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Managerial Ownership and Agency Cost: Evidence from Bangladesh

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Abstract This study examines the influence of managerial ownership on firm agency costs among listed firms in Bangladesh. This is an institutional setting that features a mixture of agency costs. This institutional setting has a concentration of ownership by managers, but the firms are not solely owned by managers. The extant literature suggests that the sacrifice of wealth by the principal and potential costs associated with monitoring the agents is known as the agency cost. This study uses three measures of agency cost: the 'expense ratio', the 'Q-free cash flow interaction', and the 'asset utilisation ratio'. The finding of the study is that managerial ownership reduces the firm agency cost only under the 'asset utilisation ratio' measure of agency cost; this is robust with regard to a number of robustness tests. Furthermore, the non-linearity tests suggest that the convergence of interest is evident with very high and low levels of managerial ownership. The entrenchment effect by the owners is evident at moderate levels of managerial ownership. Although there has been great scepticism among management researchers on the validity of agency theory, overall, the findings of this study do not reject the validity of agency theory. Given that the entrenchment by managers is evident at certain levels of ownership and that the agency problem may still exist between insiders and outsiders, legislative guidelines for controlling share ownership may be required.

Keywords Agency theory · Agency cost · Bangladesh · Control · Corporate governance · Stewardship theory

JEL Classification G32 · G34

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Introduction

The divergence of action due to incomplete alignment of the interests of agents and principals may lead to an agency problem. The sacrifice of wealth by the principal and potential costs associated with monitoring the agents is known as the agency cost (Jensen and Meckling 1976). Depending on the nature of the ownership, i.e. who owns the firm, managers/directors or external shareholders, the agency problem and associated costs may vary. In a solely manager-owned firm, there will be a zero agency cost base; the measure of agency cost will be absolute within these firms. In the words of (Ang et al. 2000, p. 81), 'to measure absolute agency cost, a zero agency cost base case must be observed to serve as the reference point of comparison for all other cases of ownership and management structure'. However, Jensen and Meckling's (1976) zero agency cost base cannot be found among the firms listed on national stock exchanges around the world, as no listed firm is solely owned by managers (Ang et al. 2000). In a firm in which the managers are not the sole owners, there will be a 'traditional' or 'principal-agent' agency conflict, and the measure of agency cost will be relative to firms solely owned by manager. To minimise the relative agency cost and to align the interests of the firm's agents with that of the principal(s), a number of monitoring mechanisms are in place. For example, in the United States (where scattered ownership is common), the actions of firm managers are monitored through information disclosures, legal protections, exercising of shareholders' rights through the election of directors and appointment of managers, and a market for corporate control or takeovers. As managers do

not typically own large stakes in a firm in these countries, and as managers have invested undiversified human capital (managerial talent) in a single firm, one of the dominant control mechanisms is contracting through executive compensation (such as stock and stock based compensation); this is also operational (Godfrey et al. 2006).

However, in some continental European countries, such as Germany, Finland, and the Netherlands (Ireland and the United Kingdom are exceptions), firms are monitored directly by certain cohesive owners (large shareholders such as banks) who have a strong influence on management (Maassen 2002). The agency cost within firms listed on exchanges in the United States is relative to firms solely owned by managers; the agency cost within the firms in continental European countries may be closer to absolute. It is to be noted that, because of the differences in ownership structure and financing patterns of corporations around the world, agency costs that arise due to agency conflict may vary. The traditional agency conflict described above may not be applicable within the corporations of many emerging economies in which there is a concentration of ownership by directors and/or managers and the firms are not solely owned by managers. Thus, there may be a mixture of agency costs among listed firms in these countries.

This study aims at investigating whether managerial ownership controls the agency cost among listed firms in Bangladesh, an emerging economy, in the presence of other monitoring mechanisms. Earlier studies examined the managerial ownership and agency cost within the no-agency cost firms (small businesses) in the United States (see Ang et al. 2000; Brau 2002; Wellalage and Locke 2012). Earlier studies have also examined the managerial ownership and agency costs within publicly traded corporations in developed economies, such as the United States (see Singh and Davidson III 2003), Australia (see Fleming et al. 2005; Henry, 2010), and the United Kingdom (see Florackis 2008; McKnight and Weir 2009). Note that most of the earlier studies have been conducted in the context of listed firms featuring dispersed ownership, in which there is very low concentrated ownership by managers, and the measure of agency cost is relative. It is argued that institutional differences between countries (such as financial, legal, political, and regulatory systems, product factor markets, and internal control systems) are important factors affecting agency costs as a result of the separation of ownership from control (Jensen 1993; Ahmed et al. 2006; Rashid 2014). In this study, the choice of Bangladesh is notable, as the listed firms in Bangladesh are featured as a mixture of agency costs; that is, it includes firms with a concentration of ownership by managers and the firms are not solely owned by managers. This is a unique agency relationship setting; the presence of agency costs among the listed firms in Bangladesh may be closer to absolute. No such study of agency problems is conducted in a unique institutional setting. This study contributes to the literature on managerial ownership and agency costs in the context of an emerging economy.

This paper is structured into several sections. "An Overview of Agency and Corporate Governance Environment in Bangladesh" section presents an overview of the agency and corporate governance environments in Bangladesh. "Theoretical Development and Hypothesis" section presents the theoretical development and hypothesis. "Research Method" section presents the research method. "Empirical Results" section presents the empirical results. The final section provides a discussion and presents a conclusion.

