

# **Earning Management of IPOs in Bangladesh-Test of Value Relevance Hypotheses: Evidence from Dhaka Stock Exchange**

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## **ABSTRACT**

*This paper investigates whether entrepreneurs engage in myopic behavior attempting to influence investors' belief and hence to achieve a high stock price at the floatation by pumping up pre-IPO earnings through the accounting choices. We find evidence, using powerful accrual testing methodology, that entrepreneurs of IPOs coming to the market during 1991-2000, behaved myopically in boosting earnings in the year prior to going public. It is also documented that earnings management had a positive impact on initial firm's value.*

**Key Words:** Myopic Behavior, Earning Management, Discretionary Accrual, Modified Jones Model, Value Relevance.

## **INTRODUCTION**

An informational asymmetry exists between the entrepreneurs and potential investors at initial public offering (IPO) process. Schipper [1989] points out that, under this condition an incentive may arise for entrepreneurs to manipulate, or manage, reported earnings. The practice of earnings management (EM) or 'Window Dressing' has been evolved as a crucial matter for firms going public through equity issuance. Earnings Management occurs when financial statement issuers use their discretion to report financial data (Teoh, Welch and Wong 1998). This is critical to the price setting process of firms going public for the first time because publicly available information about the firm at the time of offering is scarce. The information asymmetry between investors and issuers is lowest for seasoned equity offering (SEO) because financial information is already available to the public, whereas information asymmetry is highest between investors and issuers that go public for the first time.

Current generally accepted accounting standards provide sufficient flexibility to allow firms to selectively use accruals in conveying firm performance to outsiders. This is important because managers are presumed to know more about the business they run and can use their knowledge to select reporting methods, estimates and disclosures that match the firm's business environment. This, in turn, increases the value of accounting as a relevant and credible form of communication. However, this same use of judgment also creates opportunities for earnings management in which managers choose reporting methods and estimates to bias the earnings figure for extracting private benefits.

Before earnings management is defined, it is important to consider the role of accrual accounting as it allows managers to provide private information to the market and yet at the same time can be used as an earnings management tool. The role of accrual accounting is succinctly summarized in SFAC as follows:

Accrual accounting uses accruals, deferral, and allocation procedures whose goal is to relate revenues, expenses, gains and losses to periods to reflect an entity's performance during a period instead of merely listing its cash receipts and outlays. Thus recognition of revenues, expenses, gains and losses and the related increments or decrements in assets and liabilities - including matching of costs and revenues, allocations and amortization - is the essence of using accrual accounting to measure performance of activities [FASB 1985, SFAC No.6, Para 145].

As is evident from this quote, the principal goal of accrual accounting is to help investors assess the entity's economic performance during a period through the use of basic accounting principles such as revenue recognition and matching. However, accrual accounting is necessarily subjective which involves managerial judgments.

Two representative definitions of earnings management from the academic arena are:

Schipper (1989): "... a purposeful intervention in the external financial reporting process with the intent of obtaining some private gain (as opposed to say, merely, facilitating the neutral operation of the process)".

Healy and Wahlen (1999): "Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some shareholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers".

IPO issuers face substantial costs if they mislead the market about their firm's future prospects. Costs associated with the manipulation of reported earnings are of at least three types: (i) litigation costs, (ii) diminution of personal and corporate reputations and (iii) loss of future accounting flexibility (DuCharme, Malatesta and Sefcik, 2000). Trading off the costs and benefits, issuers will seek to maximize

wealth. If the associated litigation, reputation, and other costs are relatively small, then issuers may attempt to deceive investors by opportunistically manipulating earnings upward before IPO. If investors are thereby led to form overly optimistic expectations of future earnings, they will, on average, be disappointed by post-IPO results and IPO firm values will tend to decline during the post-offer period. This would imply a negative relationship between abnormal earnings around the offer date and subsequent firm performance.

Manager can also influence income with long-lived asset sales, LIFO layer liquidations, debt-equity swaps and debt defeasance. These transactions, however, simultaneously affect investment and financing decisions as well as earnings. An extensive literature has evolved in the area of earnings management. Many studies have examined management choice of accounting methods, while other research has studied accrual management. This paper is more concerned with the accrual management as a basis of Earnings Management.

The IPO process is particularly susceptible to earnings management, offering entrepreneurs both motivation and opportunities to manage earnings. There is high information asymmetry between investors and issuers at the time of the offering. This scarcity of information about the issuer forces investors to rely heavily on the prospectus, which may contain only one to three years of financial statements.

