

The Analysis of Operating and Financial Performance of Listed Companies after Issuing IPOs in Chittagong Stock Exchange

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How to cite this paper: Ahmed, F. (2021). The Analysis of Operating and Financial Performance of Listed Companies after Issuing IPOs in Chittagong Stock Exchange. *American Journal of Industrial and Business Management*, 11, 111-130. <https://doi.org/10.4236/ajibm.2021.112008>

Received: December 14, 2020

Accepted: January 30, 2021

Published: February 2, 2021

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Abstract

This paper investigates the financial and operating performance of 70 IPOs firms from 2011 to 2015. We examine changes in the Bangladeshi listed firms' performance around their initial public offerings. It is found that Bangladeshi IPOs exhibit a sharp decline in the post-IPO performance compared to the pre-IPO period as measured by the ROA. We also find that the performance deterioration is significantly associated with the IPO event. The performance decline is associated with the firm transition from private into public ownership due to increasing agency costs. Also, we find evidence supports the lack of opportunity theory because the firm's growth in sales and capital expenditure is much stronger in the pre-IPO period compared to post-IPO period.

Keywords

Initial Public Offerings, Operating Performance, Financial Performance, Ownership

1. Introduction

The firms going public, issue securities to raise capital for expansion of business operations and to promote the value of the firm. Usually the stocks of many IPO firms do not perform well after few days of the offering to public. We may understand all about how an IPO works, but what do we really know about the business of the company in which investor plan to invest. People invest their money with the hope of getting higher return on IPOs. But people don't know about as to how far the IPOs company be able to meet their desire within the professed time. In this respect, many questions may be raised. Some of them could be—does the company have a sound business plan and experienced managers with capability to execute the plan? Is the company solvent enough to

achieve the declared goals & objectives and thereby meet investors' expectations? What is the operating and financial performance of these companies after issuing IPOs? Considering all related factors, it is felt worthy both from academic and operational perspectives, to design a plan of research study focusing activities of the company during the post—IPO era and analysis their operational and financial performance after IPO.

Most of the earlier studies conducted in relation to IPOs focused on post-issue stock price performance. There are a few, however, which focus on the operating performance of the firm and to our knowledge no recognized study has been done on this subject on the Bangladeshi's market. Furthermore, our study is more recent than other studies that focus on IPOs. We will investigate how the IPO affects on an operating and financial performance level, and is there any association between change in ownership structure and change in performance of IPOs and how firm's age and size influence the performance of IPOs.

This paper investigates the operating and financial performance of 70 listed companies in Chittagong Stock Exchange after issuing initial public offerings (IPOs) for a period between 2011 and 2015. The study was limited to only companies' listed in the Chittagong Stock Exchange in Bangladesh because of reliable and consistent source of information needed for comparison purposes. A firm considering the move to go public should always be aware of the potential negative implications in order to make an informed decision. To get insight into the changes of the operating performance of IPO firms, use of accounting data one year prior to and three years after the privatization has been made.

The outline of this paper is as followings. Section 2 focuses on review of literature. Next section discusses the research methods, variables and the sample, followed by the empirical results. The last section offers some concluding remarks.

1.1. Objectives of Study

Main objective: The main objective of this research is to analysis the Operating and Financial Performance of Listed Companies after IPOs in Chittagong Stock Exchange. To achieve the main objective, the researcher sets some sub objectives as follows:

Specific objectives:

- 1) To evaluate the operating performance of listed companies after issuing IPO.
- 2) To examine the relationship between change in ownership structure and change in performance of IPO;
- 3) To investigate the impact of age and size of the firm on the performance of IPO.

1.2. Research Questions

Further considering the performance declining nature of the listed companies in CSE after issues IPO particularly during 2012-2018, the objective of the present

study is to analyze the operating and financial performance of listed companies in post IPO era, the using different approaches to answer the following questions:

- 1) Whether the operating and financial performance of listed companies improved or declined between pre and post IPO?
- 2) Whether the efficiency of IPO firms improved or declined between pre and post IPO?
- 3) Is there any relationship between change in performance of IPO and change in ownership structure?
- 4) How age and size of the firm influences on IPO performance?

1.3. Limitations of the Study

Due to time and resource constraints the study only reviewed a sample of some listed firms, not all companies that are enlisted during 2011-2015 period.

However this provides an opportunity for further research. The fixed sample quantitative data obtained from secondary data of the qualifying 100 firms implied that there was need for a similar response rate from the questionnaire used for the construction of the qualitative primary information collected using the questionnaires for the purpose of comparison. To ensure a 100% response rate, drop and pick method of administering questionnaires could not work effectively. Administration of the questionnaires was therefore personally done with the help of the research assistant and intensive follow-up which was costly and took a longer time than forecasted in the research plan. However this enhanced the achievement of all the intended study objectives. Further the study used questionnaires limited to likert scale questions and secondary information from published financial statements; therefore there is need in future studies to include open ended questions to bring more qualitative information in terms of views and opinions of different categories of the investors