An Overview of Agency and Corporate Governance Environment in Bangladesh

Before describing this research, an overview of agency and corporate governance environment in Bangladesh would be helpful for the readers. Unlike corporations in Anglo-American countries, the corporate control mechanisms in Bangladesh are primarily insider oriented, for example, ownership structure, because the core investors own significant stakes of a single firm (Rashid 2013a, 2014). This is also known as the ownership control approach and, in general, these owners comprise the board of directors (Rashid and Lodh 2008). There is a high degree of concentrated ownership by founding family members; this leads to a high degree of ownership control. Although these owners are satisfactory monitors, they often seek to minimise the presence of other monitoring mechanisms. The presence of pyramidal or cross shareholding is relatively uncommon in the Bangladesh corporate sector; therefore, individual shareholdings are also quite large (Rashid 2011).

Unlike corporate boards in many continental European countries, such as Germany, Finland, and the Netherlands (France, Spain, and the United Kingdom are exceptions), traditionally the corporate boards in Bangladesh are one-tier boards or management boards. There is no supervisory board. Both the executive and non-executive directors perform duties jointly, in one organisational layer. This is most common in Anglo-American countries, such as the United States, the United Kingdom, Canada, Australia, and New Zealand. Therefore, there are some incidences of CEO duality within listed firms in Bangladesh.

Due to highly concentrated ownership, lack of takeover regulations, a non-efficient market, and huge transaction costs associated with the takeover process, certain of the important external control mechanisms, such as a market for corporate control or takeovers, are largely absent from

the Bangladesh corporate sector (Rashid 2011). Unlike firms in Anglo-American countries, external board members (outside directors), financial analysts, and the financial press and media play a minor role in monitoring and disciplining firm management (Rashid et al. 2010; Rashid 2011). Therefore, boards and management are not fearful of being criticised. Furthermore, unlike many Anglo-American countries, with their limited voting rights, outside owners are not in a position to pose a threat to firm management. Finally, the role of other intermediaries, such as investment banks, financial analysts, and credit rating agencies, are less central in the Bangladesh corporate sector (Rashid 2011).

A notable institutional difference in the Bangladesh corporate sector from that of a developed economy is that, because of diffused share ownership, firms in developed economies appoint professional managers. Many of these managers do not have ownership stakes within the firm. However, executives in Bangladesh are family owners; many of them have large ownership control stakes or they represent the family owners (Rashid 2013b). Sobhan and Werner (2003) noted that, in approximately 73 % of the non-bank listed companies, the boards are heavily dominated by the sponsor-shareholders who generally belong to one family. The father is the chairman and the son is the CEO. These owners have huge incentives and abilities to monitor. Such monitoring mechanisms in Bangladesh reduce the need for performance related pay Rashid (2013b). Because of this, in conjunction with the absence of a liquid capital market, executive compensation, in the form of stock options, is absent from the Bangladesh corporate sector. Because owners with large stakes choose to appoint themselves to the board and management and because there is an absence of performance related pay, unlike firms in Anglo-American countries, there is no requirement for a remuneration committee in Bangladesh.

Unlike firms in Anglo-American countries, the primary source of corporate borrowing in Bangladesh is predominantly banks (private debt). Public debt in the form of corporate bonds is nearly absent from the Bangladesh corporate sector (Rashid and Hoque 2011). However, similar to firms in Anglo-American countries, firms' borrowing from banks is primarily short-term. In addition, banks maintain an arm's-length relationship with their corporate clients and are not involved in any monitoring activity (see Rashid 2011; Rashid and Hoque 2011). Thus, unlike firms in many continental European countries, East Asia, and Southeast Asia, the role of banks as lenders is less central, and the ability to use debt covenants as a corporate control mechanism is absent from the Bangladesh corporate sector. Excessive bank loans are occasionally used by insiders to exercise ownership and control.

The key corporate governance problem in Bangladesh is the weak institutional enforcement regime in conjunction with the huge family dominance. The existing regulatory regime, in many cases, fails to exert pressures on firms to follow the schemes, rules, norms, and routines of authoritative guidelines (Rashid 2011). This is because the families and their kin effectively weaken rational measures for accountability, such as rules and regulations (Uddin and Choudhury 2008). The key agency conflict among listed firms in Bangladesh can be described as the conflict between controlling and minority shareholders. The majority inside owners, who also sit on the board and occupy management positions, tend to use inside information for personal gain or to divert assets from minority shareholders; this was seen during the stock market collapse in 1996 and 2011. These majority owners also pursue their own agenda at the expense of minority shareholders (see, for example, Chen and Young 2010). This is partly because it is very hard for average non-controlling shareholders to achieve the necessary votes to pose a threat to poorly performing company management as there is no guideline regarding 'ultimate controlling share ownership' in the Bangladesh Companies Act of 1994 (Bangladesh Companies Act 1994).

Thus, the agency conflict among listed firms in Bangladesh can be described as a 'principal–principal' agency conflict (Walsh and Seward 1990; Dharwadkar et al. 2000; Young et al. 2008). This gives rise to 'horizontal agency cost' because different principals have heterogeneous interest preferences and objectives (Colombo et al. 2014). The measure of the agency cost among these firms can be described as a zero agency cost base.

