a possible correlation between x_{it} and v_{it} , only the lagged values dated $t-2$ and earlier will be used as instruments. This allows the endogeneity of regressors, as it is likely that shocks affecting dividend choices may also affect the exogenous variables. Meanwhile, a new bias is introduced that new error term $(\mathbf{v}_{it} - \mathbf{v}_{it-1})$ is correlated with the lagged dependent variable $(\mathbf{y}_{it-1} - \mathbf{y}_{it-2})$. By assuming that error terms are not auto-correlated and \mathbf{x}_{it} are weakly exogenous, Arellano and Bond (1991) propose the following conditions:

$$E(\mathbf{y}_{it-s}(\mathbf{v}_{it} - \mathbf{v}_{it-1})) = 0 \quad \text{for } t = 3, \dots, T \text{ and } s \geq 2$$

$$E(\mathbf{x}_{it-s}(\mathbf{v}_{it} - \mathbf{v}_{it-1})) = 0 \quad \text{for } t = 3, \dots, T \text{ and } s \geq 2$$

The two-step estimation technique is proposed by Arellano and Bond (1991) by taking the above moment conditions into consideration. Actually, the one-step GMM estimator is expected to assume that the disturbance term (v_{it}) is serially uncorrelated. By using the two-step estimator, we can obtain more asymptotical estimates by relaxing the independence and homoscedasticity assumptions (White, 1980). Briefly, GMM, by taking the one-step estimator

assumes homoscedastic errors, whereas in two-step estimations, errors estimated in the first-step are used to construct standard errors consistent with heteroscedasticity. However, by limiting the number of firms, we can reduce the asymptotic standard error bias associated with the two-step estimation.

5. Empirical findings

5.1 Board financial expertise in the emerging equity markets of China and Pakistan

Figure 1 shows the trend of financial expertise among directors across sectors of the equity market of China. We categorized the financial expertise of directors based on their financial qualification into five mutually exclusive groups, including a bachelor's degree in accounting and finance (A&F), a master's degree in A&F, a PHD, a professional certification (chartered accountant, certified financial analyst, association of chartered certified accountants, association of cost and management accountants, etc.), and directors with a law background (Legum Baccalaureus, Magister Legumes, etc.). The line graph of Figure 1 clearly shows that the majority of financial experts in the Chinese equity market hold the degree of master in A&F, which is followed by the professional certification. We also observe a relatively higher number of PhD degree holders than directors with a law background in the Chinese equity market. Figure 1 also depicts that the manufacturing sector holds the maximum number of financial experts as corporate board members in China. We also find a relatively lower figure of financial experts in the corporate board for the scientific research sector of the Chinese equity market. Appendix 2 (Figures A1-A5) rigorously depicts the decomposition of the financial expertise of corporate boards on the basis of their qualification in the Chinese equity market.

Figure 2 shows the compositions of financial expertise of corporate boards of the Chinese equity markets. We also decompose the financial expertise of directors based on their professional experience into five categories. As per our decomposition, a director is a financial expert if he works at any bank (public bank, private bank, investment bank, etc.), or holds a finance position, such as chief finance officer (CFO), or is the finance expert of non-financial (FENF) firms or belongs to academia i.e., professor of finance (PF) or he works as a professional investor, such as equity managers or hedge fund managers. The pie chart of Figure 2 clearly shows that 44.5 percent of the financial experts of the Chinese equity markets are the finance experts of non-financial firms. Interestingly, only 0.05 percent of financial experts on corporate boards are bankers. Similarly, the proportion of professors of finance, professional investors and chief finance officers are 20.9, 5.05 and 24.2 percent, respectively.

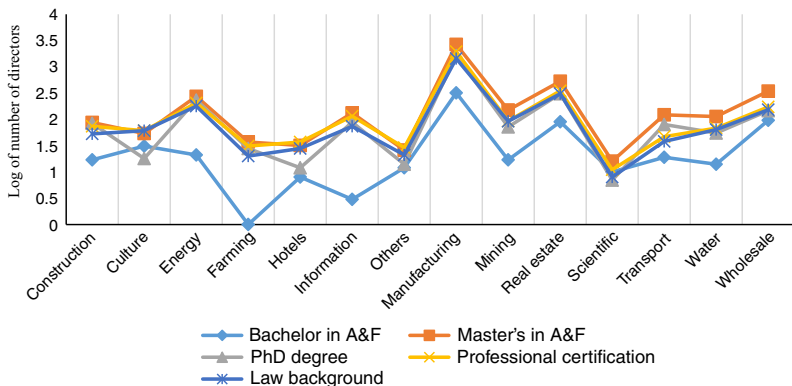


Figure 1. Trend of board financial expertise in the Chinese equity market

Board financial expertise

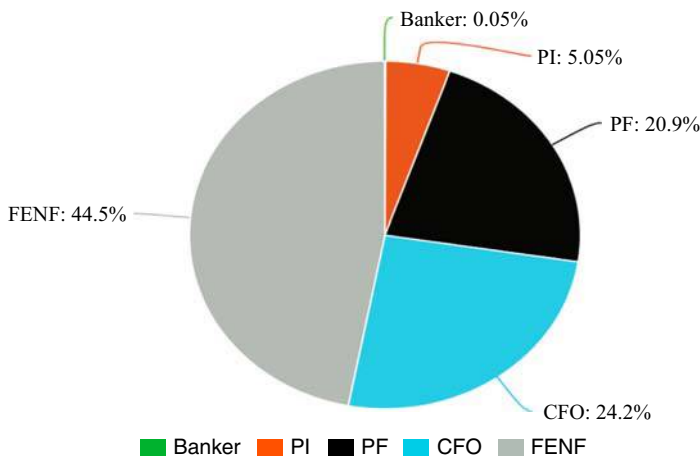


Figure 2. Decomposition of financial executives in the Chinese equity market

The line graph of Figure 3 clearly depicts that most financial experts hold a master's degree in A&F in the equity market of Pakistan. In addition to master's degree holders, Pakistani firms prefer to have a financial director with a professional certification in equity markets. However, firms also have directors with bachelor's degrees in A&F, law education and professors with PhD degrees in A&F. Textile, cement and sugar sectors have a greater number of financial experts on their board of directors. Appendix 2 (Figures A6-A10) rigorously depicts the decomposition of financial expertise of corporate boards based on their qualification across 11 sectors in the emerging equity market of Pakistan.