2. Literature Review and Theoretical Frame Work

2.1. The Post-IPO Operating Performance

Jain & Kini (1994) found declines in the post-issue operating performance compared to pre-IPO level for the U.S. market. Their results are consistent with the predictions of Jensen & Meckling's (1976) agency theory. They suggest that the decline in performance of companies that go public is explained in part by weakened incentives of managers. Moreover, they found a positive relation between performance changes and the portion of shares retained by pre-offering owners. Jain & Kini (1994), besides agency cost theory, also use windows of opportunity as well as the market timing hypotheses to explain the declines in the offerings. Coakley et al. (2008) analyzed the post-issue operating performance of UK initial public offerings at London Stock Exchange and found significant declines after the offerings. Cai & Wei (1997) found that the post-issue deterioration in operating performance of initial public offerings listed on the Tokyo Stock Exchange

cannot be attributed to the reduced managerial ownership. [Cai & Wei \(1997\)](#) insisted that their evidence provides strong support for the windows of opportunity explanations for the new issue puzzle by [Loughran & Ritter \(1995\)](#). They concluded that the decline in profitability is not related to the changes in the ownership level. Therefore, they claimed that the post-issue deterioration of performance for Japanese IPO firms cannot be attributed to the effects of moving from private to public ownership.

Besides, they reached a conclusion that their evidence does not support the agency hypothesis of [Jensen & Meckling \(1976\)](#) found declines in the post-issue operating performance of IPOs at Japanese over-the counter market. [Cai & Wei \(1997\)](#)'s results, indicated that the post-IPO deterioration in operating performance cannot be attributed to the reduced managerial ownership. However, [Kutsana et al.](#) stated that their evidence, inconsistent with [Cai & Wei \(1997\)](#)'s results, supports the view that the post-IPO deterioration in operating performance is partly attributable to the reduced management ownership. [Kim et al. \(2004\)](#) examined the operating performance of Thai firms after they go public. They did not reach any finding showing that there is a relationship between the post-issue operating performance and management ownership level after the IPO. According to them, information asymmetry among participants should be more severe than that in developed markets due to the relatively undeveloped market structure. Therefore, they insisted that ownership structure may play a more important role in firm performance of emerging market firms than those of developed countries. However, they fail to find a positive linear relationship between managerial ownership and IPO-firm performance. Like [Mikkelsen et al. \(1997\)](#) and contrary to [Jain & Kini \(1994\)](#), they found no linear relationship.

2.2. IPO Effect on Operating Performance

There are several studies that observe an impact on performance connected to the listing of a firm. We review these results, specifically the effects on profitability as well as sales & financial efficiency.

2.2.1. Profitability

[Jain & Kini \(1994\)](#) measured performance using operating return on assets, operating cash flows divided on total assets, sales, asset turnover and capital expenditure in the period 1976-1988. Their sample contains a total of 682 firms. They examined the change in performance from the year prior to the IPO to each of the four subsequent years, with the IPO year being the first. Defining operating return on assets as the operating income before depreciation divided by previous year's total assets, they found a substantial decline in all post-IPO years. The decline increases gradually and caps at -10.53 percent in year two after the IPO, with a slight recovery in year three. Additionally, they find evidence of a decrease in operating cash flow over assets. The results are also significant after adjusting the numbers to industry specific effects.

Similarly, [Pagano, Panetta, & Zingales \(1998\)](#) defined profitability as EBITDA

over total assets at the end of the previous year and detected a decline by -1.5 and -3 pp. (percentage points) for one respectively three years after the IPO. Pagano, Panetta, & Zingales (1998) investigate the reasons why companies choose to go public. The sample consists of IPOs on the Milan Stock Exchange during the years 1982-1992. In an earlier study, they also find that profit over assets for IPO firms is higher than benchmark firms before the IPO but lower at the time of the IPO date and afterwards. Furthermore, Mikkelsen, Partch, & Shah (1997), using an equivalent definition of profitability as Pagano et al. (1998), also identify a sharp decrease in post-IPO profitability. The drop is sharpest between Year -1 and Year 0 as well as between Year 0 and Year 1. Additionally, they find that the performance measures of IPO firms are generally in excess of industry matched firm levels before going public, whereas the measure declines to a threshold below the benchmark similarly to findings of Pagano et al. (1996).

Wang (2004) defines return on assets (ROA) as net income divided by total assets and operating income to assets as EBIT divided by total assets and finds a significant decline in these performance measures post-IPO. After adjusting for industry trends he finds a decrease in return on assets of close to 4 pp. from three years before to three years after the IPO.

Furthermore, a study by Boubaker & Mezhoud (2011) conducted on the French market in 2000-2006 measures performance using operating return on assets and ROA. Contrary to the other studies, findings indicate a slight increase in the year of the IPO across analyzed measures, followed by a sharp decline in the subsequent years.

2.2.2. Sales & Financial Efficiency

Jain & Kini (1994) find that the median amount of sales for the sample firms is inferior to the matched industry firms in the year before going public. However, in terms of sales growth the study presents a continuous and steady surge over the post IPO years. Specifically, the median industry-adjusted change in sales is approximately 20 pp. in each consecutive year, resulting in a growth of 80 percent from the pre-IPO year to three years post listing. Consequently, the IPO firms' sales levels increase 20 pp. in excess of matched industry firms per year, resulting in higher absolute sales numbers already during the listing year. Chi & Padgett (2006) also find an increase in sales over the post-IPO years, however, slightly less prominent numbers. The work of Pagano et al. (1998), on the other hand, exhibits a practically negligible change in sales, below 4 percent per year.