Theoretical Development and Hypothesis

In understanding corporate governance and its problems, and attempting to provide a reasonable answer to the question of whether managerial ownership adds value to the firm, researchers have depended extensively on a number of theories, with the most common being agency theory and stewardship theory. The main premise of stewardship theory (Donaldson and Davis 1991, 1994) is that executive managers are the best stewards of their firm, and thus, ownership by managers will add value to the firm. Pursuant to this theory, it is argued that directors and/or managers spend their working lives in the company they govern, therefore, they must understand the business (Donaldson and Davis 1991, 1994). In addition, with their ownership rights, they can make superior decisions (Nicholson and Kiel 2007).

In sharp contrast, agency theory argues that, unless certain other mechanisms are in place, managers may

pursue actions that benefit themselves but not firm owners (Dalton et al. 1998). Agency theorists focus on identifying situations in which the principal and agent are likely to have conflicting goals; it then describes the governance mechanisms that limit the agent's self-serving behaviour (Eisenhardt 1989). In many Anglo-American countries, executives do not have any ownership interest in the firm, and their undiversified human capital (managerial talent) is invested in a single firm. Thus, they may be driven by self-interest, and unless restricted from doing otherwise, and will undertake self-serving activities that could be detrimental to the economic welfare of the shareholders (principal), leading to an agency problem (Jensen and Meckling 1976). Different mechanisms, incentives, checks, and balances are proposed to motivate and/or to monitor management to align the interests of management with that of shareholders. For example, in Anglo-American countries, because the executives do not have large ownership stakes in the firm, these executives receive incentive-based compensation, such as stock options. Stock ownership by managers, as an alternative corporate governance mechanism (Core et al. 1999; Linck et al. 2008), is consistent with economic rationality. This dictates that management motivates executives to identify more closely with shareholders' economic interests (Rappaport 1997). When the agency cost is closer to absolute or when the firm managers hold a large ownership stake in a firm, this allows managers to refrain from self-opportunistic behaviour and can reduce the firm agency cost. In other words, managers will be the best stewards of their firm. This is also consistent with the Jensen (1993) 'convergence of interest' hypothesis; in addition, it may reduce firm agency cost. Agency theory and stewardship theory are used to uncover a single segment of the corporate governance mechanism rather than to provide a holistic view (Kiel and Nicholson 2003). Although an absence of managerial ownership may lead to high agency costs (agency theory), the presence of managerial ownership may lead to lower agency costs (stewardship theory). This approach leads to the following single hypothesis:

Hypothesis 1 Managerial ownership will reduce firm agency costs.

Research Method

Sample Selection

Traditionally, company annual reports are the sole source of companies' financial and non-financial information. Companies in Bangladesh are no exception to such reporting. There were 281 listed companies on the Dhaka Stock Exchange as of 31 December 2011, of which 97 were financial companies (banks, insurance, and other financial institutions) and 184 were non-financial companies. Based on the availability of company annual reports, this study considers 110 non-financial firms listed on the Dhaka Stock Exchange for the 11-year period of 2001–2011, resulting in a balanced sample of 1,210 observations. This sample represents 39.15 % of all listed firms and 59.78 % of all listed non-financial firms as of 31 December 2011. The sample consisted of companies in a variety of industries as classified using the Standard Industrial Classification Codes (SIC) (Table 1).

The audited financial report was the basis for obtaining a company's accounting information, such as EBIT, assets, and liabilities. Digitalised soft and hard copies of companies' annual reports were collected from the Dhaka Stock Exchange library and other sources. Eight field trips were made from 2006 to 2013 to collect these data, which were manually posted during the period 2006–2013. The market value of the year-ending share price was collected from the Dhaka Stock Exchange web page (Dhaka Stock Exchange 2013) and from the Monthly Review of the Dhaka Stock Exchange. Monthly market share prices were collected from the DataStream database (DataStream 2013). Ownership data were obtained from the notes to the financial statements, the Corporate Governance Compliance Report of the respective company, and from the (Monthly Review 2013) of the Dhaka Stock Exchange.

Variable Definitions

Dependent Variables

Several earlier studies on ownership structure have used the traditional performance measures, such as return on assets (ROA), as an accounting performance measure, or used Tobin's Q as a market performance measure, to capture the effectiveness of corporate governance practices (see, for example, Rashid 2010). Rashid (2013a, 2014) summarised the problem associated with accounting performance measures. It is argued that accounting profit can be manipulated because accounting profits are occasionally reported within the management guidelines and managers may tend towards a particular accounting method to enhance performance (Chakravarthy 1986; Deegan 2005). Managers may intentionally tend to use accounting numbers to manipulate accounting profits (Healy 1985; Wiwattanakantang 2001). It is also argued that accounting profit can be very high even in the presence of agency costs (Nicholson and Kiel 2007) and that not all agency costs are reflected in accounting performance measures (Wiwattanakantang 2001).

