
POST-IPO OPERATING PERFORMANCE IN BANGLADESH

Md. Sajib Hossain CFA

Assistant Professor

Department of Finance, Faculty of Business Studies

University of Dhaka, Dhaka-1000, Bangladesh

E-mail: saajibfin06@du.ac.bd

Dr. Muhammad Saifuddin Khan

Associate Professor

Department of Finance, Faculty of Business Studies

University of Dhaka, Dhaka-1000, Bangladesh

E-mail: saifuddin@du.ac.bd

ABSTRACT

This study attempts to investigate the change in the operating performance of firms as they go from private to public ownership. Using the data of all the non-financial firms, which floated initial public offerings (IPOs) from 2008 to 2015, this study finds that there is a significant decline in operating performance as measured by ROA, asset turnover, ROS, and OCFTA after the IPO and the decline continues for next two to three years with the highest deterioration of operating performance being observed in the immediate next year of IPO. Moreover, when the study uses age, debt ratio, sales, capital expenditure, and IPO event to explain the variation of the operating performance of IPO firms over time, it finds that IPO event negatively affects all measures of operating performance. Finally, the study finds that deterioration of the post-IPO operating performance is more pronounced for firms offering their securities with premium than firms offering securities without premium.

Keywords: IPO, Operating Performance, Bangladesh.

JEL Classification Codes: G11, G12, G32.

INTRODUCTION

There is an extensive body of literature documenting that operating performance of firms after they transition from private to public deteriorated (Jain & Kini, 1994; Mikkelson et al., 1997; Kim et al., 2004; Mikkelson, Partch, & Shah, 1997; Cai & Wei, 1997; Kitsabunnarat & Nofsinger, 2004; Bruton et al., 2010). Several possible causes are normally offered for such decline in post-issue operating performance of initial public offering (IPO) firms such as principal-agent problems that arise after a company becomes a public company (Jensen & Meckling, 1976), earnings management before IPO (Teoh et al., 1998), and the timing of the offerings according to the market conditions (Pagano, Panetta, & Zingales, 1998). Irrespective of the explanation offered by researchers, the common outcome is that the post-issue operating performance of the IPO firms declines significantly.

Although there has been lots of works on pre-issue and post-issue operating performance of IPO firms, research in Bangladesh has primarily focused on the after-market and long-run stock price behavior of IPOs. Moreover, firms in Bangladesh can offer securities either through fixed price method in which

securities are priced at par or through book building method if firms want their securities to be priced at premium. The previous literature suggests that firms offering securities with premium have more incentive to inflate their earnings to justify a higher valuation. So, it is an interesting question to investigate what happens to the post-IPO operating performance of firms offering their securities with premium compared to that of firms offering their securities without premium.

Unlike the developed market, the IPO market in Bangladesh tends to be rather small in size and often dominated by a few large issues regularly. In addition, there are institutional differences between the developed capital markets and the Bangladeshi capital market which warrant an examination of the long-run operating performance of IPOs in Bangladesh. This paper provides a comprehensive empirical analysis of the long-run operating performance of IPOs in Bangladesh during 2008-2015 and attempts to relate the pre-issue and post-issue operating performance. To get insight into the changes in the operating performance of IPO firms, this study uses accounting data one year before and three years after the IPO has been made. Our study finds that there is a significant decline in operating performance as measured by ROA, asset turnover, ROS, and OCFTA after the IPO. We also find that the decline in post-IPO operating performance continues for the next two to three years with the highest deterioration of operating performance being observed in the immediate next year of IPO. Moreover, when the study uses age, debt ratio, sales, capital expenditure, and IPO event to explain the variation of the operating performance of IPO firms over time, it finds that IPO event negatively affects all measures of operating performance. Finally, to check whether firms offering securities with premium have more incentive to inflate their earnings to justify a higher valuation, we test the differences in the mean deterioration of post-IPO operating performance for both categories in firms: firms offering securities without premium and with premium. We document that deterioration of the post-IPO operating performance is more pronounced for firms offering their securities with premium than firms offering securities without premium.

The study will contribute to the literature in two ways. Firstly, this study will concentrate solely on the operating performance of the IPO firms based on accounting measures. Secondly, this study will find the degree of operating performance changes for both IPO with premium and IPO without premium.

The remainder of this paper proceeds as follows. Section 2 provides a brief review of the literature concerning post-IPO operating performance. Section 3 describes the sample selection, data, and research methodology. Section 4 reports the empirical results. Finally, Section 5 provides the conclusion of the study.

LITERATURE REVIEW

The existing body of literature has extensive evidence that post-issue IPO operating performance of firms deteriorates primarily because of agency cost (Bruton et al., 2010; Jain & Kini, 1994), entrenchment hypothesis (Kim, Kitsabunnarat, & Nofsinger, 2004), and window of opportunity hypothesis (Cai & Wei, 1997; Loughran & Ritter, 1995). Lyandres, Sun, and Zhang (2008) suggested that the decline of the post-IPO operating performance of firms is related to aggressive capital expenditures.

Jain and Kini (1994) conducted research on the US market from 1976 to 1988 on 682 IPO firms. They found that retained ownership of the original entrepreneur is linearly associated with the firm's post-issue operating performance. Loughran and Ritter (1995) conducted a study on 4,753 companies going public and 3,702 seasoned equity offerings (SEOs) in the US from 1970 to 1990 and found issuing firms underperform significantly relative to non-issuing firms for five years after the issue.

Barbar and Lyon (1996) criticized the IPO studies and argued that return on asset is a biased measurement of IPO firms because the level of asset changes significantly after the issuance. They suggested that instead of size, firms should be matched by the relevant variables before analyzing the

data. Supporting the hypothesis of Barber and Lyon (1996), Brav and Gompers (1997), and Kothari, Leone, and Wasley (2005) found that post-issue decline of performance was mostly concentrated in small firms. Mikkelsen, Partch, and Shah (1997) studied a sample of 283 initial public offerings of US companies from 1980 to 1983. They found that the operating performance of IPO firms declines during the post-issue period. They suggested that the post-issue performance of IPO firms declined because young and small firms were unable to grasp the competitive advantage from the market.