Although Jain & Kini (1994) observe such a high sales growth, the asset turnover declines, implying an even greater increase in assets. The asset turnover of the IPO firms is initially 25 pp. higher than that of the industry matched firms. The metric decline consists of a one-off drop by 20 pp. in the year of the IPO, which could be expected, since there is a natural boost in assets due to the cash inflow of the new issue. These lower levels of asset turnover remain during subsequent years, although the long-term¹³ values are insignificant. This is further

strengthened by the findings of Boubaker & Mezhoud (2011), who observe a decline in asset turnover. However, the decline is taking place in the year after the IPO and forth, deviating from the findings of Jain & Kini (1994) in terms of timing.

2.2.3. Age of the Issuing Firm

The age of the firm shows the operating history of the firm prior to going public, which measures the ex-ante risk of the offer. Newly formed firms exhibit higher ex-ante uncertainty than older firms. Ritter (1991) found that the availability of information on firms operating for several years contributes to the reduction of IPO information asymmetry. They concluded that this ex-ante uncertainty will be reflected in higher underpricing of the IPO firms. Additionally, it is found that age is positively associated with better performance over time, in line with the findings of Mikkelsen et al. (1997) and Balatbat et al. (2004) whose studies showed a positive impact of firm age on performance. This finding also suggests that, as the age of firm increases, year to year performance improves.

2.2.4. Firm Size

The size of the issuing firm is also used to measure the ex-ante risk of IPOs. The size of a firm is usually negatively associated with its risk shown that larger firms have better access to investment capital and resources, which are crucial for the firm's profitability and survival. Also, a significant positive link is found between the size of the IPO and performance, which is consistent with Mikkelsen et al., (1997) finding that large IPO tend to perform better than small IPO. However, some studies have reported a positive relationship between these two variables.

2.3. The Ownership Structure and Operating Performance of IPO Firms

An initial public offering of common stock causes significant changes in the ownership structure of a company. This potentially worsens managerial incentives and firm performance. The increased conflict of interest between managers and shareholders after the IPO should cause a decline in operating performance. Ownership and firm performance have been the subject of an important and on-going debate in the corporate finance literature, where Jensen & Meckling (1976) were the first to describe the occurrence of potential agency costs in relation to ownership structure. Numerous academic papers have then investigated further applications of the agency theory and in context of the IPO light is shed primarily on two viewpoints; interest alignment and managerial entrenchment.

Jain & Kini (1994) partly analyse the relationship between changes in managerial ownership and firm operating performance in connection to IPOs. In accordance with theories on interest alignment (Jensen & Meckling, 1976), they argue that a decline in managerial ownership increase the risk of conflict of interest between shareholders and original owners. Conversely, given high equity retention in the transition from private to public ownership, interests are supposedly more aligned, implying a lesser risk of investing in unprofitable projects.

In line with this theory, the authors observe a higher reduction in operating performance for firms with lower managerial ownership retention. However, they cannot surely conclude whether this effect stems from interest alignment.

As most of the agency-related theories, management entrenchment has been covered numerous times in studies and implies that managers will act in order to make themselves as valuable as possible to the firm, for instance by investing in manager-specific assets (Shleifer & Vishny, 1989). In contrast to interest alignment, it has been argued that managers with high equity stake not necessarily are interested in maximizing profit. Disputes that an owner-manager will seek to maximize their utility (as any person would), which can take on several other forms than maximizing firm value. Ignoring all these forms and solely focusing on personal financial gain, managers with a high ownership stake could still be inclined to make non value-maximizing investments, for example if the investment leads to an increase in salaries and bonuses that would compensate for the loss of ownership profits (dividends). Thus, one explanation for high managerial ownership retention correlated with larger decrease in operating performance could be due to the general structure of manager incentive programs. Boubaker & Mezhoud (2011) observe this negative relationship between performance development and managerial ownership retention, meaning that companies in which managers keep a higher equity stake post-listing.

Jain & Kini (1994) link the performance decline of American IPOs to many reasons, one of which is the lessening of incentives for managers/owners after the sale, due to the change in ownership structure. IPOs typically lead to a significant change in the ownership structure and often to a battle between the original owners and the new shareholders. On the contrary, Mikkelsen et al. (1997), find no link between ownership structure change and performance decline among American IPOs. One of the major reasons for these conflicting results regarding the impact of change in ownership structure on performance change is due to the methods that are applied by the authors. Different methods have resulted in varying results.

Kim, Kitsabunnarat, & Nofsinger (2004) argue that the relationship between performance change and the change in ownership structure is not linear. They examine three different models: a linear relationship and two non-linear relationships. They use quadratic and cubic forms to allow for three levels of managerial ownership turning points, and their overall conclusion supports the non-linearity relationship. The authors argue that the alignment of interest occurs at “low” and “high” levels of ownership, which is when the managers retain the majority or minority of shares, and entrenchment occurs at the “intermediate” level of ownership.

2.4. Theoretical Framework

This study was based on four theories, Agency theory, The Windows of opportunity Theory, Earnings management hypothesis, Market Timing Theory.

Theories	Relate to Research
Agency Theory	Reduction in management ownership may increase the agency problem and agency cost that leads to declining operating performance. Manager/agent are engage to perform some service on behalf of owner which involves delegating some decision-making authority to the agent. The agency theory considers the impact of the change in ownership structure on the performance of firms after the IPO
The Windows of opportunity Theory	When the stock market rises, investors tend to be over optimistic and have high expectations about the returns of the stocks. This over-optimism creates a unique opportunity for the owners of firms, and for insiders, to achieve a higher price for the shares this finding could explain the decline in operating performance.
Earnings management hypothesis	IPO companies manipulate their financial statements with a view to attracting investors and this “window-dressing” technique is not useful in the long run because, once investors know the true value of the firm, prices fall and unusually good performance level that cannot be sustained over time

On the basis of this comprehensive literature review, it is hoped that this study is one step ahead to contribute additional evidence of operating performance of IPOs for long horizons periods, especially to address the issue of measurement problems. So the study is contribution to the increasing body of evidence on the operating performance and efficiency of IPOs for long horizons periods in CSE as well as internationally. In addition, the study will also help investors to decide whether to retain the shares for longer period after buying them from primary market.