Table 1 Industry classification of the sample

Year	Number of firms in the sample	Observed firm years
Agricultural production-corps	5	55
Agricultural production-livestock	3	33
Non-metallic minerals, except fuels	3	33
Food and kindred products	9	99
Tobacco products	3	33
Textile mill products	22	242
Apparel and other textile products	5	55
Paper and allied products	2	22
Printing and publishing	1	11
Chemicals and allied product	16	176
Petroleum and coal products	2	22
Rubber and miscellaneous plastic products	6	66
Leather and leather products	5	55
Stone, clay and glass products	6	66
Primary metal industries	2	22
Industrial machinery and equipment	3	33
Electronic and other electric equipment	5	55
Miscellaneous manufacturing industries	2	22
Water transportation	1	11
Communications	3	33
Electric, gas and sanitary services	1	11
Automotive dealers and service station	3	33
Real estate	1	11
Holding and other investment offices	1	11
Total	110	1210

Thus, this study uses agency costs as dependent variables. Similar to earlier studies (such as Ang et al. 2000; Singh and Davidson III, 2003; Rashid and Hoque 2011; Rashid 2013a, 2014), this study uses three measures of agency cost. The first measure, also known as a direct proxy for agency cost (see Ang et al. 2000), is the expense ratio (ER). It is the ratio of operating expenses (selling, general, and administrative expenses, excluding financing expenses and any non-recurring expenses, such as losses on the sale of assets) to total annual sales (Ang et al. 2000). It measures how effectively a firm's management controls operating costs. According to Ang et al. (2000, p. 82), 'this measure captures excessive expenses including perk consumption'. The second measure of agency cost is the asset utilisation ratio (AUR), or the asset turnover ratio. It is the 'proxy for the loss in revenues attributable to inefficient asset utilisation' Ang et al. (2000, p. 82). It is calculated as the ratio of annual sales to total assets, an efficiency ratio, and measures how effectively a firm's assets are employed (Ang et al. 2000). As described by Singh and Davidson III (2003), agency cost 'measures management's ability to employ assets efficiently' (pp. 798–799). A low ER indicates that the management is controlling the operating expenses and vice versa, whereas a low AUR indicates that the management is using the assets in a non-cash flow generating venture and vice versa (Singh and Davidson III 2003).

This study also considers a third measure of agency cost, known as *the 'Q-free cash flow interaction'* (Q*FCF). Similar to Doukas et al. (2000), McKnight and Weir (2009), Henry (2010) and Rashid (2014), this measure of agency cost is the interaction of company's growth opportunities with its free cash flows. Similar to Doukas et al. (2000), Henry (2010) and Rashid (2014), the growth opportunities were measured by dummy variables, which takes the value one (1) if the company's Tobin's *q* was less than 1 (indicating a poorly managed company), or is zero (0) otherwise. Similar to Lehn and Poulsen (1989), Doukas et al. (2000), McKnight and Weir (2009), Henry (2010) and Rashid (2014), free cash flows were measured by operating income before depreciation minus the sum of taxes plus interest expense and dividends paid divided by total assets. Given the company's level of free cash flows, a company with low (high) growth opportunities was expected to be subject to high (low) agency costs (Florackis 2008). Thus, a high value of this agency cost measure indicates a higher

agency cost (Doukas et al. 2000; McKnight and Weir 2009). As an indication of a reduction in agency cost, it is expected that there will be an inverse (negative) relationship between 'managerial ownership' and the 'agency cost' from the ER and Q*FCF and a positive relationship between 'managerial ownership' and the 'agency cost' from the AUR.

Independent Variables

The independent variable in this study is director and/or managerial ownership (MGTOWN), which is the percentage of shares owned by company directors and/or executives.

Control Variables

This study considers a number of control variables. These are institutional ownership, individual ownership, CEO duality, debt ratio, liquidity, firm age, firm size, dividend yield, firm growth, and firm risk. It can be argued that the presence of institutional ownership and individual ownership will enhance the gap between separation of ownership and control, which may enhance firm agency cost. Institutional ownership (INSTOWN) and individual ownership (INDOWN) are the percentage of shares owned by financial institution and individual shareholders, respectively. The CEO has great influence on firm agency cost (Rashid 2013a). CEO duality provides enormous power to the CEO; this tends to fail the internal control system (Jensen 1993; Goyal and Park 2002) that may enhance firm agency cost. CEO duality (CEOD) is a binary, which is equal to one (1) if the CEO and Chairperson posts are held by the same person, otherwise it is zero (0). Debt may increase the firm's return on stock by minimising its financing cost and by acting as a disciplinary device. According to Jensen's (1986) free cash flow theory, companies with a high debt ratio have an interest payment commitment and will have less agency problems associated with free cash flow. According to Mahoney and Roberts (2007), debt ratio (DR) is calculated as the ratio of total debt to total assets; this is calculated by dividing the total debt by average total assets. Liquidity may influence firm agency cost. Although excess liquidity may reflect superior skills (Majumdar and Chhibber 1999), it may lead to the firm's assets being tied up in non-revenue-generating ventures and may also lead to agency costs of free cash flow. The liquidity variable (LIQ) is measured as the current ratio. Firm agency cost may be influenced by firm age; older firms are likely to be more efficient than younger firms (Ang et al. 2000). These firms are subject to a low agency cost. The age variable (AGE) is defined as the number of years a firm has been listed on the stock exchange. The firm size is an important variable in influencing agency cost; large firms have more capacity to generate internal funds (Short and Keasey 1999; Majumdar and Chhibber 1999). However, large firms may also have a complex and diversified organisation structure, which may enhance firm agency cost. This study considers the natural logarithm of average total net assets as firm size (SIZE). It is argued that a higher dividend pay-out (or a higher effective dividend yield) is expected to decrease firm-level agency costs. This is because 'dividends reduce firm liquidity, which increases the potential default risk of firms. In addition, the higher are the dividends relative to earnings, the stronger the likelihood is firm focus to be on future earnings performance as a means of maintaining the current dividend pay-out level' (Henry 2010, p. 30). Dividend yield (DYIELD) is measured as dividends per share divided by end-of-year share price. It is argued that the effectiveness of governance mechanisms in reducing agency problems is dependent on a firm's growth opportunities (McConnell and Servaes 1990; Florackis 2008). Growing firms may also achieve economies of scale; this may contribute substantially to reducing their agency cost. Similar to Morck et al. (1988) and Short and Keasey (1999), this study considered a control variable, growth (GROWTH), which is measured as the percentage of annual change in sales. Firm risk is a potentially important determinant of the level of firm agency costs. Similar to Henry (2010 and Rashid (2013a), risk (RISK) is measured by the natural logarithm of the standard deviation of stock returns over 1 year (12 months).