If investors are unable to understand fully the extent to which IPO firms engage in earnings management by borrowing from either the past or the future, high reported earnings would translate directly into a higher offering price. But the firm also has an incentive to boost earnings soon after the IPO to maintain a high market price. The original entrepreneurs may wish to sell some of their personal holdings in the secondary market at the end of the lockup period. However, earnings are managed only if there are opportunities to do so. A key regulatory limit on entrepreneurial discretion is a requirement that accounting reports presented in the offering prospectus be audited by an external accounting firm to verify compliance with *generally accepted accounting principles (GAAP)*. The “accrual accounting system”, mandated by *GAAP*, permits firms to make adjustments when reporting earnings. Managers are afforded discretion in recognizing both the timing and amounts of revenues and expenses.

These adjustments to cash flows (collectively called accruals) are supposed to reflect the underlying business condition of the firm more accurately. Though cash flows are the ultimate “bottom line” for valuation, many accountants and market participants consider the change in cash position to be inadequate for conveying the underlying business condition, because they are influenced by the timing of cash receipts and payments from both operations and capital investment activities. However, when entrepreneurs have discretion over the accrual adjustments, it

becomes difficult for investors to assess whether reported earnings in a given period are appropriate or misleading.

Furthermore, the *Accounting Principles Board Opinion 20* allows IPO firms to change their accounting choices retroactively for all the financial statements presented in the offering prospectus. This gives issuers exceptional opportunities to “doctor” their time-series profile of accounting earnings for the pre-issue fiscal years to show an increase in reported earnings.

Accounting earnings that conform to GAAP can be manipulated because alternative treatments for accounting events are permitted. Earnings management can be made by choice of accounting methods, application of accounting methods, and timing of asset acquisitions and dispositions.

Reported earnings consist of cash flows from operations and accounting adjustments called accruals. *Total accruals* (TAC) can be decomposed into current and long-term components. These two components should be evaluated separately because entrepreneurs have more discretion over short-term than over long-term accruals [Guenther, 1994]. Current accrual adjustments involve short-term assets and liabilities that support the day-to-day operations of the firm. Managers can increase current accruals, for example, by advancing recognition of revenues with credit sales (before cash is received), by delaying recognition of expenses through assumption of a low provision for bad debts, or by deferring recognition of expenses when cash is advanced to suppliers. Long-term accrual adjustments, which involve long-term net assets, can be increased by decelerating depreciation, decreasing deferred taxes (the difference between tax expense recognized for financial reporting and actual taxes paid), or realizing unusual gains.

Not surprisingly, firms are not eager to publicize accrual adjustments that reflect their desire for a higher short-term share price rather than the economic realities of the mismatch between actual accounting events and the timing of inflows and outflows. Thus, it is difficult for investors to infer how much of the accruals are *discretionary* (i.e., unusual managerial choices given the underlying timing of cash flows). Given the business conditions typically faced by the firm in the industry, some accrual adjustments are appropriate and necessary, and so are expected by investors. For example, fixed-asset intensive firms have high depreciation, or rapidly growing firms may have revenues that exceed cash sales. Thus, we need a model to decompose accruals into two components, one that is dictated by firm and industry conditions and one that is presumed to be managed by the entrepreneur.

Following Teoh, Wong, and Rao (1998), an extension of the cross-sectional Jones' (1991) model has been used for this purpose. Accruals are decomposed into two components: discretionary accruals and nondiscretionary accruals. Nondiscretionary accruals are the asset-scaled proxies for unmanipulated accruals

dictated by business conditions. Discretionary accruals are the asset-scaled proxies for manipulated earnings determined at the discretion of management. Given the earlier discussion, it is expected that discretionary accruals (DTAC) are the superior proxy for earnings management.

The main objective of this study is to empirically test for detection of earnings management of IPOs in Bangladesh and to test the value relevance hypothesis of IPOs. In conjunction with these main objectives, specific objectives are defined as to test that:

- I. Whether entrepreneurs of IPOs in Bangladesh are managing earnings prior to going public, and
- II. Whether there has any relation between earnings management and firm's initial value i.e., whether earnings management has any positive impact on initial firm value.

To achieve these objectives two hypotheses will be tested with models, developed in line with the suggestions of various authors, using empirical data of each IPOs and cross-sectional industries in Bangladesh.

The rest of the paper is organized as follows. Section II contains literature review and empirical evidences. Section III deals with development of hypotheses in compliance with the objectives. Empirical models have been constructed in Section IV to test the hypotheses. Selection of sample, collection of data, descriptions of the variables and summary statistics of the variables are described in Section V. Empirical test results of the models and their explanations are reported in Section VI followed by summary findings and conclusion in Section VII.