2.5. Conceptual Framework

A conceptual framework is a concise description of the phenomenon under study represented by graphical depiction of the major variables of the study defines conceptual framework as a diagrammatic representation of the relationship between the dependent and independent variables.

For this study the conceptual framework looked at the relationship among IPOs, efficiency of IPO and Change in ownership structures of companies listed in CSE and how they affected on operating and financial performance (see **Figure 1**).

2.6. Hypothesis Development

H1: The operating performance of IPOs deteriorates after the IPO (pre-IPO performance is better than post-IPO).

H2: The change in the ownership structure is associated with the performance change of IPO Firms

H3: The age and the size of the IPOs Firm are associated to performance change, in that large, well-established IPOs perform better than other IPOs.

3. Research Methodology

3.1. Target Population (See Table 1)

The population of interest in this study was all the firms that have been listed at the CSE between 2011 and 2015 and had compiled their financial reports for the relevant period of study.

3.2. Sample Frame

The present study has covered a period of 5 years from 2011 to 2015 by selecting the data of new IPO firms floated on the Chittagong Stock Exchange. The sample IPO firms were selected in this study comprised of 70 IPO firms by using **MORGAN'S TABLE** that was listed on the CSE. Total population consists of **86** IPO firms that were listed during the study period. The year wise sample of IPO firms is displayed in **Table 2**.

Table 1. Target population.

Year	No of Companies	Percentage
2011	18	20.93%
2012	14	16.28%
2013	17	19.77%
2014	20	23.36%
2015	17	19.76%
Total	86	100%

Source: Chittagong Stock Exchange.

Table 2. Sample frame (Year wise).

Year	Population size	Sample size
2011	18	15
2012	14	12
2013	17	14
2014	20	15
2015	17	14
Total	86	70

Source: Chittagong Stock Exchange (using MORGAN'S TABLE).

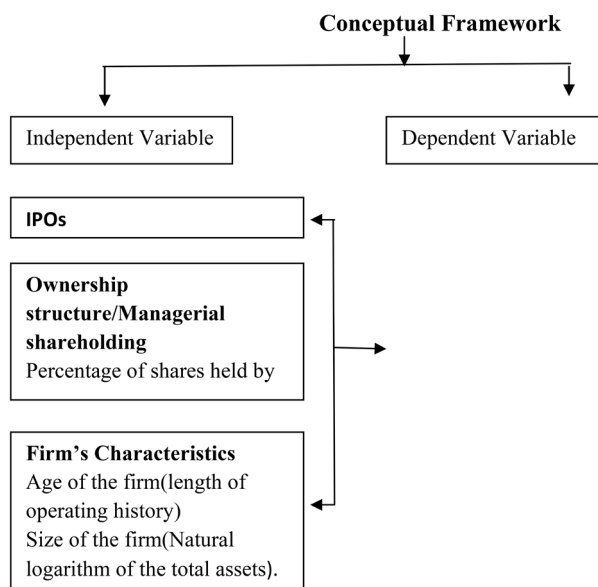


Figure 1. Conceptual framework.

3.3. Event Specification

As we measure the post-issue operating performance, the IPO will naturally be the event. Since an IPO is firms specific, i.e. the event occurs at a different time for each firm, the analysis must be conducted on the change in performance over time relative to the IPO. Due to data availability we limit the thesis to observing change in full year accounting data, excluding intra-year variations. Therefore, the year of the IPO, hereafter referred to as Year 0, constitutes our event window. Since the aim of this study is to observe changes in operating performance as an effect of the IPO, the estimation period must be the year prior to the event, Year -1. We then compare Year -1 to Year 0 and three consecutive post-IPO years, Year 1 - 3. The chosen time frame, frequently used in previous literature, is illustrated in **Figure 2**

3.4. Performance Measure Definition

There are several commonly used and clearly defined measures of firm operating performance. Chosen measures are presented in following:

Performance measure definitions

Performance Indicator	Definition	Measurement
Return on Asset (ROA)	ROA is an indicator of how efficient a company's management is at using its assets to generate earnings.	$ROA = (\text{Profit after depreciation, interest and tax}) / \text{Total Assets} * 100$
Return on Equity (ROE)	ROE is a measure of how well a company uses investments to generate earnings growth.	$ROE = (\text{Profit after depreciation, interest and tax}) / \text{Total Equity} * 100$
Profit Margin (PM)	The profit margin ratio is a profitability ratio that measures the amount of net income earned with each dollar of sales generated by comparing the net income and net sales of a company.	$PM = (\text{Profit after depreciation, interest and tax}) / \text{Total Equity} * 100$
Asset Turnover (AT)	Asset turnover is an important ratio used to analyses how assets are utilized to produce revenues,	$AT = (\text{Net Sales} / \text{Total Assets}) * 100$
Sales Growth	Sales Growth is the parameter which is used to measure the performance of the sales team to increase revenue.	$SG = [(\text{Sales in year 1} - \text{Sales in year 0}) / \text{Sales in year 0}] * 100$
Age of the Firm	The independent variable age of the firm shows history of operating activity from the start	Age is measured by the length of operating history
Size of the Firm	Size of the firm indicates the size of annual total asset of a firm.	Size is measured by the natural logarithm of the total assets.
Ownership Structure	Ownership is the state or fact of exclusive rights and control over property	Percentage of shares held by management
Capital Expenditure Growth	Capital expenditure is the natural logarithm of the money spent by the IPO firm on acquiring or upgrading physical assets	$CEG = [(\text{CE in year 1} - \text{CE in year 0}) / \text{CE in year 0}] * 100$
Total Debt Ratio	TDR is vital in assessing the ability of the firm to meet long-term obligations.	$\text{Total Debt Ratio (TDR)} = (\text{Total Liabilities} / \text{Total Assets}) * 100$