Regression Model Specification

To examine the relationship between the managerial ownership and agency cost, the following model is developed:

$$\begin{aligned} Y_{i,t} = {} & \alpha + \beta_1 \mathrm{MGTOWN}_{i,t} + \beta_2 \mathrm{INSTOWN}_{i,t} \\ & + \beta_3 \mathrm{INDOWN}_{i,t} + \beta_4 \mathrm{CEOD}_{i,t} + \beta_5 \mathrm{DR}_{i,t} + \beta_6 \mathrm{LIQ}_{i,t} \\ & + \beta_7 \mathrm{AGE}_{i,t} + \beta_8 \mathrm{SIZE}_{i,t} + \beta_9 \mathrm{DYIELD}_{i,t} \\ & + \beta_{10} \mathrm{GROWTH}_{i,t} + \beta_{11} \mathrm{RISK}_{i,t} + \varepsilon_{i,t,} \end{aligned}$$

where for the *i*th firm at time *t*, $Y_{i,t}$ is alternatively $ER_{i,t}$ Q*FCF and $AUR_{i,t}$; $MGTOWN_{i,t}$ is the percentage of shares owned by directors/managers; $INSTOWN_{i,t}$ is the percentage of shares owned by financial institutions; $INDOWN_{i,t}$ is the percentage of shares owned by individual shareholders; $CEOD_{i,t}$ is CEO duality; $DR_{i,t}$ is the debt ratio; $LIQ_{i,t}$ is the liquidity; $AGE_{i,t}$ is the firm's age; $SIZE_{i,t}$ is the firm's size; $DYIELD_{i,t}$ is the dividend yield ratio, $GROWTH_{i,t}$ is the firm's growth in sales and $RISK_{i,t}$ is the natural logarithm of the standard deviation of stock returns; and α is the intercept, β is the regression coefficient, and ε is the error term.

Descriptive Statistics

Descriptive statistics of the variables are presented in Table 2. The descriptive statistics include the mean, median, standard deviation, minimum, and maximum. The descriptive statistics reveal that the average firm agency cost, as measured by the ER, is 14.9 %; as measured by the Q-interaction of free cash flow, average firm agency cost is 3.8 %; and as measured by the AUR, average firm agency cost is 85.5 %. These findings are consistent with an expected low ER, Q-interaction of free cash flow, and a high AUR. Average managerial stock ownership is 40.2 %; this ranges from 0 to 90.9 %. Average institutional ownership is 18.3 %; this ranges from 0 to 89.1 %. This number is much lower than that of Anglo-American standards. For example, in the United Kingdom, 60.0 % of the shares in listed companies are owned by local institutions and an additional 20.0 % are owned by overseas institutions (Hampel Report 1998; Farrar 2005); in the United States, this ownership percentage is 50.0 % for local institutions (Farrar 2005). This percentage is 36.9 % in Australia (Farrar 2005). Average individual ownership is 33.9 %; this ranges from 0 to 88.1 %. There is a 34.6 % incidence of CEO duality. The average debt ratio is 68.1 %, implying that 68.1 % of the firm assets are financed by debt. Average firm liquidity is 1.63; average firm age (in the form of listing on the stock exchange) is 13.7 years; this ranges from 1 to 36 years. Average dividend yield ratio is 4.4 %.

To perform statistical analysis, it is necessary to meet the assumptions of statistical analysis, such as normality, multicollinearity, heteroscedasticity, and endogeneity. The normality assumption requires that observations be normally distributed in the population. Although Coakes and Steed (2001) argue that violations of normality are of little concern when the sample size is large (greater than 30), the Residual Test/Histogram-Normality Test of the regression equation produced a 'Bell Shape', confirming the normality of the data.

Multicollinearity refers to high correlations among the independent (or explanatory) variables or when the explanatory variables are significantly correlated with one another. When a high degree of correlation is found among explanatory variables, these variables must be removed. The correlation matrix of the explanatory variables (in Table 3) shows that there is no strong correlation between the variables; the correlation coefficients are very small (less than 0.45 or negative). Furthermore, the Variance Inflation Factors (VIFs) of all the variables are less than 2, while it is argued that VIFs of more than 10 are an indication of multicollinearity (Dielman, 2001; Gujarati, 2003; Hills and Adkins, 2003).