Cai and Wei (1997) studied long-run stock returns and the operating performance of 180 initial public offerings (IPOs) listed on the Tokyo Stock Exchange during the 1971-92 period. Unlike Jain and Kini (1994) they reported that deterioration of operating performance was not caused by reduced managerial ownership with the IPO years rather they suggested that the underperformed firms experienced a lack of window of opportunity after going public. Their dependent variables were long-run stock performance and the independent variables were size, ownership share of owner-manager, growth of size. Later on, Cai and Laughran (1998) analyzed the performance of seasoned and unseasoned equity offerings on the Tokyo Stock Exchange and also argued that the post-issue deterioration in operating performance cannot be attributed to managerial ownership changes. Pagano, Panetta, and Zingales (1998) also studied about 30,000 Italian firms and reported that IPOs experienced severe deterioration in their profitability while studying the determinants of the IPO. According to them, this deterioration was caused by the subsequent changes made in their company structure that intensified the agency costs.

Kutsuna, Okamura, and Cowling (2002) analyzed the operating performance on the sample size of 850 JASDAQ companies during the operation period of 1995-1996. In this analysis, dependent variables were net sales, ordinary profit, net profit, and their respective profits, and the independent variables were change in shareholding position, listing year and sector dummy, firm's age, firm's size, market capitalization. They concluded that operating performance changes as the managerial ownership changes irrespective of the age and size of the firm which is purely contrary to the findings of Cai and Wei (1997). Lukose and Rao (2003) analyzed the operating performance of the IPO firms through a rights share issue and found that the decline in performance was caused by the inefficiency in the utilization of business assets. Rindermann (2003) investigated the operating performance issue from a different aspect that is the impact of venture capitalists on the operating and market performance of firms going public by using a hand-collected international dataset of venture- and non-venture backed of 303 samples in France, Germany, and the UK from 1995 to 1999. He reported that venture-backed issues underperform non-venture-backed companies in terms of accounting measures while doing the cross-country analysis.

Kim, Kitsabunnarat, and Nofsinger (2004) analyzed the entrenchment hypothesis by using a cubic function on a sample of 103 firms in Thailand for the period of 1987 to 1993. Their dependent variables were operating return on total assets, operating cash flow, sales to total assets ratio, and capital expenditure and the independent variables were industry-adjusted return on assets and ownership percentage along with quadratic and cubic function. Their findings were that there was a curvy-linear relationship between ownership of owner-manager and operating performance.

Wang (2005) conducted the same analysis on a sample of 747 firms in China for the period from 1994 to 1999. They found that there was a sharp decline in post-issue operating performance of IPOs, as measured by return on assets, operating income to assets, and sales to assets. They also argued that neither state ownership nor concentration of ownership was linked with performance changes rather there was a curvilinear relation between legal-entity ownership and operating performance changes and between the concentration of non-state ownership and operating performance changes. Lyandres, Sun, and Zhang (2008) supported an investment-based explanation for the decline in the performance of IPO firms, whereby firms go for aggressive spending of money in capital expenditure. The investment-based explanation of the new issues puzzle denotes that the lower post-issue operating performance was caused

by the negative relation between real investment potentiality and expected returns. Firstly, the relationship between real investment and expected return is negatively correlated. Secondly, if firms issue new equity and debt to finance real investment, then issuers would get lower expected returns than the non-issuers. Fan, Wong, and Zhang (2007) conducted research on 790 IPO firms during the timeframe of 1993-2001 and found that firms having the politically connected CEOs perform less than those of without politically connected CEOs by 18% in the subsequent three-year post-IPO stock returns and have lesser three-year post-IPO earnings growth, sales growth, and change in returns on sales. They concluded that post-issue decline in operating performance is rigid and severe in firms where CEO is politically well-known and with very fragile corporate governance.

Kao, Wu, and Yang (2009) analyzed 479 IPO firms in China for the timeframe of 1996 to 1999 and found that IPO firms that show a comparative better operating performance have larger declines in their profitability in the post IPO period. Moreover, IPO firms make an over-optimistic forecast in the market and consequently experience a lower first-day return and thus experience worse post-IPO performance. Bruton et al. (2010) analyzed a sample of 224 matched IPO firms of the UK and France and then concluded that venture capital funds adversely affect IPO firms' performance, while long-term angel funds affect their operating performance quite leniently.

Ahmad-Zulaki, Campbell, and Goodacre (2011) analyzed a sample of 250 Malaysian IPOs during the time frame of 1990 to 2000 and the results provided support for IPO year income-increasing earnings management, but this happened primarily because of the economic stress period. IPO companies that are indulged in massive (income-increasing) earnings management experience a worse post-IPO market-based performance than their competitors in the market. Krishnan, Ivanov, Masulis, and Singh (2011) conducted research on IPO companies from 1993 to 2004 to scrutinize the effect of venture capital (VC) in the long run post-IPO performance. Based on the various accounting measures and stock performance they found that venture capital has a positive link with post-issue performance.

Michel, Oded, and Shaked (2014) conducted a study on 1,801 IPOs from 1996 to 2006 to investigate whether there was any association between post-issue performance and public float decisions. They took ROA as the performance measure and public float as their independent variable. Their analysis concluded that there was a non-linear relationship between public float and the long-run return performance of the IPOs. Pereira and Sousa (2017) described that post-issue operating performance of firms changes based on the geographical location they hold. They examined a sample of 555 European firms that floated their shares in public between 1995 and 2006. Consistent with previous findings, they found a decline in post-issue operating performance of IPO firms where firms located in emerging European regions performed worse after the IPO period compared to the firms located in developed European countries in the immediate after periods of IPO.

With the increasing significance of this IPO topic in the empirical studies of corporate finance, Bangladesh has also several pieces of research in this field. Islam et.al (2002) studied the operating performance of SEOs in Bangladesh. They reported that SEOs in Bangladesh followed a trend of having improved operating performance before the equity offering and experienced a declining operating performance right after they make the equity offering to the public market. They also argued that the fall in the operating performance of small firms was more severe than that of large firms. Haque and Imam (2017) studied that firms with the highest forecasting error quartile performed severely low in the three subsequent years after going public, while firms having the most conservative earnings showed a better performance. Their results also clarified that the mean absolute forecast error of IPO return forecasts in Bangladesh is nearly 90%, which implied that actual profits changed 90% from the forecasted returns mentioned in the IPO prospectuses.