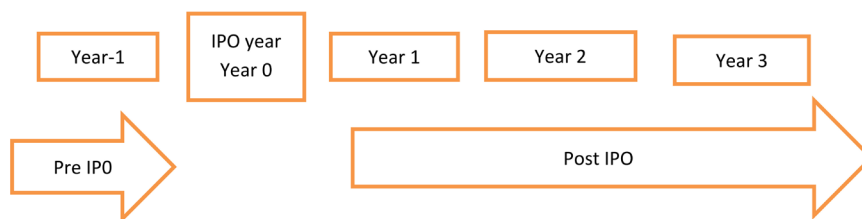


Figure 2. Event specification.

3.5. Econometric Model

In order to analyze the IPO effect on performance we are using the following model specifications on all performance measures:

The first model to be used in this study was developed by the authors to measure the association between the performance change and the IPO event. It is in a linear-log form as follow:

$$\text{ROA} = \beta_1 + \delta \text{IPO} + \beta_2 \ln(1/\text{Total assets}) + \beta_3 \ln(\text{Net Income}) + \gamma_1 [\ln(1/\text{Total assets}) * \text{IPO}] + \gamma_2 [\ln(\text{Net Income}) * \text{IPO}] + \varepsilon \quad (1)$$

The dependent variable in Equation (1) is the return on assets ROA. The first independent variable is the IPO, which is an intercept dummy variable that takes 1 for firms after the IPO and 0 before the IPO. Including this intercept dummy variable will enable to capture the direct effect of the IPO on the ROA without interference from other variables. Also, two dummy interaction parameters γ_1 and γ_2 have been included in the model to capture the effect of the net income and total assets with the IPO event. The benefit of this step is to compare the interaction between the IPO event and other variables between the two periods, pre and post-IPO. When the IPO takes place all dummy variables will be included, but before the IPO the model in Equation (1) will retain only the total assets and the net income variables. The best way in seeing the effect of the inclusion of these dummies is to consider the regression function $F(\text{ROA})$ in the two periods, pre and post-IPO:

$$F(\text{ROA}) = (\beta_1 + \delta) + (\beta_2 + \gamma_1) \ln(1/\text{total assets}) + (\beta_3 + \gamma_2) \ln(\text{net income}), \quad (2)$$

when IPO = 1 for the after the initial public offerings period

$$F(\text{ROA}) = \beta_1 + \beta_2 \ln(1/\text{total assets}) + \beta_3 \ln(\text{net income}), \quad (3)$$

when IPO = 0 for the before the initial public offerings period

The second model to be used in this paper was used many times in the literature such as the study of Kim et al. (2004). The model with slight changes and adjustment to be used in this paper is:

$$\begin{aligned} &\text{Change in performance}(\text{ROA}_{-1 \text{ to } +1}) \\ &= \beta_0 + \beta_1 \text{Ownership} + \beta_2 \text{Age} + \beta_3 \text{Size} + \beta_4 \text{CG} + \beta_5 \text{SG} + \beta_7 \text{TDR} + \varepsilon \end{aligned} \quad (4)$$

The dependent variable in this model can be either the change between $Y + 1$ and $Y - 1$. The Ownership independent variable represents the ownership stake

(in percentage) that is held by the original owners at the time of the IPO (the retention). It is expected that ownership will have a negative impact on change in performance due to increasing agency cost. A higher rate of retention by the original owners results in a higher agency conflict and a decline in performance. Age is the difference between the establishment year and the IPO year of the firm. Size is the natural logarithm of the total assets during the IPO year. [Mikkelsen et al. \(1997\)](#) found that the size and the age of the firm have an impact on the performance; therefore we include them in the model to find out their effect on the Bangladeshi firms. SG represents the sales growth from $Y - 1$ to $Y + 1$. [Kim et al. \(2004\)](#) said that leverage could have an impact on the firms' performance, thus total debt ratio is included to control for possible leverage effect.

4. Analysis and Interpretations

In order to analyze the post-issue operating performance of IPO firms, the changes in operating performance relative to pre-issue period have been examined.

4.1. Descriptive Statistics

Table 2 shows descriptive statistics on 70 IPOs between 2011 and 2015. The offer price is the price per share standardized for all IPOs by the equivalent TK. Initial returns (underpricing in percentage) are calculated by taking the difference between the IPO closing price on the listing day and the issue price. Proceeds (in TK) are calculated by multiplying the number of shares on offer by the issue price. Total assets (TK) are the total value of assets in the IPO year. Age is the length of the IPO operating history calculated by taking the difference between the IPO year and the establishment year. Ownership is the percentage of shares held by the original owners at the time of the IPO.