The heteroscedasticity assumption requires that the variance of the error is constant across observations (all levels of explanatory variables) or the residuals of the dependent variables are approximately equal/constant. In other words, the data points will be spread uniformly across the regression line. The plot of standardised residuals (ZRESID) against the standardised predicted value (ZPRED) of the model does not appear as a funnel or curve shape, indicating no evidence of heteroscedasticity. However, the Chi Square statistics and corresponding p value of the Breusch–Pagan–Godfrey test also suggest that heteroscedasticity is present in the model; this is corrected using White's correction technique for unknown heteroscedasticity (White 1980).

Endogeneity is the relationship between any of the explanatory variables with the error term. The potential endogeneity of ownership is highlighted by Demsetz (1983), Demsetz and Lehn (1985), Hermalin and Weisbach (1988)

Table 2 Descriptive statistics of the variables ($N = 1210$)

	Mean	Median	SD	Minimum	Maximum
Expense ratio (ER)	0.146	0.092	0.214	0.000	4.450
Q*FCF	0.038	0.000	0.078	−1.329	0.622
Asset utilisation ratio (AUR)	0.855	0.709	0.710	0.000	7.167
Managerial ownership (MGTOWN)	0.402	0.469	0.202	0.000	0.909
Institutional ownership (INSTOWN)	0.183	0.153	0.167	0.000	0.891
Individual ownership (INDOWN)	0.339	0.325	0.172	0.000	0.881
CEO duality (CEOD)	0.346	0.000	0.476	0.000	1.000
Debt ratio (DR)	0.681	0.589	0.532	0.020	5.619
Liquidity (LIQ)	1.626	1.148	2.090	0.028	31.245
Firm age (AGE) (Ln)	2.617	2.708	0.605	0.000	3.584
Firm sise (SIZE) (LnTA)	6.144	6.209	1.450	2.177	11.227
Dividend yield (DYIELD)	0.044	0.025	0.078	0.000	0.935
Firm growth (GROWTH)	0.270	0.080	3.595	−1.000	115.368
Firm risk (RISK)	2.700	2.529	1.916	−2.262	7.515

Table 3 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	12	VIF
MGTOWN	1.000											1.342
INSTOWN	−0.215**	1.000										1.367
INDOWN	−0.224**	−0.395**	1.000									1.380
CEOD	0.265**	−0.074**	−0.014	1.000								1.090
DR	−0.058*	−0.048	−0.048	−0.035	1.000							1.220
LIQ	−0.048	−0.036	0.069*	−0.027	−0.280**	1.000						1.102
AGE	−0.110**	0.085**	−0.099**	0.004	0.145**	−0.040	1.000					1.366
SIZE	−0.101**	0.019	−0.026	−0.098**	−0.158**	−0.007	0.109**	1.000				1.126
DYIELD	0.149**	−0.040	−0.013	0.050	−0.108**	−0.014	−0.199**	0.076**	1.000			1.084
GROWTH	0.004	−0.012	0.007	−0.023	−0.007	−0.014	0.000	−0.009	−0.021	1.000		1.003
RISK	−0.027	0.103**	−0.075**	−0.007	−0.130**	0.004	0.444**	0.243**	−0.113**	0.022	1.000	1.372

* $p < 0.05$; ** p < 0.01

and Cho (1998). When endogeneity is present, the Ordinary Least Square (OLS) estimate is inconsistent. Instrumental variable techniques are used to address endogeneity. Earlier studies (Demsetz and Lehn 1985; Hermalin and Weisbach 1988; Cho 1998) have used two stage least square estimates (treating ownership as potentially endogenous). However, studies, for example, Morck et al. (1988) have ignored the issue of endogeneity of ownership structure. Despite this consideration, as suggested by Gujarati (2003) and similar to Rashid 2013a; Rashid. 2014), the F test for the predicted value of managerial ownership was marginally insignificant. Using 'expense ratio' as a proxy for firm agency cost, $F = 7.20$ ($p = 0.010$), using 'asset utilisation ratio' as a proxy for firm agency cost, $F = 0.71$ ($p = 0.3991$), and using Q-interaction of free cash flow as a proxy for firm agency cost, $F = 1.50$ ($p = 0.2216$). These findings marginally indicate that there are no signs of potential endogeneity between managerial ownership and agency cost, suggesting that both the OLS and IVs are consistent.

Empirical Results

The regression coefficients of the relationship between managerial ownership and agency cost are presented in Table 4 (Panel A). The adjusted R squared and F-Statistics indicate that the model is an overall fit. From the regression output, it is noted that the coefficients MGTOWN are in the expected direction only under ER and AUR measure of agency cost. However, these are significant only under AUR measure of agency cost. There is a significant relationship positive relationship between institutional ownership and Q*FCF measure of agency cost (as opposed to negative) and significant negative relationship between institutional ownership and AUR measure of agency (as oppose to positive) cost implying that institutional ownership may be a source of agency cost. There is a significant negative relationship (as opposed to positive) between external ownership AUR measures of agency cost. These findings further support the idea that separation of ownership and control may lead to the agency problem described herein. Liquidity and firm age have significant explanatory power in reducing firm agency cost under the AUR measure of agency cost. Although CEO duality has significant explanatory power in reducing firm agency cost under the ER measure of agency cost, this could be a source of agency cost under AUR measure of agency cost. Firm size has significant explanatory power in reducing firm agency cost under the ER measure of agency cost. The significant negative relationship between the debt ratio and Q*FCF implies that, when a firm relies on debt financing, the interest payment obligation may reduce the agency cost associated with free cash flow. Firm age reduces firm agency cost under both Q*FCF and AUR measure of agency cost. Firm risk has significant explanatory power in reducing firm agency cost under all the measures of agency cost.