DATA AND METHODOLOGY

Data

This study is based on secondary data of non-financial firms, which floated IPOs from 2008 to 2015 in Bangladesh. The study focuses on the long-term operating performance of the IPO firms, for which we consider three years of post-issue data and two-year pre-issue data. We consider only two-year pre-issue data because financial statement two-year before the IPO event is not available in Bangladesh. Non-financial firms have been selected for uniform balance sheet formation so that any conclusion attributed from the analysis encompasses and matches with the whole sample.

Research Methodology

Operating Performance Measuring Variables

Following the existing studies, return on assets (ROA), return on sales (ROS) or profit margin, asset turnover (AT) and ratio to operating cash flow to the total asset (OCFTA) have been used as the proxy for the operating performance. Variables have been estimated in the following way:

ROA= Net Profit after Tax / Total Assets

ROS= Net Profit after Tax / Total Sales

AT= Net Sales/ Total Assets

OCFTA= Net Operating Cash Flow/ Total Assets

The Pre-IPO years are marked as “t-” and the post-IPO years are marked as the “t+” for the comparison. The IPO year is labeled as “t”. The study uses median changes instead of mean changes as mean values of operating performance are highly sensitive to outlier effects, and the use of the median would be a better choice (Jain & Kini, 1994). Wilcoxon signed-rank test is used to test whether the difference of operating performance between the pre-IPO and post-IPO periods is statistically significant.

Regression Analysis

Almost all previous studies conducted in developed and developing countries on the topic of IPO documented a significant post-IPO performance decline. For example, this operating performance decline is found in the U.S.A by Jain and Kini (1994); Mikkelson et al. (1997), in Japan by Cai and Wei (1997); Kutsuna et al. (2002) in Italy by Pagano et al. (1998), in Korea by Chan et al. (2000), in Thailand by Kim et al. (2004). Consistent with the existing literature, we hypothesize that:

H₁: The operating performance of IPO firms in Bangladesh deteriorates after the IPO.

Finally, we conduct regression analysis to test the link between the IPO event and the operating performance over time. The function model is the following:

Operating Performance = f (IPO event, natural logarithm of sales, age, total debt ratio, and natural logarithm of capital expense).

IPO event is a dummy variable taking a value of 1 for the post-IPO period and zero otherwise. Age is the difference between the incorporation years and the listing years and Total Debt Ratio (TDR) is the ratio between total debt and total asset.

Post-Issue Operating Performance of Firms with Premium and without Premium

Moreover, to test whether the post-issue operating performance of firms with premium changes more than the post-issue operating performance of firms without premium, we have tested the following hypothesis with a simple t-test analysis.

H₂: Post-issue operating performance of firms with premium declines more than the post-issue operating performance of firms without a premium

Test of Robustness

The regression results are tested with various robustness tests. These tests have been used as the assumptions of regression tests. All the data has been tested with the Durbin Watson model to check whether the variables used in the regression analysis suffered from autocorrelation or not. Multicollinearity has been tested using variance inflation factor (VIF) to check whether the variables are significantly correlated to each other or not. Finally, the normality of residuals has been checked using the Jarque-Bera normality test and histogram graph. All the analysis has been conducted using the statistical software Stata.

EMPIRICAL ANALYSIS

Descriptive Statistics

From the descriptive analysis in Table 1, it is evident that the average issue price of these IPO firms is about 29 Taka which indicates that most of the firms that became public during the period came with premium issue price as the price is more than 10 Taka par value set by the authority back in 2011. The issue price remains in the range of 10 to 100 for that period. The average issue size of the IPOs is about 726 million taka which indicates that the issue size is quite high during the period. The highest issue size during the period was for Grameenphone Ltd. which came with a premium share price and the lowest issue size was for the AFC Agro Biotech Ltd. which came with a face value share price in the market. The median issue size is 425 million Taka which indicates a more reserved figure than the average issue size. The average age of the firm or the tenure of operational history of the IPO firms is 13 years and the median age is 11.5 years. Both statistics denote that most of the firms are pretty much matured in the sense of business and operational activities. So, they made their entry into the capital market after having enough business experience. The firm with the lowest operational history among the IPO firms is Dacca Dyeing and Manufacturing Company Limited and the firm with the highest operational history and experience is Bangladesh Steel Re-Rolling Mills Ltd. Balatbat, Taylor, and Walter (2004) found that the mean age of the IPO firms in Australia is 5 years and Wang (2005) reported that the mean operational history of IPO firms in Thailand is 14 years which is quite similar with our context. Shukla and Shaw (2018) found in a recent study that the average age of the firms in India who come into the market as IPO firms are around 12 years.

Table 1. Descriptive Statistics

| Attributes | Mean | Median | Standard Deviation | 25th Percentile | 75th Percentile | Minimum | Maximum | Observations |
|----------------------|-------------|---------------|---------------------------|------------------------|------------------------|----------------|----------------|---------------------|
| Issue Price (Taka) | 28.8 | 25 | 23.7 | 10 | 35 | 10 | 100 | 60 |
| Retention Rate (%) | 57% | 55% | 27% | 40% | 77% | 0% | 100% | 60 |
| Issue Size (Million) | 725.75 | 425 | 778.43 | 220 | 1000 | 120 | 4860.76 | 60 |

| | | | | | | | | |
|----------------|-------|------|-------|---|------|---|----|----|
| Age (Years) | 13.15 | 11.5 | 10.05 | 7 | 17.5 | 3 | 63 | 60 |
|----------------|-------|------|-------|---|------|---|----|----|

Table 1 shows the IPO statistics of all the 60 non-financial firms that made their entry as a public limited company from 2008 to 2015. The descriptive statistics show the four attributes where issue price is the initial price that the company wishes to offer for the selling of shares. This issue price can be the face value which is the uniform share price of Taka 10 or the premium share price which is any value over the face value of Taka 10. Retention rate is the percentage of ownership hold by the directors before making their transition to market as a public limited company. The issue size is the amount of capital the company is wishing to collect from the market through the Initial Public Offering (IPO) process. The last attribute denotes the age of the firm that is counted as the difference between their incorporation year and the year they are permitted to issue IPO shares in the market for collecting capital for the business.