Figure 4 shows the compositions of financial expertise of corporate boards of the Pakistani equity markets. We also decompose the financial expertise of directors based on their professional experience into five categories. As per our decomposition, a director is a financial expert if he works at any bank (public bank, private bank, investment bank, etc.), or holds a finance position, such as chief finance officer, or FENF firms or belongs to academia, i.e., PF, or he works as a professional investor, such as equity managers or hedge fund managers. The pie chart of Figure 4 clearly shows that 66 percent of financial experts of the Pakistani equity markets are finance experts of non-financial firms. Interestingly, only 1.6 percent of financial experts on corporate boards belong to academia and are professors of finance. Similarly, the proportion of bankers, professional investors and chief finance officer are 15, 11 and 6.5 percent, respectively.

Table I reports the summary statistics of the proportion of financial expertise in the corporate board across 14 industries considered in the equity market of China. The mean,

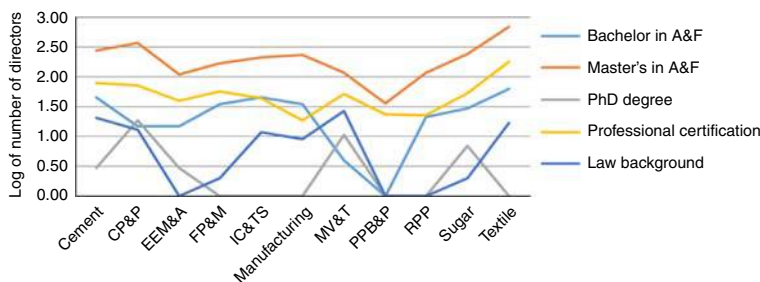


Figure 3. Trend of board financial expertise across different sectors in the Pakistani equity market

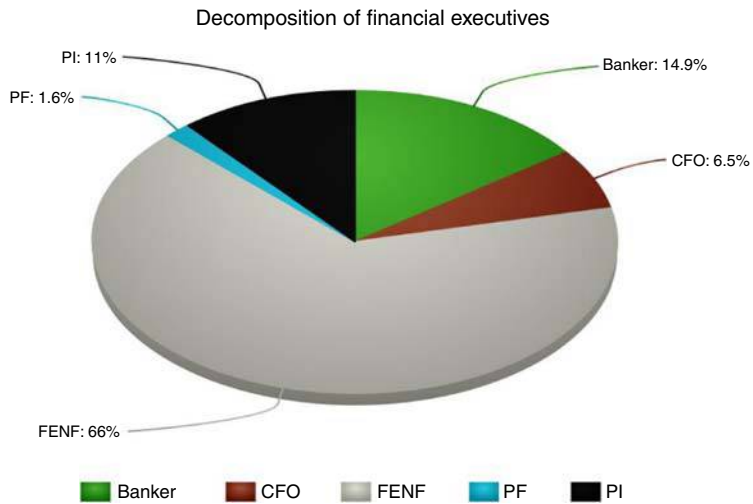


Figure 4.
Decomposition of financial executives in the Pakistan equity market

Sector	Obs	Mean	SD	Min.	Max.
<i>Panel A: Full sample firms</i>					
Overall sample	3,360	0.47	0.19	0.07	0.88
<i>Panel B: Statistics by industry</i>					
Construction	78	0.44	0.21	0.00	0.88
Cultural, sport and entertainment	48	0.50	0.19	0.21	0.91
Energy and electricity	180	0.58	0.19	0.09	1.00
Farming	54	0.42	0.18	0.10	0.77
Hotels and catering	30	0.53	0.19	0.33	0.89
Information and software	120	0.41	0.19	0.10	1.00
Integrated	30	0.34	0.19	0.00	0.56
Manufacturing	2,063	0.46	0.19	0.00	1.00
Mining	102	0.46	0.16	0.09	0.89
Real estate industry	300	0.53	0.20	0.08	1.00
Scientific research	6	0.25	0.30	0.00	0.77
Transport	66	0.45	0.24	0.13	1.00
Water	54	0.52	0.16	0.17	0.88
Wholesaler and retailer	229	0.56	0.19	0.13	0.92

Table I.
Descriptive statistics of board financial expertise in Chinese equity market

Notes: This table reports the quantitative feature of the proportion of financial expertise of directors in the corporate board in the emerging equity market of China. Panel A reports the summary statistics of full sample of our study. Panel B reports the summary statistics across 14 industries in the equity market of China

standard deviation, minimum and maximum values of the proportion of financial experts in emerging equity markets are included. The mean value of the proportion of financial experts in Chinese markets shows that 47 percent of total corporate directors are financial experts, with a standard deviation of 19 percent for the sample firms. Further, we find the maximum value and minimum value of the proportion of financial experts in the Chinese equity market are 88 and 7 percent, respectively. Equity sectors, namely, culture, sports and entertainment; energy and electricity; hotels and catering; real estate industry; water; and wholesalers and retailers, have more than 50 percent of financial experts on their corporate board in China, whereas the scientific research sector

only has 25 percent financial experts, with the highest variation, i.e., 30 percent, on the corporate board of their companies. Board financial expertise

Table II reports the summary statistics of the proportion of financial expertise in the corporate board across 11 industries considered in the equity market of Pakistan. The mean, standard deviation, minimum and maximum values of proportion of financial experts in emerging equity markets are reported. The mean value of the proportion of financial experts in Pakistani markets shows that 58 percent of total corporate directors are financial experts, with a standard deviation of 16 percent in the sample firms. Additionally, the maximum value, i.e., 0.88, shows that 88 percent of total corporate boards of any specific company are financial experts. From the results, it is clear that the cement and textile sector results show more financial experts on their corporate boards, whereas information communication and transport sectors have relatively low financial expertise on the board of governance in the Pakistani equity market. The standard deviation values for the energy, electrical machinery and appliances and sugar sectors are 0.11, 0.12 and 0.12, respectively, revealing that the majority of firms in these sectors have corporate boards with more than 50 percent financial experts. Furthermore, firms from refined petroleum products have the highest variation in terms of financial experts on their corporate board (standard deviation is 0.19).

Tables AI and AII in Appendix 1 show the quantitative features of the studied variables, i.e., *DY*, financial expertise, total assets, return on asset, return on equity, *leverage*, taxes, market-to-book value, dividend per share and earnings per share in Chinese and Pakistani equity markets. Further, Tables AI and AII also report the summary statistics for full sample, dividend-paying firms and non-dividend-paying firms in Chinese and Pakistani equity markets, respectively. We also carry out Goldfeld-Quandt test to show an evidence of difference or similarity. It is proposed by Goldfeld and Quandt (1965). We reject the null hypothesis of similarity based on the comparison of residual sum of squares using the *F*-statistics[1].