The characteristics of the sample are outlined in **Table 3**. The median offer price is Tk.22 and the mean offer price is Tk.38.48. The mean gross proceeds raised by the sample firms is Tk.205.85 million while the minimum gross proceeds is Tk 4.5 million and the maximum is Tk.5500 million. The mean (median) initial return for these firms is 78.85 (38.92) percent; however the maximum and minimum initial returns are 684.57 percent and -57.97 percent respectively. The mean (median) age of sample IPOs is 12.96 (8) years. The mean (median) ownership structures for these firms are 42.50 (30) percent; however the maximum and minimum initial returns are 684.57 percent and -57.97 percent respectively.

Accounting profitability measures are reported in **Table 3** for the entire sample of 70 IPOs firms. And show a sharp decline in the profitability of IPOs from the pre-IPO to the post-IPO year. The mean (median) deteriorates in all profitability ratios. The mean of ROA, ROE, PM and AT is pre IPO is 12.2%, 24%, 16.1% and 1.72 respectively. The average ROA, ROE, PM and AT have declined in post-listing 11%, 12.2%, 15.5% and 1.47 respectively.

Table 3. Characteristics of IPO sample.

Descriptive Measure	Mean	Median	Maximum	Minimum
Offer Price (Tk)	38.48	22	500	08
Gross Proceeds (Tk. Million)	205.85	50	5500	4.5
Initial Return (%)	78.85	38.92	684.57	-57.97
Age	12.96	8	25	1
Ownership (%)	42.50	30	75	18

Source: Author's source.

Summary statistics of 70 Initial public offering (IPO) firms, pre and post IPO. Y -1 refers to the fiscal year preceding the year during which the company is listed (pre-IPO year). ROA is profit over total assets. ROE is profit over total equity. Profit margin is profit over total sales. Sales Growth is the parameter which is used to measure the performance of the sales Asset turnover is calculated as sales over total assets.

On the **Table 4** it is shown that mean of Pre IPO condition is 12.2%, 24%, 16.1% of ROA, ROE and PM and Post IPO condition is 11%, 12.2% and 15.5% of ROA, ROE and PM respectively. There is a sharp decline in Post IPO condition except in sales growth.

4.2. Empirical Results

Operating Performance of Listed IPOs Firm

Table 4 reports the median changes in the operating performance of IPO firms surrounding the issuing year. The change in operating performance of issuing firms has been measured relative to year -1 (one year preceding the IPO). The performance of companies going public has been found to decline after the IPO. There is a significant decline in median return on assets from year -1 to year 0 and from year -1 to year 1 but the decline in later years is not significant. Return on equity has declined significantly till the third year after the IPO. Sales growth is positive throughout the three years after issue. In spite of the sales growth, there is a decline in assets turnover which indicates that issuing firms increase their assets faster as compared to the sales following the IPO issue. Results indicate that return on assets, return on equity and assets turnover decline after the issuance, regardless of the event window used. However, operating cash flow on assets declines in the first year but increases in the subsequent years. If changes in performance from year $t - 1$ to $t + 1$ are measured, return on assets has declined by 1.89%, return on equity by 1.35%, Profit margin by -0.68% and assets turnover by - 9.92%. Capital expenditure growth rate has also remained positive, except for a decline from year -1 to +2. These results are consistent with [Jain & Kini \(1994\)](#) and [Mikkelsen et al. \(1997\)](#) who found that IPO firms in U.S. exhibit a decline in their post-issuance operating performance.

The post-IPO operating performance has declined as compared to the pre-IPO levels. The decline in return on assets, return on equity and assets turnover is not related to a decline in business activity. However, these findings

are in line with the hypothesis of window dressing which states that the managers attempt to window-dress their accounting reports prior to going public, due to which pre-IPO performance gets over-stated and post-IPO performance declines (Table 5).

4.3. Bangladeshi Firms' Performance Decline Explanations

Table 6 shows a significant decline in the growth of sales in the post-IPO period in comparison to the growth rate during the pre-IPO period. The median sales growth has fallen from 22% to 10% {a decline of approximately 54% $(10\% - 22\%/22\%) = -54\%$ }. Furthermore, the capital expenditure growth has fallen from 30% to 12% that severe 60% $\{(12\% - 30\%/30\%) = -60\%$ deterioration in the post-IPO period. Both variables indicate that the growth rates of IPOs during the pre-IPO are better than the growth rates during the post-IPO period. This result lends support to the lack of opportunities hypothesis. Moreover, the total debt ratio (insignificant) suggests that IPOs rely more on debt after the IPO than during the pre-IPO period.

Table 4. Descriptive analysis of pre and post IPO.

Performance Indicator	Pre IPO				
	Observation	Min	Max	Mean	Std. Deviation
ROA	70	-0.121	0.525	0.122	0.164
ROE	70	-1.312	0.58	0.24	0.321
PM	70	-193	0.534	0.161	0.17
SG	70	0.056	3.998	0.082	0.13776
AT	70	0.06	14.77	1.72	1.84
Post IPO					
ROA	70	-0.245	0.438	0.11	0.188
ROE	70	-1.752	0.662	0.122	0.583
PM	70	-1.206	0.525	0.155	0.368
SG	70	0.087	4.969	0.1142	0.1918
AT	70	0.06	2.78	1.47	0.76

Table 5. Changes of operating performance of listed IPOs firm.