Comparison between Pre-Issue and Post-Issue Operating Performance of the IPO Firms

In this section, the operating performance of the IPO firms that has been evaluated using various accounting measures is discussed. In Table 2, we can see that there is a clear decline in operating performance of the IPO firms by comparing the year before IPO (Y-1) with the three consecutive years after the IPO event (Y+1, Y+2, Y+3) both in mean and median comparison. In Panel A, there is a comparison of performance between the year Y-1 and the year Y+1 only. There is a slight decline in mean Return on Asset (ROA) measurement as it declines from 6.52% to 6.20%. To make the statement stronger we can see the median value as there is no outlier effect in the result. The median ROA has declined from 4.69% to 5.46% marking a -0.77% downward performance of the IPO firms in year Y+1. The other accounting measure such as return on sales (ROS) also says the same that performance has declined in year Y+1. The mean ROS has declined sharply from 15.91% to 12.57% marking a massive 3.34% change in performance which is almost 20% of the ROS of Y-1. The median value shows the performance declined from 9.78% to 9.05% which indicates a -0.73% decline in performance in year Y+1. Another performance measurement, asset turnover (AT) shows that the firms could not increase their turnover in year Y+1 rather faced a decline from mean 61.23% to 58.23%. The performance change in AT is -3%. The median AT also shows a -1.92% change in year Y+1. While considering the ratio of operating cash flow to the total asset (OCFTA) it shows the mean has declined to 4.48% from 6.05% marking a slight decline of 1.57%. However, the median results show a bit increment. Similarly, in Panel B, there is a comparison of performance between the year Y-1 and the year Y+2 only. There is also a slight decline in mean ROA measurement as it declines from 6.52% to 5.14% which indicates a performance change of -1.38%. The median ROA has declined from 5.46% to 4.74% marking a -0.71% downward performance of the IPO firms in year Y+2. ROS also says the same thing that performance has declined in year Y+2. The mean ROS has declined sharply from 15.91% to 11.97% marking a massive 3.94% decline in performance which is almost 25% of the ROS of Y-1. The median value shows the performance declined from 9.78% to 9.06% which indicates a -0.73% decline in performance in year Y+2. AT shows that the firms could not increase their turnover in year Y+2 also rather faced a decline from the mean of 61.23% to 56%. The performance change in AT is -5.21%. The median AT also shows a -2.89% change in year Y+2. OCFTA shows the mean has declined to 3.02% from 6.05% marking a slight decline of 3%. The median OCFTA also shows that it declined 0.24% in year Y+2.

In the final Panel C, there is a comparison of performance between the year Y-1 and the year Y+3 only. There is also a slight decline in mean ROA measurement as it declines from 6.52% to 4.49% which indicates a performance change of -2.03%. The median ROA has declined from 5.46% to 3.72% marking a -1.73% downward performance of the IPO firms in year Y+3. ROS also says the same that performance has declined in year Y+3. The mean ROS has declined sharply from 15.91% to 13.59% marking a massive

2.32% change in performance which is almost 15% of the ROS of Y-1. The median value shows the performance declined from 9.78% to 9.26% which indicates a -0.73% decline in performance in Year Y+2. AT shows that the firms could not increase their turnover in year Y+3 also rather faced a decline from mean 61.23% to 50.54%. The performance change in AT is massive -10.7%. The median AT also shows a -4.56% change in year Y+3. OCFTA shows that the mean has declined to 3.11% from 6.05% marking a slight decline of about 3%. The median OCFTA also shows that it declined 0.43% in year Y+3.

Table 2. Pre-Issue and Post-Issue Operating Performance of the IPO Firms

| Panel A: Comparative Performance (Y-1 and Y+1) | | | | | | | | |
|--|----|-------------|------------|-----------------|---------------|--------------|-------------------|-----------------------------------|
| Variables | N | Mean Before | Mean After | Mean Difference | Median Before | Median After | Median Difference | z-statistics of Median Difference |
| ROA | 60 | 0.0652 | 0.0620 | -0.0032 | 0.0546 | 0.0469 | -0.0077 | 2.30** |
| ROS | 60 | 0.1591 | 0.1257 | -0.0334 | 0.0978 | 0.0905 | -0.0073 | 0.99 |
| AT | 60 | 0.6123 | 0.5823 | -0.0300 | 0.5662 | 0.5470 | -0.0192 | 0.44 |
| OCFTA | 60 | 0.0605 | 0.0448 | -0.0157 | 0.0398 | 0.0458 | 0.0060 | 0.47 |
| Panel B: Comparative Performance (Y-1 and Y+2) | | | | | | | | |
| Variables | N | Mean Before | Mean After | Mean Difference | Median Before | Median After | Median Difference | z-statistics of Median Difference |
| ROA | 60 | 0.0652 | 0.0514 | -0.0138 | 0.0546 | 0.0474 | -0.0071 | 2.79*** |
| ROS | 60 | 0.1591 | 0.1197 | -0.0394 | 0.0978 | 0.0906 | -0.0073 | 1.27 |
| AT | 60 | 0.6123 | 0.5602 | -0.0521 | 0.5662 | 0.5372 | -0.0289 | 0.74 |
| OCFTA | 60 | 0.0605 | 0.0302 | -0.0303 | 0.0398 | 0.0374 | -0.0024 | 1.25 |
| Panel C: Comparative Performance (Y-1 and Y+3) | | | | | | | | |
| Variables | N | Mean Before | Mean After | Mean Difference | Median Before | Median After | Median Difference | z-statistics of Median Difference |
| ROA | 60 | 0.0652 | 0.0449 | -0.0203 | 0.0546 | 0.0372 | -0.0173 | 3.34*** |
| ROS | 60 | 0.1591 | 0.1359 | -0.0232 | 0.0978 | 0.0926 | -0.0052 | 1.22 |
| AT | 60 | 0.6123 | 0.5054 | -0.1070 | 0.5662 | 0.5206 | -0.0456 | 1.63* |
| OCFTA | 60 | 0.0605 | 0.0311 | -0.0295 | 0.0398 | 0.0355 | -0.0043 | 1.24 |

Table 2 is indicating the changes in operating performance of the 60 IPO firms from 2008 to 2015. Operating performance has been measured using return on asset (ROA), return on sales (ROS), asset turnover (AT), ratio of operating cash flow to the total asset (OCFTA). The Wilcoxon signed-rank test (z-statistics) has been applied to evaluate the significance of median difference values. ***, **, and * indicates statistical significance at 1%, 5%, and 10% levels of significance respectively.