Robustness Test

The finding is robust; in other words, the data used in this study are a balanced panel, and there is no unobserved heterogeneity. However, it is argued that the relationship between the managerial ownership and firm agency cost is 'spurious because the relationship between these variables is industry specific and no control has been included in the regressions for this possibility' (Short and Keasey 1999, p. 95). Managerial ownership may be substantially

Table 4 Regression coefficient of the relationship between ownership structure and agency cost (This table presents the summary results of the relationship between managerial ownership and agency cost)

	Dependent variables					
	Panel A (Before controlling for Industry and Time)			Panel B (After controlling for Industry and Time)		
	ER	Q*FCF	AUR	ER	Q*FCF	AUR
Intercept	0.217 (2.410)*	0.050 (1.944)*	0.354 (3.074)**	0.426 (2.624)**	−0.001 (−0.018)	−0.581 (−2.283)*
MGTOWN	−0.029 (−1.072)	0.014 (1.387)	0.467 (3.392)***	−0.035 (−1.274)	0.015 (1.133)	0.227 (1.556)
INSTOWN	−0.016 (−0.256)	0.031 (1.636)*	−0.471 (−4.002)***	−0.004 (−0.066)	0.040 (1.996)*	−0.498 (−3.702)***
EXTERNAL	0.072 (1.290)	0.014 (0.710)	−0.745 (−5.314)***	0.022 (0.450)	0.041 (1.518)	−0.923 (−5.310)***
CEOD	−0.024 (−2.387)*	0.005 (1.049)	−0.124 (−3.129)**	−0.001 (−0.093)	0.001 (0.145)	−0.050 (−1.094)
DR	0.031 (0.517)	−0.013 (−3.229)***	0.061 (1.488)	0.054 (0.689)	−0.016 (−4.405)***	0.167 (3.017)**
LIQ	0.011 (2.913)**	0.000 (0.268)	0.029 (3.072)**	0.002 (0.640)	0.001 (1.052)	0.017 (2.668)***
AGE	0.019 (1.597)	−0.014 (−2.847)**	0.134 (4.642)***	0.022 (2.457)*	−0.009 (−1.574)	0.210 (4.835)***
SIZE	−0.020 (−4.635)***	0.003 (1.606)	−0.001 (−0.099)	−0.018 (−4.492)***	0.002 (1.205)	0.041 (2.770)**
DYIELD	−0.208 (−4.047)***	0.327 (7.014)***	0.960 (3.362)***	−0.114 (−2.457)*	0.305 (6.431)***	0.706 (2.200)*
GROWTH	0.001 (0.430)	0.000 (−1.752)*	−0.004 (−0.856)	0.001 (0.687)	0.000 (−0.159)	0.000 (−0.095)
RISK	−0.010 (−2.734)**	−0.007 (−5.183)***	0.083 (7.190)***	−0.006 (−2.333)*	−0.004 (−2.834)**	0.104 (8.086)***
F-statistics	8.093***	28.785***	20.001***	7.761***	10.634***	10.572***
Adjusted R^2	0.060	0.202	0.148	0.198	0.259	0.258

The *t* tests are presented in the parentheses. * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

different across firms (Zhou 2001); it may impact large and small firms differently with respect to value (Kole 1995). Consistent with this argument and similar to Demsetz and Lehn (1985), McConnell and Servaes (1995), Short and Keasey (1999), further analysis is conducted to determine the robustness of the results by controlling the above regression model for industry and time effect. This is done by adding 'INDUSTRY Dummies' for the two-digit industrial classification (SIC) codes for the sector to which the firm belongs and 'TIME Dummies' for the year in which the observation is made. The following regression equation is arrived at

$$\begin{aligned} Y_{i,t} = {} & \alpha + \beta_1 \mathrm{MGTOWN}_{i,t} + \beta_2 \mathrm{INSTOWN}_{i,t} \\ & + \beta_3 \mathrm{INDOWN}_{i,t} + \beta_4 \mathrm{CEOD}_{i,t} + \beta_5 \mathrm{DR}_{i,t} + \beta_6 \mathrm{LIQ}_{i,t} \\ & + t\beta_7 \mathrm{AGE}_{i,t} + \beta_8 \mathrm{SIZE}_{i,t} + t\beta_9 \mathrm{DYIELD}_{i,t} \\ & + \beta_{10} \mathrm{GROWTH}_{i,t} + \beta_{11} \mathrm{RISK}_{i,t} \\ & + \Omega YEAR + \gamma INDUSTRY + \varepsilon_{i,t.} \end{aligned}$$

The new regression coefficients shown in Table 4 (Panel B) were not materially altered. Although a few coefficients have changed from non-significant to significant and vice versa and many coefficients have changed from negative to positive and vice versa, the signs of the coefficient MGTOWN are unchanged. These findings suggest that the influence of managerial ownership on firm agency cost could be industry specific. In other words, managerial ownership may reduce firm agency cost in some industries; however, this may not be the case in other industries. This is because firms in different industries have different operating expenses, assets, and inventory structure.