Measure of Operating Performance	Year Relative to the IPO year			
	-1 to 0	-1 to 1	-1 to 2	-1 to 3
Return on Asset	-1.62*	-1.89**	-3.05	-3.75
Return on Equity	-0.41**	-1.35***	-5.44***	-6.31***
Profit Margin	-0.45	-0.68	0.62	0.06
Sales Growth	0.77	12.37**	3.85	2.556
Asset Turnover	-12.71	-9.92	-18.67	-15.42
Capital Expenditure Growth	0.55	1.02	-0.15**	0.02*

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.

Table 6. Comparison between the average Y– and the average Y+.

Variables	N	Median before	Median after	Median change	z-Statistic
Sales growth	40	0.22	0.10	–0.12	3.2***
Capital expenditure growth	40	0.30	0.12	–0.22	2.4 **
Total debt ratio	40	–0.03	0.04	0.08	1.1

***, **, * Significant at the 1, 5, and 10 per cent levels, respectively.

4.4. Regression Analysis

4.4.1. The Performance Decline and the IPO Event Association

To test for an association between bangladeshi firms' performance decline and the IPO event, a regression methodology has been used. **Table 4** illustrates the regression model results. The goodness-of-fit is the adjusted R-squared = 72.1 per cent, indicating that the model fits the data well.

Table 7 reports Ordinary Least Squares regression coefficient estimates. The dependent variable is the return on assets. The sample is 70 Bangladeshi firms that went IPO during the period 2011-2015. IPO represents an intercept dummy variable takes 1 after the IPO and 0 before. The second explanatory variable is the logarithm of the inverse total assets. The third explanatory variable is the logarithm of the net income. $\text{Log}(1/\text{Assets}) * \text{IPO}$ and $\text{Log}(\text{income}) * \text{IPO}$ are interaction dummy variables that will be present after the IPO and disappear because the zero multiplication before the IPO.

The estimated regression function for Bangladeshi firms after the IPO is

$$F(\text{ROA}) = 3.546010 + (-1.249305) + (2.34665 - 1.000103) + (0.115187 - 0.034768)$$

$$F(\text{ROA}) = 2.296705 + 1.346547 \text{ LOG}(1/\text{Assets}) + 0.080419 \text{ LOG}(\text{Income})$$

For the pre-IPO period, the regression function is

$$F(\text{ROA}) = 3.546010 + 2.34665 \text{ LOG}(1/\text{Assets}) + 0.115187 \text{ LOG}(\text{Income})$$

1) The IPO premium for firms after they go public is (–1.249305). The intercept is significant and it says that when all independent variables are equal to zero, the expected return on assets would be 2.296705 per cent for the after-IPO period and 3.546010 per cent for the pre-IPO period.

2) The coefficients for the total assets and its interacted slope dummy variable are all significant indicating that the IPO has significant impact on the return on assets. A 1% increase in assets leads to a 0.01346547% increase in the return on assets for the post-IPO period, while a 1% increase in assets used to lead to more increase 0.0234665% in the return on assets for the pre-IPO period. This result indicates that the usage of assets efficiently in generating higher ROA was better in the pre-IPO period than in the post-IPO period, which is consistent with our findings on Bangladeshi firms' performance decline.

3) The coefficients for the net income and the interacted dummy variable are significant indicating that the IPO has big impact on the firms' performance. A 1% increase in net income leads to a 0.00080419% increase in the return on assets for the post-IPO period, while a 1% increase in the net income used to lead

to bigger increase 0.00115187% in the return on assets in the pre-IPO period. This result also shows that hiring the net income effectively was better in the pre-IPO period than in the post-IPO, which confirmed the performance deterioration after going public for Bangladeshi firms IPOs.

Using this model is showing that the IPO has significant negative impact on Bangladeshi firms' performance as measured by the ROA and the performance decline is related to the IPO event.

4.4.2. Estimates of the Relationship between the Change in IPO Performance and the Change in Ownership Structure

Previously, it was confirmed that the decline in the IPO performance is associated with the IPO event. Several techniques were used in order to match the pairs before and after the IPO and too pool all of the data. Following is a thorough analysis of the impact of ownership on the performance of IPOs and the type of association that exists between these factors.

Table 8 shows the estimates of Equation 2, it is found that a linear association between a change in the IPO performance (ROA) and a change in the ownership structure exists. As hypothesized, a change in ownership structure has a significant negative impact on the performance of the IPO. This result contradicts the findings of Kim et al. (2004) 5 of a non-linear relationship. Additionally, this finding suggests that a higher rate of retention by original owners results in a worse change in performance.

Table 7. ROA regression equation estimates.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	3.546010***	0.209586	13.99765	0.0000
IPO	-1.249305***	0.345712	-3.677804	0.0003
LOG (1/Assets)	2.345665***	0.177060	16.47705	0.0000
LOG (Income)	0.115187***	0.007458	17.27745	0.0001
LOG (1/Assets)*IPO	-1.000103***	0.243705	-3.24883	0.0002
LOG (Income)*IPO	-0.034768***	0.010064	-4.551002	0.0000

Adjusted R-squared = 0.721. No. Observation = 70. *, **, *** are statistically significant at the 10%, 5%, and 1% levels respectively.