IPO Events and Variation of Operating Performance of IPO Firms Over Time

In this section, we have used several independent variables expected to affect operating performance based on literature along with IPO event as a dummy variable to explain the variation of the operating performance of IPO firms over time. The objective is to see if IPO event negatively affects the operating performance after controlling other firm-specific variables.

Table 3 shows the regression results. In the first three models, the profitability of the IPO firms measured by ROA, ROS, and AT has been found negatively correlated with the IPO event. This is consistent with the result found by most of the researchers like Jain and Kini (1994), Mikkelsen et al.

(1997) in the USA, Cai and Wei (1997) in Japan, Wang (2005) in China, Kim, Kitsabunnara, and Nofsinger (2005) in Thailand and Lukose and Rao (2003) in India. Although the attributed reasons varied among the authors but the declines in performance are the uniform results that matched among the researches even though there is a variation of market and environment that affect the performance from country to country.

Age is expected to be positively correlated with the performance of the IPO firms as it is deemed that as the tenure of the firms' increases, the performance gets better. But unlike Mikkelson et al. (1997) and Balatbal et al. (2004), the results show that in all the four models age is negatively correlated to the performance of the firms that means that the firms who came into the market newly but operating business for years also performed poorly in the later periods of IPO event. The total debt ratio (TDR) is expected to be negatively correlated as the debt increases the performance becomes poor. The regression results also show that in all four cases TDR is negatively correlated with the operating performance of the firms. A positive correlation has been found with the sales as the sales volume increases the firms perform better, a result which also matches with our expected results with the sales on operating performance of the firms. But no significant relationship has been found with the capital expenditure activities of the firm on the operating performance of the firms except the OCFTA.

All the results described above clearly denotes that the IPO event in the operational history of the firms negatively affects the firms even if the firm is matured enough in the market. This result is consistent with the other researches who have evaluated the operating performance history of the IPO firms. Therefore, it can be inferred that operating performance declines in the post IPO periods.

Table 3. IPO Events and Variation of Operating Performance of IPO firms over time

| | (1) | (2) | (3) | (4) |
|--------------------|------------------------|------------------------|------------------------|------------------------|
| VARIABLES | ROA | ROS | AT | OCFTA |
| IPO | -0.0242*** (0.0060) | -0.0307* (0.0165) | -0.1539*** (0.0493) | 0.0099 (0.0125) |
| Age | -0.0011*** (0.0003) | -0.0022*** (0.0008) | -0.0061** (0.0024) | -0.0026*** (0.0006) |
| TDR | -0.0643*** (0.0145) | -0.2092*** (0.0398) | -0.0675 (0.1191) | -0.1100*** (0.0301) |
| Sales | 0.0059*** (0.0015) | -0.0034 (0.0042) | 0.0864*** (0.0124) | 0.0091*** (0.0031) |
| Capex | 0.0004 (0.0009) | 0.0026 (0.0024) | -0.0099 (0.0073) | 0.0046** (0.0018) |
| Constant | -0.0294 (0.0319) | 0.2466*** (0.0874) | -0.8515*** (0.2611) | -0.1700** (0.0660) |
| Observations | 360 | 360 | 360 | 360 |
| Adjusted R-squared | 0.0989 | 0.0802 | 0.1166 | 0.0967 |

Table 3 seeks to find any link between the various profitability measures as dependent variables and other relevant independent variables. For the analysis, the total observations were collected from 360 yearly data (two-year pre-IPO, IPO year, and three-year post-IPO) of 60 non-financial IPO firms that went public from 2008 to 2015. The dependent variable is the operating performance of firms. The independent variables in the regression model are: IPO event which is a dummy variable and have a value of 0 for the pre-IPO period and a value of 1 in the post-IPO period. Age is the difference between the

incorporation years and the listing years. Sales and Capital expenditure (CE) values have been taken as the natural logarithm. So, the whole model takes the form of:

$$Performance_{it} = \beta_0 + \beta_1 IPO_i + \beta_2 Age_{it} + \beta_3 TDR_{it} + \beta_4 \log(Sales)_{it} + \beta_5 \log(CE)_{it} + \varepsilon_{it} \quad (1)$$

Standard errors are reported in parentheses. ***, **, and * indicates statistical significance at 1%, 5%, and 10% levels of significance respectively.

IPO Events and Variation of Operating Performance over Time of IPO Firms with Premium and without Premium

In this section, the analysis will now be categorized into two segments. While making their entry to the market, the IPO firms can issue their securities either at face value or with a premium price. This paper intends to know the resultant effect of IPO event separately on the firms those who have issued at face value (without premium) and those who have issued their securities with premium.

IPO Events and Variation of Operating Performance over Time of IPO Firms without Premium

Table 4 shows that in line with the findings of other researches and the previous regression analysis the IPO is negatively correlated with the operating performance proxied by ROA, ROS, and AT. However, IPO is positively correlated with OCFTA. All the coefficients of the IPO are significant enough to express the negative performance of the firms. Firm's age is insignificantly related to the firms operating performance. TDR and sales volume are showing the expected results as the total amount of debt negatively affects the operating history of the firm and the sales volume is positively associated with the firm's operating performance. Capital expenditure volume has been found insignificant in the firm's performance like all the research conducted on the operational performance measurements.

Finally, it can be deemed from the regression results shown in Table 4 that the resultant effect of independent variables on various firm performances is the same for the non-premium issuing IPO firms also.