5.2 Board financial expertise and dividend policy

Table III reports regression estimates for the relationship between the presence of financial expertise on the board and a dividend policy by using FE, RE and GMM two-step estimation

Sector	Obs	Mean	SD	Min.	Max.
<i>Panel A: Full sample firms</i>					
Overall sample	859	0.58	0.16	0.22	0.88
<i>Panel B: Statistics by Industry</i>					
Cement	94	0.68	0.16	0.3	0.88
Chemical products and pharmaceuticals	130	0.54	0.16	0.22	0.86
Energy, electrical machinery and appliances	46	0.54	0.11	0.33	0.71
Food products and minerals	57	0.52	0.17	0.22	0.77
Information communication and transport	73	0.45	0.12	0.25	0.63
Manufacturing	73	0.58	0.13	0.36	0.63
Motor vehicle and transport	42	0.521	0.16	0.22	0.71
Paper, paperboard and products	18	0.57	0.15	0.38	0.78
Refined petroleum products	38	0.56	0.19	0.25	0.88
Sugar	74	0.58	0.12	0.29	0.88
Textile	214	0.64	0.16	0.29	0.86

Notes: This table reports the quantitative feature of the proportion of financial expertise of directors in the corporate board in the emerging equity market of Pakistan. Panel A reports the summary statistics of full sample of our study. Panel B reports the summary statistics across 11 industries in the Pakistani equity market. Maximum firm's year observations are found to be in the textile sector of Pakistan

Table II.
Descriptive Statistics
of board financial
expertise in Pakistani
equity market

Table III.
Board financial expertise and dividend policy (full sample)

Regressors	China			Pakistan		
	REM	FEM	GMM ^a	FEM	GMM ^a	GMM ^b
$DY_{i,t-1}$	0.528*** (0.016)	0.013 (0.020)	0.334*** (0.078)	0.298*** (0.048)	0.167*** (0.037)	0.080*** (0.021)
FIN	-0.606*** (0.068)	-0.95*** (0.092)	-0.631*** (0.163)	-0.660*** (0.159)	0.015*** (0.004)	0.020*** (0.003)
$LnTA$	0.071*** (0.015)	0.106** (0.042)	0.128** (0.065)	0.129** (0.056)	-0.004** (0.001)	-0.001 (0.001)
ROA	0.018*** (0.002)	0.010*** (0.002)	0.016*** (0.003)	0.004*** (0.0001)	0.0004*** (0.0001)	0.0004*** (0.000)
RE	0.006 (0.007)	0.034** (0.015)	0.030 (0.014)	-0.047*** (0.007)	-0.040*** (0.007)	-0.038** (0.011)
$Leverage$	-0.001 (0.003)	-0.001 (0.008)	-0.005 (0.013)	-0.009 (0.155)	0.001 (0.003)	0.000 (0.004)
Tax	-0.165 (1.379)	-6.444*** (1.815)	-1.187 (2.538)	-1.539 (2.668)	-0.031** (0.012)	-0.028 (0.016)
MBV	-0.032** (0.010)	-0.036** (0.014)	-0.067** (0.023)	-0.068** (0.021)	0.001** (0.001)	0.002*** (0.000)
$MarketReturn$	-0.490*** (0.058)	-0.362*** (0.054)	-0.357*** (0.053)	-0.368*** (0.054)	-0.008*** (0.002)	-0.006*** (0.001)
Model sig.						
(p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Hausman test ^c						
Wald test ^d		0.000			0.000	
m_2			0.295			0.100
Observations	2,800	2,800	2,138	2,703	708	567
						708

$$DY_{i,t} = \beta_0 + \beta_1 DY_{i,t-1} + \beta_2 FIN + \beta_3 LnTA + \beta_4 ROA + \beta_5 TAX + \beta_6 Leverage + \beta_7 RE + \beta_8 MarketReturn + \epsilon_{i,t}$$

^cThe null hypothesis under the Hausman's test is that there is no correlation between stochastic error term and the explanatory variable; ^dthe null hypothesis under the Wald test is homoscedasticity (or constant variance). The m_2 is a test for second-ordered serial correlation in residuals for GMM^a and GMM^b. We report standard errors in parenthesis. ***, ** Significant at 5 and 10 percent levels, respectively

Notes: This table reports the results of impact of financial expertise of board members on the dividend-paying behavior of a firm along with the control variables by using static and dynamic models for full sample firms in the emerging equity markets of China and Pakistan. Specifically, it reports the result of following econometrics specification under random effect model (REM), fixed effect model (FEM) and the GMM two-step estimation techniques by Arellano-Bond (1991) – GMM^a and Arellano-Bover/Blundell-Bond (1995) – GMM^b.

techniques for both Pakistani and Chinese equity markets. The *DY* is taken as a proxy for the dividend policy because the sample has firms with negative earnings. *FIN* is used as the independent variable, defined as the proportion of financial expertise on a corporate board. The results for both the FE and RE estimations reveal a significant positive coefficient of financial expertise in relation to the dividend policy for the Pakistani market, whereas for the Chinese equity market, this relationship is significantly negative. The Hausman statistics reject the null hypothesis that there is no correlation between stochastic error term and the explanatory variables; therefore the FE model is appropriate for both Chinese and Pakistani equity markets. The results of Wald test and endogeneity test for endogenous regressor are also presented in Appendix 3. The presence of heteroscedasticity and the endogeneity of our main independent variable makes the FE regression model vulnerable. Therefore, this study applies the dynamic models – two-step GMM estimation techniques by Arellano and Bond (1991) and Arellano and Bover (1995). The results of m_2 test for second-ordered serial correlation in residuals for GMM estimators are also presented in Table III, and we find no evidence that Arellano and Bond (1991) and Arellano and Bover (1995) models are misspecified.

The results for both the Arellano and Bond (1991) and Arellano and Bover (1995) GMM two-step estimation techniques reveal a significant positive coefficient of financial expertise in relation to the dividend policy for the Pakistani market, whereas for the Chinese equity market, this relationship is significantly negative. For the Pakistani market, it is evident that if there is a 1 percent increase in the proportion of financial expertise on a board, it will increase the *DY* by 2 percent in sample firms, and for the Chinese market, a 1 percent increase in the financial expertise of the board decreases the *DY* by 66 percent.