## **LITERATURE REVIEW AND EMPIRICAL EVIDENCES**

Copeland (1968) defined accounts manipulation as some ability to increase or decrease reported net income at will. At the same time, he implicitly acknowledged that the notion of manipulation had several meanings, recognizing that “maximizers”, “minimizers”, or other “manipulators” will not follow a pattern of behavior, which approximates that of “smoothers”. Earnings Management can differ as they are related to various motivations such as the desire to present smooth, maximize or minimize reported income, etc. (Moore, 1973).

In finance theory, market price is a function of the expected return, which is itself a function of the risk related to this return (Fama and Miller, 1972). This risk is directly related to the financial structure of the firm. In the case of an IPO, most of this information is unavailable, so analyst cannot perform the same kind of analysis, as they would do under normal circumstances. This may be one reason why analysts have the reputation of being overoptimistic about new issues (Rajan and Servaes,

1997). In such a context, earnings management can be viewed by manager as an efficient operation.

Earnings management is aimed at managing investors' impressions of the firm (Degeroge, Patel and Zeckhauser, 1999) and to alter their views regarding its future. Stock price is the goal of any earnings management, and price is a function of the return and the risk. Earnings management is meant to try to change investor's perceptions as to expected returns and to the level of risk associated with these returns, structural or other. It is not important to know whether such earnings management had a real effect on investors' impressions, it is only important that managers believe it so (Aharony, Lin, Loeb, 1993).

Issuers are assumed to be 'wealth maximizers' who possess information regarding their firm's future earnings prospects not available to outside investors. Pricing an IPO "close to the market" is a difficult task. Most prospectuses for IPOs stated that sales, earnings, and cash flow histories, and trends were used in the determination of the initial public offering price. Other factors frequently mentioned are the experience and quality of firm management, the position of the firm in its industry, the general state of the securities market, current market conditions for new offerings of other securities, and the market value and price-to-earnings ratios of the comparable publicly traded firms.

In the absence of earnings management, firms are expected to have certain amount of accruals that are associated with the level of economic activities. Dechow, Sloan and Sweeny (1995) documented that the modified version of the Jones' model (1991) exhibits the most power in detecting earnings management relative to the Healy model, the DeAngelo model, the Jones' model and the industry model. The modified version of Jones' model controls the changes in nondiscretionary accruals arising from changes in economic conditions. Further, it assumes that all changes in accounts receivables are discretionary. In the presence of sales-based manipulation, it will detect earnings management with less error. Total accruals consist of both discretionary and non-discretionary components. Many recent studies (DeFond and Jiambalvo, 1994; Becker et al., 1998; and DeFond and Subramanyam, 1998) followed the modified Jones' model approach as it allows analysis of the entire sample and thus overcomes the survivorship bias problem in a time-series counterpart. An estimate of the discretionary component of total accruals is used to detect earnings management. Abnormal (discretionary) accruals are derived by subtracting the normal (nondiscretionary) accruals from the total accruals.

Ritter (1991) provided empirical evidence that IPO firms' stock returns are significantly less than those of a matched sample of non-IPO firms over the three-year period after offering. One possible explanation for this finding is that entrepreneurs mislead investors by earnings management. Jain and Kini (1994) examined



accounting measures of operating performance of IPO firms. They found that firms exhibit a decline in operating performance after their IPOs. They suggested that potential investors may initially have high expectations of future earnings growth that are not subsequently fulfilled.

Issuers have an incentive to inflate earnings through accrual management before going public to increase their proceeds if they believe that underwriters and investors interpret accruals naively or that investor's view managed earnings as a credible signal about issuers' future expectations. Friedland (1994) used accruals to test the level of manipulation of accounting information in IPOs. He compared the accruals in the most recent financial statements or annual accounts of the last full year, with accruals from previous or later years. He used a benchmark based on the five years surrounding the IPO - three years before, including the last year, and two years after. He also compared the level of accruals with non-IPO firms of COMPUSTAT. His results suggested that IPO firms significantly increase their net income before going public by using accounting discretion. He presented anecdotal evidence that underwriters did not detect and adjust for all accounting choices made by issuers of firms going public, but instead relied on the opinions of auditors to explain the implications of these choices.

Aharony, Lin, Loeb (1993) also used accruals to measure the level of manipulation. Although they observed significant increases in profit, they could not detect any clear general manipulation of the accruals. Their results were explained by the differences between those firms that employ prestigious and high quality underwriters and auditors, and those that do not. The second group used accruals to manipulate profits. Firms included in the second group are smaller and more heavily leveraged than those in the first group. This difference in size explains the absence of significant results at the overall level.