Table 4. IPO Events and Variation of Operating Performance Over Time of IPO without Premium

| | (1) | (2) | (3) | (4) |
|--------------------|------------|----------|-----------|----------|
| VARIABLES | ROA | ROS | AT | OCFTA |
| IPO | -0.0252** | -0.0396* | -0.2111** | 0.0498** |
| | (0.0114) | (0.0233) | (0.0910) | (0.0226) |
| Age | -0.0003 | -0.0010 | -0.0064 | 0.0003 |
| | (0.0010) | (0.0021) | (0.0084) | (0.0021) |
| TDR | -0.0856*** | -0.1172* | -0.3730 | -0.0704 |
| | (0.0300) | (0.0614) | (0.2396) | (0.0597) |
| Sales | 0.0047** | 0.0001 | 0.0803*** | 0.0038 |
| | (0.0021) | (0.0043) | (0.0168) | (0.0042) |
| Capex | 0.0003 | -0.0009 | 0.0039 | 0.0034 |
| | (0.0014) | (0.0030) | (0.0116) | (0.0029) |
| Constant | -0.0073 | 0.1739* | -0.7494* | -0.1050 |
| | (0.0479) | (0.0981) | (0.3828) | (0.0953) |
| Observations | 150 | 150 | 150 | 150 |
| Adjusted R-squared | 0.0626 | 0.0074 | 0.1257 | 0.0430 |

Table 4 contains the regression analysis to find any link between firm performance and other independent variables. The analysis was done on 150 observations (two-year pre-IPO, IPO year, and three-year post-IPO) of 25 non-premium IPO firms that went public from the period of 2008 to 2015. The dependent variables are various profitability measures. The independent variables in the regression model are: IPO event which is a dummy variable and have a value of 0 for the pre-IPO period and a value of 1 in the post-IPO period. Age is the difference between the incorporation years and the listing years. Sales and Capital expenditure (CE) values have been taken as the natural logarithm. So, the whole model takes the form of:

$$Performance_{it} = \beta_0 + \beta_1 IPO_i + \beta_2 Age_{it} + \beta_3 TDR_{it} + \beta_4 \log(Sales)_{it} + \beta_5 \log(CE)_{it} + \varepsilon_{it} \quad (2)$$

Standard errors are reported in parentheses. ***, **, and * indicates statistical significance at 1%, 5%, and 10% levels of significance respectively.

IPO Events and Variation of Operating Performance Over Time of IPO Firms with Premium

Now, the same analysis has been done for the firms who have come to the market by offering premium share prices. From the sample of 60 non-financial institutions in the period of 2008 to 2015, 35 firms offered premium share prices. Those who issue premium share prices are supposed to be performing better and have the capacity for greater profitability. We wanted to see whether premium IPO firms were negatively affected by the IPO event or not as per our previous expected negative relationship between IPO and firm performance.

Table 5 shows that the same expected relationship as the IPO is negatively related to operating performance proxied by ROA, AT and OCFTA in the regression analysis, and these are statistically significant. Age is expected to be positively correlated but in the case of premium IPO firms also shows a negative correlation with the firm performances. That means the aged firms with premium issue prices also get affected by the IPO event. The sales and the total debt ratio show the expected relation as sales volume is positively correlated with operating performance and the total debt ratio is negatively correlated with the firm performance. Like the previous analysis, no link has been found with the capital expenditure volume on the return on assets (ROA) of the Premium IPO firms. But it has been found positively correlated with other profitability measures like return on sales (ROS) and the ratio of net operating cash flow to total assets but negatively related with asset turnover (AT) and these results are statistically significant. The overall analysis shows that issue with premium has no difference compared to that of the issue without premium.

Table 5. IPO Events and Variation of Operating Performance over time of IPO with Premium

| | (1) | (2) | (3) | (4) |
|-----------|------------------------|------------------------|-----------------------|------------------------|
| VARIABLES | ROA | ROS | AT | OCFTA |
| IPO | -0.0238*** (0.0065) | -0.0197 (0.0211) | -0.1222** (0.0477) | -0.0233* (0.0136) |
| Age | -0.0013*** (0.0003) | -0.0027*** (0.0009) | -0.0045** (0.0020) | -0.0037*** (0.0006) |
| TDR | -0.0569*** (0.0151) | -0.2732*** (0.0490) | 0.1642 (0.1111) | -0.1564*** (0.0317) |
| Sales | 0.0097*** (0.0030) | -0.0399*** (0.0097) | 0.1857*** (0.0219) | 0.0233*** (0.0062) |

| | | | | |
|--------------------|----------|-----------|------------|------------|
| Capex | 0.0002 | 0.0088** | -0.0332*** | 0.0078*** |
| | (0.0012) | (0.0040) | (0.0090) | (0.0026) |
| Constant | -0.1046* | 0.9590*** | -2.7272*** | -0.4846*** |
| | (0.0593) | (0.1917) | (0.4347) | (0.1239) |
| Observations | 210 | 210 | 210 | 210 |
| Adjusted R-squared | 0.1388 | 0.2290 | 0.2733 | 0.2222 |

Table 5 represents the regression analysis to identify any association between the firm's profitability measures and other independent variables. The analysis was conducted on 210 yearly data (two-year pre-IPO, IPO year, and three-year post-IPO) of 35 premium IPO firms from the period of 2008 to 2015. The dependent variable is the operating performance of firms. The independent variables in the regression model are: IPO event which is a dummy variable and have a value of 0 for the pre-IPO period and a value of 1 in the post-IPO period. Age is the difference between the incorporation years and the listing years. Sales and Capital expenditure (CE) values have been taken as the natural logarithm. So, the regression model looks like this:

$$Performance_{it} = \beta_0 + \beta_1 IPO_i + \beta_2 Age_{it} + \beta_3 TDR_{it} + \beta_4 \log(Sales)_{it} + \beta_5 \log(CE)_{it} + \varepsilon_{it} \quad (3)$$

Standard errors are reported in parentheses. ***, **, and * indicates statistical significance at 1%, 5%, and 10% levels of significance respectively.

Changes in Operating Performance of IPOs with Premium and without Premium

The underlying logic to see the impact of IPO events separately on the issue with premium and issue without premium is that offering securities with premium have a higher incentive to inflate their operating performance to attract investors to their inflated offer price compared to offering securities without premium. The expectation is that post-IPO operating performance will decline more for securities offered with premium than securities offered without premium.