This study finds a positive relation between financial expertise and dividend policy for Pakistani firms that depicts; in case of better corporate governance practices, firms with financial expertise on the board are consistent with the compliment hypothesis and provide opportunities for outside investors to compel managers for dividend payments rather than use funds for their own personal benefits. These results are consistent with La Porta *et al.* (2000), where firms with better governance quality provide their shareholders with stronger protection, indicating financial expertise on board as an influential tool for the *DY* of non-financial sector of Pakistan. To attain a better position globally, it is crucial for Pakistani firms to adopt the true concept of corporate governance practices. Cornelius (2005) reported Pakistan at the low end of the continuum in a poor corporate governance system and its governance practices across board are perceived to be weak. Even after a decade, regulatory bodies are still struggling to implement corporate governance practices in its true spirit. Some holdups in implementing corporate governance practices in Pakistan are: independent non-executive directors' ineffectiveness, controlled ownership, inability of directors to understand their roles, inadequately trained personnel, lack of professional knowledge, lack of trainings, dependability of audit committee members and overall operational weakness (Ameer, 2013).

Developed countries hire professionals, because they are experienced in working with other companies, having a better knowledge of performing their duties and handling corporate governance issues; but in case of Pakistan, companies are engulfed with non-independence of directors, and controlled ownership. Therefore, if regulatory bodies require firms to have a professional financial expert on their board, they are likely to have competency to handle the issues related to corporate governance. Lack of professionals having financial knowledge is another hurdle toward the successful implementation of corporate governance practices in Pakistan.

Moreover, in Pakistan, the rights of minority shareholders are exploited by majority shareholders. In fact, in Pakistan, shareholders holding 20 percent of shares are eligible to go court and register a complaint in case of any misconduct. Further, shareholders can only

register a complaint with the security and exchange commission of Pakistan if their shareholdings in the company are 10 percent or above. Furthermore, this positive relationship means that board financial expertise ensures the need for better and transparent financial monitoring, which restricts management from “wasting” free cash by investing in negative or low NPV projects, excludes expropriating shareholders, and ensures payments of dividends to shareholders. Another interesting relationship is that for Pakistani firms, where shareholders rights are not fully protected and there is better corporate governance, having financial expertise on the board compels managers to pay dividends, and there is a significantly positive relationship with *MBV* (a proxy for investment) that is consistent with the findings of La Porta *et al.* (2000), which stresses the positive relationship between the two in a weak governance regime.

In contrast, in countries having comprehensive and scientific legal system to safeguard shareholders, the need for a reputation mechanism is weak; hence, dividend payouts are not urgent. Therefore, this study finds a negative relation between financial expertise and dividend policy for Chinese firms; Chinese firms having more financial expertise on the board do not take dividends as a control mechanism. This substitution hypothesis also suggests that in a country with good investor protection, the investment opportunity effect is negative. In China, outstanding representatives of Chinese listed companies have laid the foundation of improved corporate governance which in turn has consolidated and increased the attractiveness of Chinese capital market that has gained an effective boost and vitality to promote steady development and resource allocation optimization. The constant improvement in Chinese legal system provides useful insights for other developing countries (OECD, 2011)[2].

From 2004 onwards, listed companies began to accept the importance of standard operations which resulted in a better governance level. This knowledge also led to the introduction of new and efficient corporate governance models to encounter issues, considered as bottleneck, for the successful implementation of corporate governance, independence of directors and their diversification for internal control, board meetings, operations of board, audit committee and general shareholders, internal control system, investor relations management and protection of shareholders' rights. China, being one of the leading economies of the world, instrumented a systematic and complete legal system to safeguard shareholders' rights and interests. Therefore, in such countries having proper legal system to safeguard shareholders, the need for a reputation mechanism is weak; hence, dividend payouts are not urgent.

The other control variable confirms that the dividend policy in an equity market of Pakistan is affected by lagged dividend, *ROA*, *RE*, *MBV* and market return, and for Chinese firms, the dividend policy is affected by lagged dividend, firm size, *ROA*, *RE*, *MBV* and market return.

Positive and significant coefficients of lagged *DY* for both Pakistani and Chinese firms suggest that *DY* for the current year are significantly dependent on the *DY* for the previous year, which is consistent with the findings of Naceur *et al.* (2006) and Amidu and Abor (2006). The relationship between firm size and dividend is significantly positive for Chinese firms; whereas for Pakistani firms, this relationship is negative but insignificant.

ROA is significantly and positively related to *DY* for both the sampled countries and suggests that firms that are profitable are more likely to pay dividends (Jensen *et al.*, 1992), which is consistent with the signaling perspective by Miller and Rock (1985). The relationship between retained earnings and *DY* is negative for Pakistani firms and shows that firms having more investment opportunities pay less cash to their shareholders as dividends (Baker *et al.*, 2007). The Pakistani equity market is relatively skewed toward small companies because domestic investors want to be directors rather than ordinary shareholders in any company. Ownership concentration does not allow them to issue right

shares, as it can affect the pattern of their shareholdings even if they do not have a good liquidity position. In that case, retained earnings are the only available option firms have to expand operations, and they reduce dividend payments. For Chinese firms, this relationship is positively insignificant.

The relationship between *DY* and market return is negative, which is consistent with the findings of Glen *et al.* (1995), Mascarenhas and Aaker (1989) and Jabbouri (2016), which indicates that dividend payments decreased by the firms during good economic times and increases during economic slumps.

5.3 Robustness check

The study sample comprises both dividend and non-dividend-paying firms for Chinese and Pakistani equity market. To determine whether our results are affected by non-dividend-paying firms, in consistent with the study of Naceur *et al.* (2006), we re-estimated the static (FE and RE) and dynamic models – two-step GMM estimation techniques by Arellano and Bond (1991) and Arellano and Bover (1995) – without non-dividend-paying firms. Table IV shows the regression estimates for the relationship between the board financial expertise and a dividend policy. The results for both the static and dynamic models confirm the previous findings where we reveal a significant positive coefficient of board financial expertise in relation to dividend policy for the equity market of Pakistan, whereas this relationship is significant negative for the Chinese equity market.

This study also employed the instrumental variable approach to control possible endogeneity. We used two instrumental variables – industry average financial expertise of the board and board size – as proxies for board financial expertise. We run the instrumental variable regression using the generalized method of moment estimation technique, and the *p*-value of Hansen test (test of over-identifying restrictions) confirms that our instruments are valid. Further, *C* (difference in Sargan test) is also reported to statistically test the endogeneity of our main independent variable, and test-value confirms the endogeneity. The coefficient of instrumented financial expertise is significantly negative for Chinese firms and positive for Pakistani firms, which confirms that IV analysis is substantially less exposed to endogeneity and that high financial expertise supports larger dividends for Pakistani firms, and high financial expertise supports lesser dividends for Chinese firms (Table V).