Table 8. The change in ROA regression equation estimates.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	-4.138380**	1.366575	-3.028286	0.0143
Ownership	-2.025879**	-0.656125	-3.087641	0.013
Age	0.008246***	0.002435	3.385930	0.0081
Size	0.26587	0.145627	1.825693	0.1012
CAPEX	-0.010537	0.024234	-0.434814	0.6739
Sales	-0.202294	0.212112	-0.953714	0.3651
TDR	-0.197397**	0.072418	-2.725796	0.0234

Adjusted R-Squared = 0.655. No. Observation = 70. *, **, *** are statistically significant at the 10% level, 5% and 1% respectively.

Table 8 reports Ordinary Least Squares regression coefficient estimates. The dependent variable is the change in return on assets from year -1 to year $+1$, where year 0, the year when company goes public is excluded. The sample is 70 Bangladeshi firms that go IPO during the period 2011-2015. Ownership represents the percentage stake held by the original owners after the IPO. Firm age is the difference between the establishment year and the IPO year. Firm size is the natural logarithm of total assets at the IPO year. CAPEX is the change in capital expenditure from the prior year. Sales rate is the growth in sales from the prior year and is calculated as the percentage increase in annual sales. TDR is the total debt ratio calculated as the percentage change between year -1 and year $+1$.

We consider here a linear relationship between firms' performance and ownership. The model has adjusted R-Squared value of 65.5 per cent, which indicates the model fits the data well. Therefore, it seems that change in ownership structure has a negative impact on the ROA. This result contradicts the findings of [Kim et al. \(2004\)](#) of a non-linear relationship. Additionally, this finding suggests that a higher rate of retention by original owners results in a worse change in performance.

Also, in **Table 8** it is found that there is a strong impact of the firms' age on the performance. The age coefficient is positively significant indicating that with each increase in the age there will be an increase in the change in the ROA. The size of the firm seems to have also a positive impact on the performance, but it is not significant. This result is consistent with [Mikkelsen et al. \(1997\)](#) who linked the performance change to the age and the size of the firm. While our result is in line with this author in regard to the age of the firm, the size of the firm in Bangladesh cannot be linked to the firms' performance. Moreover, the total debt ratio coefficient has a significant negative impact on the ROA change. This means that firms using more debt have experienced a worse performance after they go public as measured by the change in ROA. This result is consistent with [Kim et al. \(2004\)](#) on Thai IPOs.

Finally, in **Table 8** we find that the capital expenditures and the sales growth are both insignificant, and that firms with more sales and capital expenditures growth seem to suffer worse change in the ROA. This is an expected result in regard to the capital expenditures since this increase may have enlarged the denominator in the ROA equation and hence lowering the change in the ROA. On the contrary, the increase in sales was expected to be a positive impact on the change in the ROA as it contributes to the numerator. These two estimates however are insignificant.

5. Findings and Recommendations

5.1. Summary of Findings

1) The performance of companies going public has been found to decline after the IPO. There is a significant decline in median return on assets from year -1 to

year 0 and from year -1 to year 1 but the decline in later years is not significant. Return on equity has declined significantly till the third year after the IPO.

2) Sales growth is positive throughout the three years after issue. In spite of the sales growth, there is a decline in assets turnover which indicates that issuing firms increase their assets faster as compared to the sales following the IPO issue.

3) Operating cash flow on assets declines in the first year but increases in the subsequent years.

4) If changes in performance from year Y -1 to Y +1 are measured, return on assets has declined by 1.89%, return on equity by 1.35%, Profit margin by -0.68% and assets turnover by - 9.92%.

5) A change in ownership structure has a significant negative impact on the performance of the IPO. A higher rate of retention by original owners results in a worse change in performance.

6) It is found that there is a strong impact of the firms' age on the performance. The age coefficient is positively significant indicating that with each increase in the age there will be an increase in the change in the ROA. The size of the firm seems to have also a positive impact on the performance, but it is not significant.

5.2. Recommendations

1) A complete model would attempt to include all variables of importance when the different post-issue performance measures, for instance bonus and incentive programs for managers as well as dividend policies. It should be recommended for further research

2) Companies should examine the reasons of declining operating performance after issuing IPOs. And should overcome it at best possible way so that investors are getting back their expected returns.

3) The total debt ratio coefficient has a significant negative impact on the ROA change. So firms should use debt as an efficient way that has positive impact on ROA.

4) The Companies should not publish their overstated accounting reports prior to going public, due to which pre-IPO performance gets over-stated and post- IPO performance declines.

5.3. Conclusion and Future Research

In this paper, the operating performance of 70 IPO Listed companies was under CSE examined. The results indicate that performance deteriorates during the post-IPO period. Also, this paper has documented that the performance decline for the seventy firms had started from the year of the IPO and intensified in magnitude in subsequent years following the shares issue. We also documented that the performance decline among the seventy Bangladeshi IPOs is associated with the IPO occurrence as the regression analysis indicated. In conclusion, the

explanation for the decline in the operating performance of an IPO is a complex function of multiple factors, and no single theory or hypothesis can explain this decline.

Our study does not attempt to maximize the R2 value of the model, i.e. we do not aim to fully explain the development of the performance measures, but rather to observe to what extent certain parameters, such as managerial ownership retention, affect performance. Consequently, further research could involve an attempt to construct a complete model, thus increasing the R2, explaining changes in operating performance post-IPO. A complete model would attempt to include all variables of importance when the different post-issue performance measures, for instance bonus and incentive programs for managers as well as dividend policies.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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