Table 6 shows that the mean downward changes in ROA of 25 firms that floated IPOs without premium is 1.7% whereas the mean downward changes in ROA of 35 firms that floated IPOs with premium is 3.2%. So, this clearly shows that post-IPO operating performance declined more for firms that offered securities with premium.

While considering the return on sales (ROS), the difference is more pronounced. Post-IPO operating performance as measured by ROS for firms that offered securities without premium went down by 4% (Panel A) whereas, for firms that offered securities with premium, this decline in ROS is 6.2% (Panel B). Similarly, post-IPO operating performance as measured by asset turnover for firms that offered securities without premium declined by 7.8 % (Panel A) whereas, for firms that offered securities with premium, this decline in asset turnover is 11.7% (Panel B). Similar results are observed in the case of OCFTA as well.

Table 6. Summary of Changes in operating performance of IPOs with and without Premium

| Panel A: Changes in operating performance of without Premium IPOs | | | | | |
|--|--------------|--------|-----------|--------|-------|
| Variable | Observations | Mean | Std. Dev. | Min | Max |
| ROA | 75 | -0.017 | 0.076 | -0.187 | 0.536 |
| ROS | 75 | -0.004 | 0.278 | -1.251 | 1.248 |

| | | | | | |
|---|--------------|--------|-----------|--------|-------|
| PAT | 75 | -0.078 | 0.462 | -1.757 | 0.884 |
| OCFTA | 75 | -0.049 | 0.138 | -0.366 | 0.486 |
| Panel B: Changes in operating performance of With Premium IPOs | | | | | |
| Variable | Observations | Mean | Std. Dev. | Min | Max |
| ROA | 105 | -0.032 | 0.062 | -0.186 | 0.215 |
| ROS | 105 | -0.062 | 0.131 | -0.859 | 0.257 |
| AT | 105 | -0.117 | 0.264 | -1.508 | 0.291 |
| OCFTA | 105 | -0.096 | 0.161 | -0.699 | 0.15 |

Table 6 indicates the performance changes of firms for three years (Y-1 to Y+1, Y+2, and Y+3). With these three-year changes, the performance changes for the 25 non-premium IPO firms cover 75 observations, and for the 35 premium IPO firms cover 105 observations. Panel A represents the descriptive statistics of changes of performance for the without premium IPO firms and Panel B represents the descriptive statistics of changes of performance for the with premium IPO firms.

From table 6, it has been evident that post-IPO operating performance deteriorates for firms issuing securities both with premium and without premium. At this point, we have tested whether post-IPO performance decline is significantly higher for companies offering securities with premium than for companies offering securities without premium.

The t-test analysis results in table 7 show that post-IPO operating performance as measured by ROA, ROS, and OCFTA declines significantly higher for companies offering securities with premium than for companies offering securities without premium and the results are statistically significant.

Table 7. Mean differences of operating performance of IPOs with and without Premium

| Variables | Observations | Mean (Without Premium) | Mean (With Premium) | Difference | Standard Error | t-Value |
|-----------|--------------|------------------------|---------------------|------------|----------------|---------|
| ROA | 75 | -0.022 | -0.052 | 0.030 | 0.010 | 2.95*** |
| ROS | 75 | -0.050 | -0.117 | 0.067 | 0.034 | 2.00** |
| AT | 75 | -0.109 | -0.150 | 0.041 | 0.049 | 0.85 |
| OCFTA | 75 | -0.043 | -0.100 | 0.056 | 0.022 | 2.55*** |

In table 7, mean (Without Premium) is representing the mean value of changes in the performance of non-premium IPOs, and Mean (With Premium) is representing the mean value of the changes in the performance of premium IPOs. ***, **, and * indicates statistical significance at 1%, 5%, and 10% levels of significance respectively.

The underlying reason for poorer performance could be that the firms that floated IPOs with premium spend more on their capital expenditure and as production capacity increases, real business opportunities diminish quickly. Another reason might be that their performance in the pre-IPO periods was not sustainable and thus experienced a broader fall in the later years of IPO year or firms offering securities with premium inflated their pre-IPO earnings more aggressively, resulting in subsequent fall in post-IPO performances faster than the operating performance of firms offering securities without premium.

CONCLUSION

Using the data of all the non-financial firms, which floated IPOs during 2008 to 2015, this study attempted to investigate the change in operating performance of firms as they go from private to public ownership, how IPO events affect the post-IPO operating performances of the firms during that period and whether there is a difference in the change of post-IPO operating performance between firms offering their securities with premium and firms offering securities without premium. First, the study documents that there is a significant decline in post-IPO operating performances as measured by ROA, ROS, asset turnover, and OCFTA, and the decline continues for the next two to three years with the highest deterioration of operating performance being observed in the immediate next year of IPO. Second, when the study uses age, debt ratio, sales, capital expenditure, and IPO event to explain the variation of the operating performance of IPO firms over time, it finds that IPO event negatively affects all measures of operating performance. Age has been found negatively affecting the IPO firms' operating performance which is a contrary result in the context of Bangladesh. The sales variable shows the expected result whereas the capital expenditure variable was found irrelevant to the performance changes. Third, the study finds that post-IPO operating performance deteriorates for firms issuing securities both with premium and without premium, and decline in post-IPO operating performance as measured by ROA, ROS, asset turnover, and OCFTA is more pronounced for companies offering securities with a premium compared to the companies offering securities without premium. The probable cause for poorer performance could be that the firms that floated IPOs with premium spend more on their capital expenditure and as production capacity increases, real business opportunities diminish quickly. Another reason might be that their performance in the pre-IPO periods was not sustainable and thus experienced a broader fall in the later years of IPO year or firms offering securities with premium inflated their pre-IPO earnings more aggressively, resulting in subsequent fall in post-IPO performances faster than the operating performance of firms offering securities without a premium

REFERENCES

- Ahmad-Zaluki, N. A., Campbell, K., & Goodacre, A. (2011). Earnings management in Malaysian IPOs: The East Asian crisis, ownership control, and post-IPO performance. *The International Journal of Accounting*, 46(2), 111-137.
- Aggarwal, R., & Rivoli, P. (1990). Fads in the Initial Public Offering Market?. *Financial Management*, 19(4), 45-57.
- Balatbat, M. C., Taylor, S. L., & Walter, T. S. (2004). Corporate governance, insider ownership and operating performance of Australian initial public offerings. *Accounting & Finance*, 44(3), 299-328.
- Barber, B. M., & Lyon, J. D. (1996). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. *Journal of Financial Economics*, 41(3), 359-399.
- Brav, A., & Gompers, P. A. (1997). Myth or reality? The long-run underperformance of initial public offerings: Evidence from venture and nonventure capital-backed companies. *The Journal of Finance*, 52(5), 1791-1821.
- Bruton, G. D., Filatotchev, I., Chahine, S., & Wright, M. (2010). Governance, ownership structure, and performance of IPO firms: The impact of different types of private equity investors and institutional environments. *Strategic Management Journal*, 31(5), 491-509.