6. Conclusion

Many researchers have proposed theories and studies to explore the dividend policy behavior of firms within different streams. Previous studies have focused on tax preference theories, signaling and agency cost hypotheses to explore the dividend behavior, but dividend policy is still a puzzle. The empirical literature also identifies a variety of firm-specific fundamentals, corporate governance factors, industry-specific and country-specific patterns to explain the firms' dividend policy behaviors. However, dividend policy is still considered an unresolved finance problem (Brealey and Myers, 2005). Many questions still need to be answered since researchers have reported conflicting results. This study focuses on a new dimension, i.e., financial expertise on the board, for explaining the dividend policy dynamics in emerging markets.

We use the static (FE and RE) and dynamic models – two-step GMM estimation techniques by Arellano and Bond (1991) and Arellano and Bover (1995) – to investigate the relationship between board financial expertise and dividend policy. These results support that Pakistani firms are taking financial expertise as proxy to corporate governance and support the compliment hypothesis, while Chinese firms back the substitution hypothesis by paying less dividends. Further robustness models also confirm the presence of a significant association between dividend policy and board financial expertise in both equity markets.

Table IV.
Board financial expertise and dividend policy (non-dividend-paying firms excluded)

Regressors	China			Pakistan			
	REM	FEM	GMM ^a	REM	FEM	GMM ^a	GMM ^b
D_{it-1}	0.379*** (0.021)	-0.016 (0.020)	0.519*** (0.102)	0.461*** (0.044)	0.110** (0.042)	0.305*** (0.062)	0.324*** (0.055)
FIN	-0.185** (0.094)	-0.397** (0.186)	-1.326*** (0.347)	-1.037** (0.3443)	0.008** (0.003)	0.010*** (0.003)	0.011** (0.003)
$LnTA$	0.008 (0.015)	-0.070 (0.079)	0.252 (0.133)	0.151** (0.116)	-0.002** (0.001)	0.0003 (0.001)	-0.001 (0.001)
ROA	0.046*** (0.004)	0.035*** (0.007)	0.045*** (0.011)	0.043*** (0.011)	0.0002*** (0.0001)	0.0002*** (0.000)	0.0002*** (0.000)
RE	0.003 (0.010)	0.022 (0.019)	0.027 (0.017)	0.008 (0.018)	-0.024*** (0.006)	-0.034 (0.011)	-0.042** (0.010)
$Leverage$	0.003 (0.009)	0.007 (0.012)	0.037 (0.029)	0.012 (0.034)	-0.0004 (0.001)	-0.006 (0.005)	-0.006 (0.004)
Tax	0.058 (2.15)	-8.09** (3.09)	2.906 (3.961)	-0.887 (4.012)	-0.021 (0.009)	-0.013 (0.016)	0.003 (0.018)
MBV	-0.141*** (0.019)	-0.225*** (0.032)	-0.060 (0.041)	-0.080** (0.037)	0.010*** (0.001)	0.006*** (0.001)	0.007*** (0.001)
$MarketReturn$	-0.786*** (0.083)	-0.571*** (0.083)	-0.602*** (0.078)	-0.574*** (0.079)	-0.001 (0.002)	-0.0004 (0.001)	-0.0001 (0.001)
Adjusted R^2	34.83%	10.00%		21.00%	35.48%		
Model sig.			0.000	0.000		0.000	0.000
(p -value)							
Hausman	0.000			0.000			
Wald test ^d		0.000			0.000		
m_2	1,732	1,732	933	1,375	596	343	454
Observations	1,732	1,732	933	1,375	596	343	454

$DY_{i,t} = \beta_0 + \beta_1 DY_{i,t-1} + \beta_2 FIN + \beta_3 LnTA + \beta_4 ROA + \beta_5 TAX + \beta_6 Leverage + \beta_7 RE + \beta_8 MarketReturn + \epsilon_{i,t}$

Notes: This table reports the results of impact of financial expertise of board members on the dividend-paying behavior of a firm along with control variables by using static and dynamic models for dividend-paying firms in China and Pakistan. Specifically, it reports the results of following econometrics specification under random effect model (REM), fixed effect model (FEM) and the GMM two step estimation technique by Arellano- Bond (1991) – GMM^a and Arellano-Bover/Blundell-Bond (1995) – GMM^b.

^cThe null hypothesis under the Hausman's test is that there is no correlation between stochastic error term and the explanatory variable; ^dthe null hypothesis under the Wald test is homoscedasticity (or constant variance). The m_2 is a test for second-ordered serial correlation in residuals for GMM^a and GMM^b. We report the standard errors in parenthesis. *, **, ***Significant at 1, 5 and 10 percent levels, respectively

Country Regressors	Board financial expertise	
	Pakistan GMM instrumental variable regression	China GMM instrumental variable regression
<i>FIN</i>	0.013** (0.006)	-0.607** (0.303)
<i>LnTA</i>	-0.001** (0.000)	0.120*** (0.015)
<i>ROA</i>	0.0001** (0.000)	0.026*** (0.003)
<i>RE</i>	-0.101** (0.032)	0.021** (0.007)
<i>Leverage</i>	-0.001 (0.001)	-0.002 (0.002)
<i>Tax</i>	-0.116** (0.046)	0.960 (1.191)
<i>MBV</i>	-0.0003 (0.0003)	-0.022** (0.009)
<i>MarketReturn</i>	-0.0004 (0.001)	-0.133*** (0.019)
Model sig. (<i>p</i> -value)	0.000	0.000
Hansen Test (<i>p</i> -value) ^a	0.384	0.206
<i>C</i> (difference-in-Sargan) ^b	0.000	0.001
Observations	743	3,360

Notes: This table reports the results of the impact of financial expertise of board members on the dividend policy by using two instrumental variables – industry average financial expertise of the board and board size – as proxies for board financial expertise. ^aIt reports the *p*-value of Hansen Test – test of over-identifying restrictions; ^b*C* (difference in Sargan test) to statistically test the endogeneity. We report the standard errors in parenthesis. **,***Significant at 5 and 10 percent levels, respectively

Table V.
GMM instrumental
variable regression

This study contributes to the existing literature by documenting that the presence of financial expertise on a board affects a firm's economic policy or real corporate policies such as the dividend policy, and financial expertise is not only useful for accurate financial reporting. Further, financial expertise contributes by documenting the potential determinant of a board to improve a firm's corporate governance, reduce agency costs and satisfy the firm's investors. There is a need to further analyze the presence of financial expertise on boards, which can lead to variations in financial activities by exploring their impact on other corporate policies, such as leverage, cash management and investment policy. Researchers can extend this study for other developed and developing markets because this study is limited to the Pakistani and Chinese equity markets. Researchers can also limit the financial expertise to CEOs, with an audit committee only, and investigate the influence of their financial expertise on the variation in firm financial activities. Future research can also explore the concept of financial literacy beyond the SOX 2002, Section 407.