These findings also imply that there is a non-linear relationship between managerial ownership and agency cost. This argument is consistent with prior studies (see Morck et al. 1988; Short and Keasey 1999). This possibility is investigated by following an approach similar to Morck et al. (1988) and Short and Keasey (1999) by analysing the square and cubic root of managerial ownership. The results from this analysis (not shown here) reveal that the coefficient MGTOWN is negative and significant ($p = 0.080$), the coefficient for its square term is positive and significant ($p = 0.086$), and its cubic term is again negative and significant ($p = 0.087$) under the ER measure of agency cost. The inflection points determined by this analysis are 24.77 % and 68.88 %. These results indicate that managerial ownership reduces firm agency cost as much as 24.77 % of managerial ownership; beyond that level, a maximum of 68.88 % of managerial ownership enhances agency cost. In addition, over 68.88 % of managerial ownership again reduces firm agency cost. Similarly, MGTOWN is positive and significant (p value $= 0.000$), whereas the coefficient for its square term is negative and significant (p value $= 0.000$); its cubic term is again positive and significant (p value $= 0.000$) using the AUR measure of agency cost. The inflection points determined by this analysis are 24.62 % and 57.78 %. These results indicate that managerial ownership reduces firm agency cost as much as 24.62 % of managerial ownership; a maximum of 57.78 % of managerial ownership enhances agency cost. In addition, over 57.78 % of managerial ownership again reduces firm agency cost. The coefficient MGTOWN, its square, and cubic term are found to be non-significant using the Q*FCF measure of agency cost.

Additional Endogeneity Test

Although the results of the study thus far suggest that managerial ownership has an influence on firm agency cost, managerial ownership may be a source of agency costs. Thus, the direction of this relationship is not fully captured by cross-sectional regression. Therefore, similar to previous studies (see Rashid 2013a, 2014) as a final assessment of endogeneity, a simple crossed-lagged regression model is used, which is.

$$\begin{aligned} \text{Agency cost}_{it} = {} & \delta_0 + \delta_1 \text{Agency cost}_{t-1} \\ & + \delta_2 \text{Managerial ownership}_{t-1} \\ & + \text{Other control variables} + \acute{\epsilon}_{it} \end{aligned}$$

$$\begin{aligned} \text{Managerial ownership}_{it} = {} & \delta_0 + \delta_1 \text{Managerial ownership}_{t-1} \\ & + \delta_2 \text{Agency cost}_{t-1} \\ & + \text{Other control variables} + \acute{\epsilon}_{it} \end{aligned}$$

In the first equation, at time t, firm agency cost is regressed against the lagged value of agency cost and the lagged value of managerial ownership. In the second equation, at time t managerial ownership is regressed against the lagged value of managerial ownership and the lagged value of firm agency cost. The regression output of firm agency cost at time t against the lagged value of itself and the lagged value of managerial ownership reveals that the firm's past agency cost significantly influences the firm's future agency cost under all the measures of agency cost. However, past managerial ownership has no significant influence on future agency cost. The regression output of managerial ownership at time t against the lagged value of managerial ownership and the lagged value of agency cost reveals that the past managerial ownership has a significant influence on future managerial ownership. However, past firm agency cost has no significant influence on future managerial ownership. Therefore, one can conclude that there is no reverse causality between managerial ownership and firm agency cost.

Discussion and Conclusion

This study investigates the relationship between managerial ownership and firm agency cost among listed firms in Bangladesh. The finding of the study is that managerial ownership reduces firm agency cost only under the AUR measure of agency cost, implying managerial ownership as a factor for better utilisation of firm resources. However, it does not serve as a deterrent to excessive discretionary expense. This finding is consistent with prior studies, such as Singh and Davidson III (2003), in the context of a developed economy. This study's finding primarily supports the Jensen (1993) 'convergence of interest' hypothesis; that is, managerial shareholding may align the interest of managers with that of shareholders, which may help reduce firm agency costs. The non-linear relationship between managerial ownership and agency cost implies that the convergence of interest is evident within a certain level of ownership; entrenchment by managers is evident at a moderate level of agency cost.

Because institutional ownership and external ownership enhance the gap between the separation of ownership and control, it appears that these types of ownership are sources of agency cost. These findings further support the idea that managerial shareholding will align the interest of owners with that of management.

It is hard to say whether this study supports the validity of stewardship theory as managerial ownership reduces firm agency cost when managers have a vested interest in the firm. However, this study does not reject the validity of agency theory. This is because, the separation of ownership and control leads to the problem of aligning the interest of owners with managers, which may be detrimental to the economic welfare of principals. Because entrenchment by managers is evident at moderate levels of ownership and the agency problem may still exist between insiders and outsiders, the practitioner/policy implication of this study is that legislative guidelines for controlling share ownership may be required. It will pose a threat to poorly performing company management. It also may reduce the information asymmetry between insiders and outsiders; this may lead to a cooperative stakeholder relationship and may reduce the firm's agency cost.

This study may have some limitations. For example, the data were mainly collected from companies' annual reports. Because the accounting standards are very poor in developing countries, annual reports may not truly represent the state of affairs or performance of companies. Furthermore, the data were collected from a large number of observations of different corporate entities without regard for the underlying differences in organisations, although no two organisations (even within the same industry) are the same (Deegan 2006). The extreme values of some observed variables, such as EBIT or accumulated profits, of some firms during certain years may severely impact the outcome of this study.

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