- Cai, J., & Wei, K. J. (1997). The investment and operating performance of Japanese initial public offerings. *Pacific-Basin Finance Journal*, 5(4), 389-417.
- Cai, J., & Loughran, T. (1998). The performance of Japanese seasoned equity offerings, 1971–1992. *Pacific-Basin Finance Journal*, 6(5), 395-425.
- Chan, K., Wang, J., & Wei, K. J. (2004). Underpricing and long-term performance of IPOs in China. *Journal of Corporate Finance*, 10(3), 409-430.
- Dawson, S. M. (1987). Secondary stock market performance of initial public offers, Hong Kong, Singapore and Malaysia: 1978–1984. *Journal of Business Finance & Accounting*, 14(1), 65-76.
- Degeorge, F., & Zeckhauser, R. (1993). The Reverse LBO Decision and Firm Performance: Theory and Evidence. *The Journal of Finance*, 48(4), 1323-1348.
- Dsebd.org. (2019). *Dhaka Stock Exchange*. Retrieved from <https://www.dsebd.org>
- Fan, J. P., Wong, T. J., & Zhang, T. (2014). Politically connected CEOs, corporate governance, and the post-IPO performance of China's partially privatized firms. *Journal of Applied Corporate Finance*, 26(3), 85-95.
- Hossain, M. S., Hossain, M. A., & Amin, S. (2016). An Empirical Analysis of the Relationship between Monetary Policy Stance and Stock Price in Bangladesh. *Bangladesh Development Studies*, 39(1-2), 27-57.
- Ibbotson, R. G., & Jaffe, J. F. (1975). Hot issue” markets. *The journal of finance*, 30(4), 1027-1042.
- Haque, R., & Imam, M. O. (2017). Long-run Price Performance of Initial Public Offerings in Bangladesh. *Research Journal of Finance and Accounting*, 8(4), 65-79.
- Islam, M. S., Uddin, M. M., & Ahmad, S. (2002). The operating performance of firms conducting seasoned equity offerings In Bangladesh. *Dhaka University Journal of Business Studies*, 23(2).
- Jain, B. A., & Kini, O. (1994). The post-issue operating performance of IPO firms. *The Journal of Finance*, 49(5), 1699-1726.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305-360.
- Kao, J. L., Wu, D., & Yang, Z. (2009). Regulations, earnings management, and post-IPO performance: The Chinese evidence. *Journal of Banking & Finance*, 33(1), 63-76.
- Kim, K. A., Kitsabunnarat, P., & Nofsinger, J. R. (2004). Ownership and operating performance in an emerging market: evidence from Thai IPO firms. *Journal of Corporate Finance*, 10(3), 355-381.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of accounting and economics*, 39(1), 163-197.
- Krishnan, C. N. V., Ivanov, V. I., Masulis, R. W., & Singh, A. K. (2011). Venture capital reputation, post-IPO performance, and corporate governance. *Journal of Financial and Quantitative Analysis*, 46(5), 1295-1333.

- Kutsuna, K., Okamura, H., & Cowling, M. (2002). Ownership structure pre-and post-IPOs and the operating performance of JASDAQ companies. *Pacific-Basin Finance Journal*, 10(2), 163-181.
- Loughran, T. (1993). NYSE vs NASDAQ returns: Market microstructure or the poor performance of initial public offerings?. *Journal of Financial Economics*, 33(2), 241-260.
- Loughran, T., & Ritter, J. R. (1995). The new issues puzzle. *The Journal of Finance*, 50(1), 23-51.
- Lukose, P. J., & Rao, S. N. (2003). Operating performance of the firms issuing equity through rights offer. *Vikalpa*, 28(4), 25-40.
- Lyandres, E., Sun, L., & Zhang, L. (2008). The new issues puzzle: Testing the investment-based explanation. *The Review of Financial Studies*, 21(6), 2825-2855.
- Michel, A., Oded, J., & Shaked, I. (2014). Ownership structure and performance: Evidence from the public float in IPOs. *Journal of Banking & Finance*, 40, 54-61.
- Mikkelson, W. H., Partch, M. M., & Shah, K. (1997). Ownership and operating performance of companies that go public. *Journal of Financial Economics*, 44(3), 281-307.
- Pagano, M., Panetta, F., & Zingales, L. (1998). Why Do Companies Go Public? An Empirical Analysis. *The Journal of Finance*, 53(1), 27-64.
- Pereira, T. P., & Sousa, M. (2017). Is there still a Berlin Wall in the post-issue operating performance of European IPOs?. *International Journal of Finance & Economics*, 22(2), 139-158.
- Rindermann, G. (2003). Venture Capitalist Participation and the Performance of IPO Firms: Empirical Evidence from France, Germany, and the UK. *SSRN Electronic Journal*.
- Ritter, J. R. (1984). The "Hot Issue" Market of 1980. *The Journal of Business*, 57(2), 215-240.
- Ritter, J. R. (1991). The Long-Run Performance of Initial Public Offerings. *The Journal of Finance*, 46(1), 3-27.
- Sec.gov.bd. (2019). *Bangladesh Securities and Exchange Commission*. Retrieved from <http://sec.gov.bd>
- Shukla, A. K., & Shaw, T. S. (2018). Operating Performance of Initial Public Offering Firms after Issue in India – A Revisit. *Working Papers id:12701. eSocialSciences*.
- Wang, C. (2005). Ownership and operating performance of Chinese IPOs. *Journal of Banking & Finance*, 29(7), 1835-1856.

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal. This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>)