Notes

1. Goldfeld and Quandt (1965) proposed a test to compare the similarity/differences of two groups. Primarily, it compares the variances of error terms across two groups. We computed the residual sum of square of each group, and calculate the ratio of residual sum of squares (*R*). Under the assumption of normality, the *R* is distributed according to *F*-distribution, $F(n-2k)/2, (n-2k)/2$ degrees of freedom, where *n* is sample size, *k* is number of regressor. Since the value of *R* (36,425) is greater than *F*-statistics (1.07), therefore our results shows the evidence of differences.
2. Corporate Governance of listed Companies in China © OECD 2011.

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Further reading

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Appendix 1. Descriptive statistics of the regressor variable

Tables AI and AII show the quantitative features of the studied variables, i.e., the financial expertise, dividend yield, total asset, return on asset, return on equity, leverage, taxes, market-to-book value, dividend per share and earnings per share for the full sample, dividend-paying firms, and non-dividend-paying firms in the Chinese and Pakistani equity markets, respectively. The tables include the measure of central tendency, i.e., the mean, first quartile, median and third quartile of all the studied variables.

Variable	Observation	Mean	SD	First quartile	Median	Third quartile
<i>Panel A: Full sample</i>						
DivYield	3,360	0.55	0.83	0.00	0.27	3.75
FIN	3,360	0.47	0.19	0.07	0.46	0.88
LnTA	3,360	21.81	1.16	19.1	21.7	24.9
ROA	3,360	4.42	7.16	-16.5	3.62	23.96
RE	3,360	0.66	1.97	-1.06	0.16	11.11
Leverage	3,360	0.92	3.39	0.013	0.47	12.5
TAX	3,360	0.01	0.01	0.00	0.002	0.05
MBV	3,360	1.89	2.06	0.16	1.37	8.07
Market return	3,360	0.34	0.53	-0.3	0.16	1.46
<i>Panel B: Dividend-paying firms</i>						
DivYield	2,040	0.92	0.91	0.02	0.65	4.70
FIN	2,040	0.40	0.19	0.00	0.38	0.88
LnTA	2,040	21.9	1.11	19.9	21.8	24.9
ROA	2,040	6.31	5.34	0.11	4.90	23.98
RE	2,040	0.99	2.33	0.002	0.29	14.14
Leverage	2,040	0.910	3.53	0.011	0.46	15.00
TAX	2,040	0.005	0.01	0.00	0.002	0.05
MBV	2,040	1.82	1.46	0.20	1.40	7.61
Market return	2,040	0.33	0.52	-0.30	0.28	1.46
<i>Panel C: Non-dividend-paying firms</i>						
FIN	1,320	0.58	0.15	0.33	0.55	0.71
LnTA	1,320	21.51	1.16	18.76	21.4	24.90
ROA	1,320	1.55	8.53	-23.36	1.40	23.82
RE	1,320	0.15	1.02	-1.44	0.03	3.42
Leverage	1,320	0.94	3.17	0.013	0.48	9.20
TAX	1,320	0.005	0.011	0.00	0.001	0.05
MBV	1,320	2.01	2.75	0.12	1.33	9.7
Market return	1,320	0.36	0.56	-0.3	0.16	1.46

Notes: This table divides the summary statistics into three panels, i.e., Panels A, B and C. Panel A includes the full sample firms of our study, therefore it includes the dividend-paying firms and non-dividend firms. Panel B only includes the dividend-paying firms while Panel C consist of non-dividend-paying firms in emerging equity market of China for the sample period 2009-2014

Table AI.
Descriptive statistics –
Chinese equity market

Variable	Observation	Mean	SD	First quartile	Median	Third quartile	Board financial expertise
<i>Panel A: Full sample</i>							
DivYield	859	0.01	0.01	0.00	0.00	0.04	
FIN	859	0.58	0.16	0.22	0.57	0.88	
LnTA	859	22.51	1.36	19.77	22.41	25.88	
ROA	859	7.69	11.11	-14.42	5.41	43.37	
RE	859	0.024	0.079	-0.22	0.03	0.20	
Leverage	859	0.53	0.22	0.07	0.55	1.041	
TAX	859	0.03	0.04	0.01	0.01	0.15	
MBV	859	0.61	0.98	0.01	0.27	4.86	
Market return	859	0.15	0.28	-0.53	0.25	0.42	
<i>Panel B: Dividend-paying firms</i>							
DivYield	597	0.01	0.010	0.0002	0.01	0.045	
FIN	597	0.582	0.16	0.22	0.57	0.89	
LnTA	597	22.60	1.37	19.8	22.5	25.9	
ROA	597	10.99	10.82	-2.84	9.2	53.13	
RE	597	0.041	0.076	-0.21	0.04	0.21	
Leverage	597	0.493	0.206	0.059	0.513	0.902	
TAX	597	0.031	0.040	-0.008	0.017	0.166	
MBV	597	0.342	0.420	0.01	0.21	2.36	
Market return	597	0.175	0.270	-0.539	0.25	0.42	
<i>Panel C: Non-dividend-paying firms</i>							
FIN	262	0.568	0.16	0.22	0.57	0.88	
LnTA	262	22.34	1.31	19.7	22.3	25.92	
ROA	262	0.173	7.51	-17.1	0.02	32.7	
RE	262	-0.014	0.071	-0.27	-0.01	0.18	
Leverage	262	0.64	0.20	0.091	0.636	1.11	
TAX	262	0.01	0.017	-0.001	0.006	0.092	
MBV	262	1.22	1.48	0.00	0.635	7.01	
Market return	262	0.12	0.32	-0.539	0.251	0.420	

Notes: This table divides the summary statistics into three panels, i.e., Panels A, B and C. Panel A includes the full sample firms of our study, therefore it includes the dividend-paying firms and non-dividend firms. Panel B only includes the dividend-paying firms, while Panel C consist of non-dividend-paying firms in the Pakistani emerging equity market for the sample period 2009-2014

Table AII.
Descriptive
Statistics – Pakistani
equity market

Appendix 2. Decomposition of financial expertise of the corporate board

We categorized the financial expertise of directors on the basis of their financial qualification into five mutually exclusive groups, which includes a bachelor's degree in accounting and finance (A&F), a master's degree in A&F, a PhD, a professional certification (chartered accountant, certified financial analyst, association of chartered certified accountants, association of cost and management accountants, etc.), and directors with a law background (Legum Baccalaureus, Magister Legumes, etc.). This study further explores the financial expertise of corporate directors across 14 and 11 sectors in the Chinese and Pakistani equity markets, respectively. With the help of a pie chart, we decompose the financial expertise of directors on the basis of their qualification. Figures A1-A10 rigorously depict the decomposition of financial expertise in the emerging equity markets of China and Pakistan.

Figure A1. Sector-wise decomposition of board financial expertise having bachelor's degrees in accounting and finance in the Chinese equity market

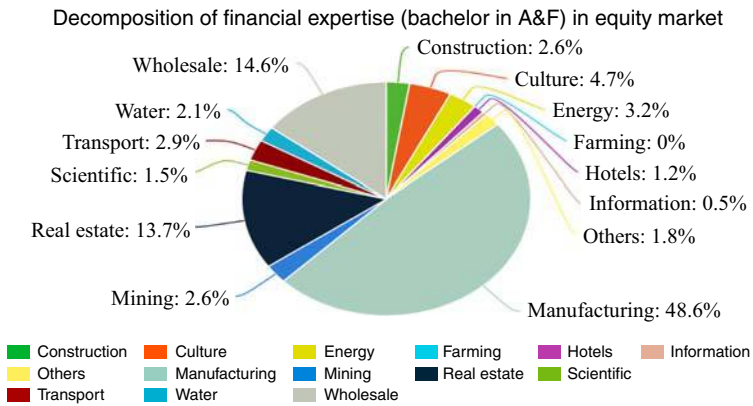
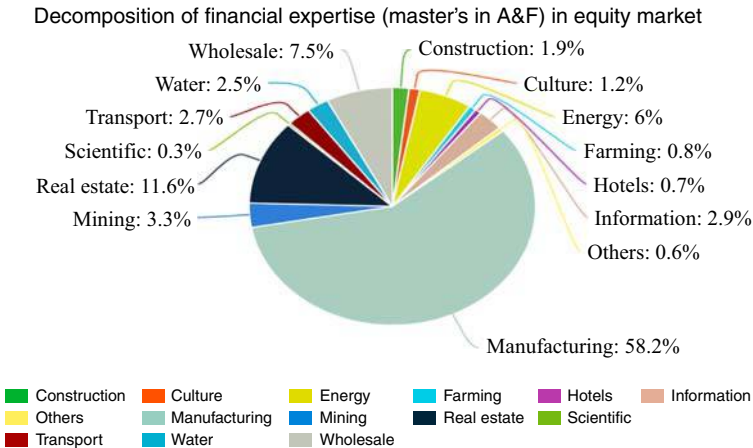


Figure A2. Sector-wise decomposition of board financial expertise having master's degrees in accounting and finance in the Chinese equity market



Board financial expertise

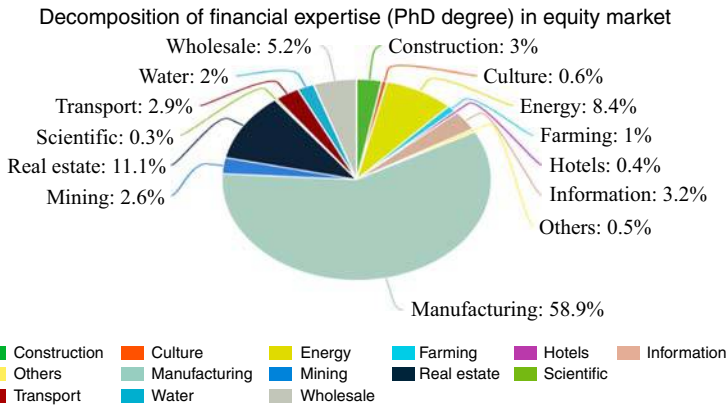


Figure A3. Sector-wise decomposition of board financial expertise having PhD degrees in accounting and finance in the Chinese equity market

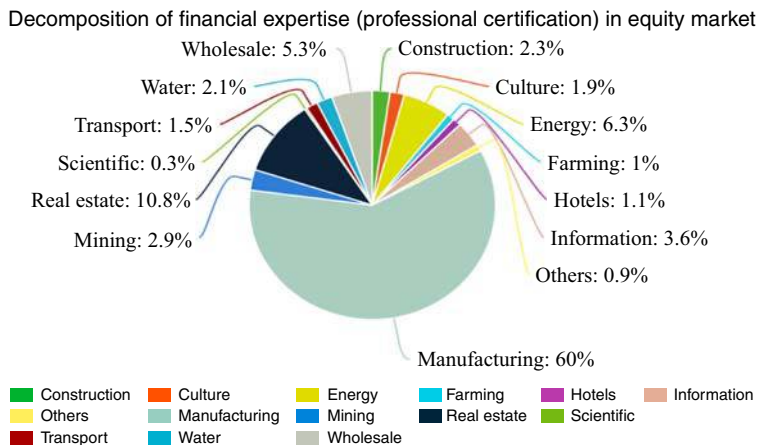


Figure A4. Sector-wise decomposition of board financial expertise having professional certifications in accounting and finance in the Chinese equity market

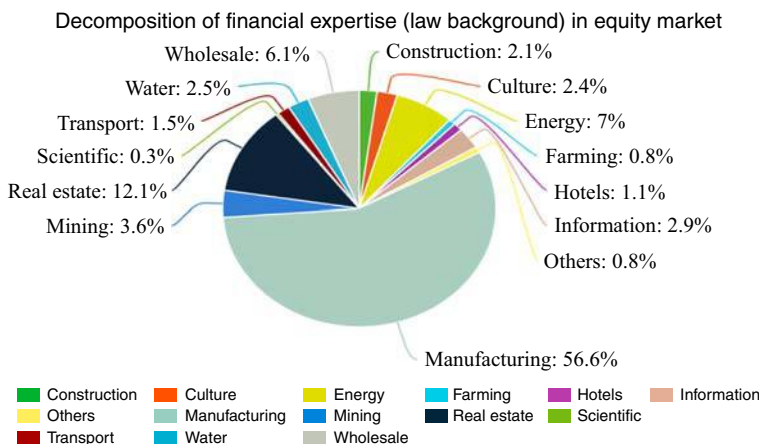


Figure A5. Sector-wise decomposition of board financial expertise having law backgrounds in accounting and finance in the Chinese equity market

Figure A6. Sector-wise decomposition of board financial expertise having bachelor's degrees in Accounting and finance the Pakistani equity market

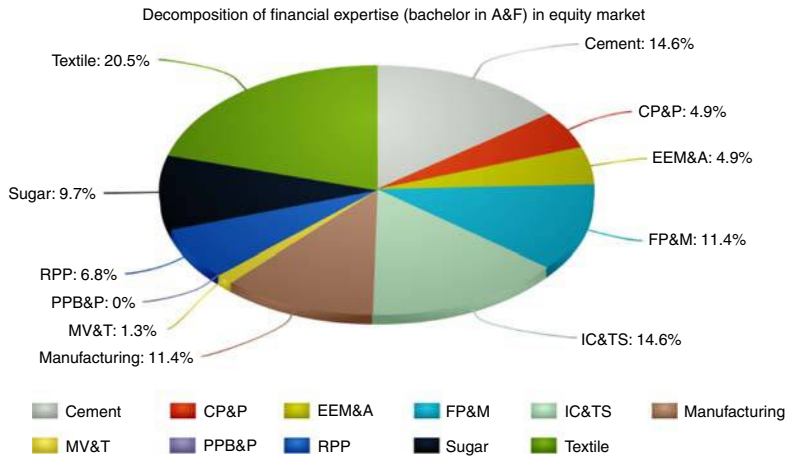
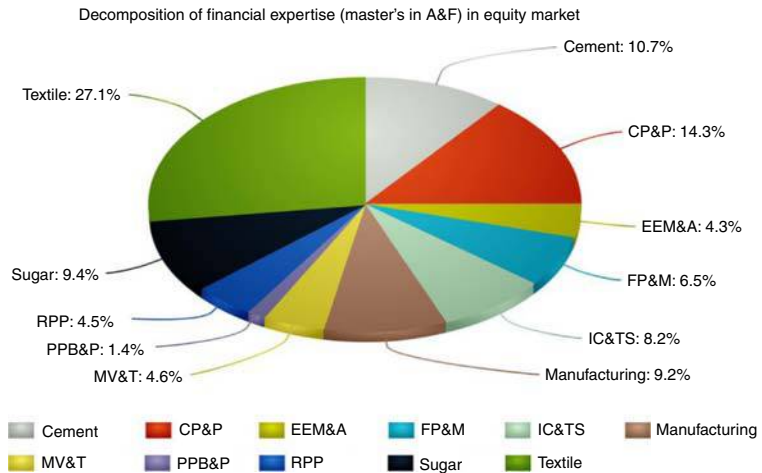


Figure A7. Sector-wise decomposition of board financial expertise having master's degrees in accounting and finance in the Pakistani equity market



Board financial expertise

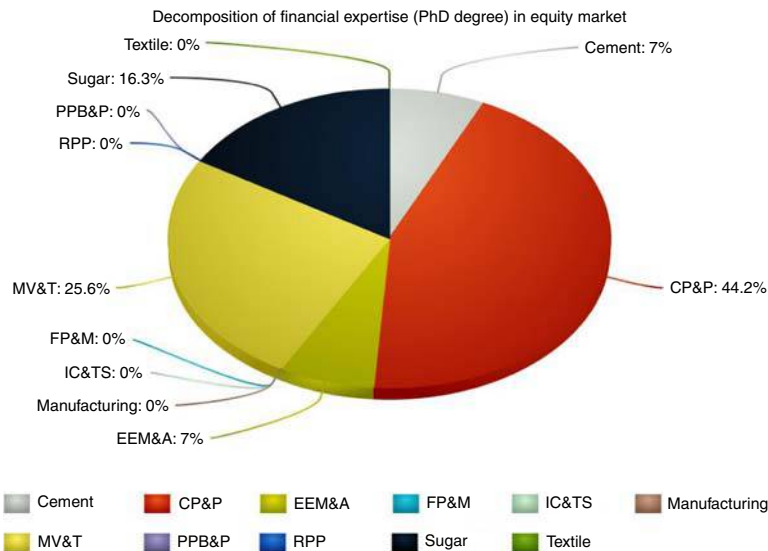


Figure A8. Sector-wise decomposition of board financial expertise having PhD degrees in the Pakistani equity market

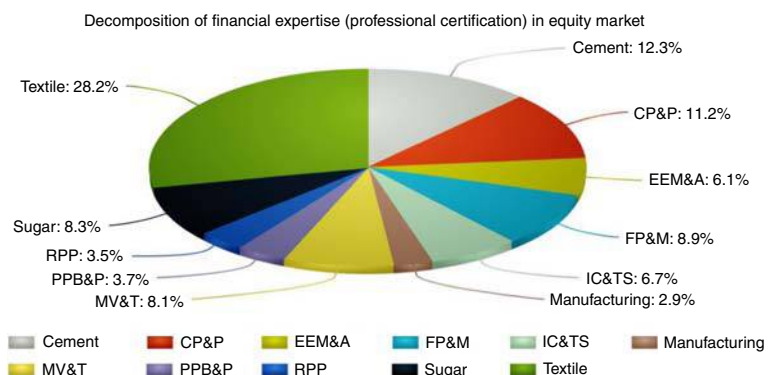


Figure A9. Sector-wise decomposition of board financial expertise with professional certifications in the Pakistani equity market

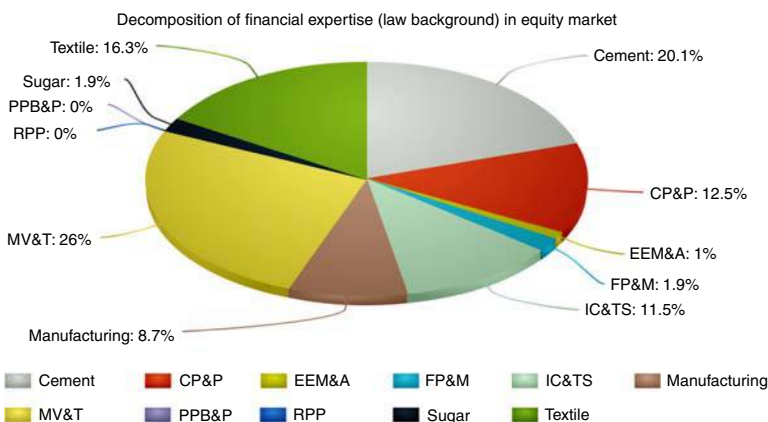


Figure A10. Sector-wise decomposition of board financial expertise with law backgrounds in the Pakistani equity market

Country	<i>P</i> -value Wald test (fixed effect)	Endogeneity test
Pakistan	0.000***	0.010**
China	0.000***	0.025**

Table AIII.

Wald test statistics and endogeneity test for endogenous regressor

Notes: This table reports the results of Wald test and endogeneity test for endogenous regressor. The presence of heteroscedasticity and the endogeneity of our main independent variable makes the fixed effect regression model vulnerable. In this table, the null hypothesis for Wald test is homoscedastic, and *p*-value shows that we can reject the null hypothesis. It confirms the presence of heteroscedasticity in both the Chinese and Pakistani equity markets. **,***Significant at 5 and 10 percent levels, respectively

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