Firth and Smith (1992) analyzed the quality of the forecasts in the prospectuses for IPOs in New Zealand. Unfortunately, despite the low quality of the forecasts, they found no significant relationship regarding under pricing. However, the low quality of these forecasts implies a certain level of manipulation.

Teoh and Wong (1997) interpreted abnormal accruals as a measure of earnings management, reported evidence consistent with analysts being misled by opportunistic earnings management by new equity issuers (both IPOs and SEOs). Teoh, Welch and Wong (1998) compared the level of accruals of IPO and non-IPO firms around the issuing date. They found a significant difference in the level of accruals between both categories. IPO firms showed a constantly declining net income becoming significantly negative by year four while operating cash flow increased from the issuance to year six. These findings imply that the difference between profit and operating cash flow decreases through time, so the level of accruals, which are then

suspected of having been manipulated around the issuance, decreases also.

DuCharme, Malatesta and Sefcik (2000) decomposed reported earnings into three components: cash flow from operations, expected (unmanaged) accruals, and abnormal (managed) accruals. They found that initial firm value is significantly positively related both to pre-IPO accruals and cash flow. Moreover, valuation of managed accruals should be as high as unmanaged accruals and higher than cash flow from operations. Their analysis of post -IPO firm performance revealed a significantly negative relation between abnormal accruals for the IPO year and later stock returns. In addition they showed that a similar relation exists between pre-IPO abnormal accruals and post-issue returns. Thus, it appears that aggressive pre-IPO earnings management both increases IPO proceeds and decreases subsequent returns to investors.



A selection of empirical studies of earnings management has been presented in Table I.

*Table I: Empirical Studies of Earnings Management - A Selected List*

Author	Motivation	Sample	Methodology	Result
Healy [1985]	Effects of bonus plans and accounting choices on	Population = 250 largest US firms from Fortune, Sample = 94 firms for 239 firm years	Nondiscretionary accruals = a mean value over period	If the profit is too low, managers will take a bath otherwise they will pick income increasing or decreasing procedures.
DeAngelo [1986]	Proxy contest and management buyout	64 NYSE and American SE proposing a management buyout (73-82)	Discretionary accruals = Total accruals	The empirical evidence does not support the hypotheses.
Jones, J. [1991]	Earnings management during an inquiry of the International Trade Commission	23 firms in 5 industrial sectors	Nondiscretionary accruals are established by providing the normal growth of the firm by normalizing with total asset at he beginning	Managers make income discretion in accounting choices during investigations.
Aharony, Lin and Loeb [1993]	Earning management in IPO context	229 industrial firms (1985-87) on a population of 1162 US firms	DeAngelo's model: total accruals standardized by average total assets	No evidence of manipulation through the accruals
DeFond and Jiambalvo [1940]	Possibility of a default of the debt covenant	94 firms from the NAARS database disclosing a violation between 1985 and 1988	2 measures: total accruals and working capital accruals	Earnings management occurs at the year before the default becomes publicly known.
Friedland [1994]	Earnings management in IPO context	277 IPO firms from 1981 and 1984	DeAngelo's model: modified through standardizing by sales	Income increasing procedures just before the IPO.

Dechow, Solan and Sweeny [1995]	To test the validity of available models in detecting earnings management	4 samples: 2 random of 1000 each, 1 from firms having extreme performance and 1 of 36 firms prosecuted by the SEC	Models tested: Jones' Original, Jones' modified, Healy, DeAngelo and the Industry model	Jones' model is the best model although none is really complete.
Teoh, Welsh and Wong [1998]	Increased asymmetry of information in IPOs	1649 IPO firms (1980-92)	Four types of accruals discretionary and nondiscretionary, short term and long term	Positive evidence of earnings management immediately after the issuing.
Benish [1999]	Detection of earnings manipulation	74 firms and all COMPUSTAT companies matched by two-digit SIC numbers. Data available for 1982-92 periods	8 variables	Identification of the companies involved in earnings manipulation.
Erickson and Wang [1999]	Increasing stock value prior to a stock for stock merger	55 firms from 24 industries	Total Accruals = Net Income less Operating Cash Flows. Jones' model to determine discretionary accruals	Income increasing procedures are found just before the merger.
Navissi [1999]	Earnings management under price regulation	62 firms from New Zealand, 2 samples – 1 control sample	Dechow, Solan and Sweeny model adjusted for the impact of general price inflation	Evidence of earnings management
Du Charme, Malatesia and Sefcik [2000]	Earnings management in IPO context	604 IPO firms (1982-87) Sample : 171	Modified Jones' model	Earnings management is positively related to initial firm value and negatively related to subsequent firm's performance.

## DEVELOPMENT OF HYPOTHESES

### Hypothesis for Detection of Earnings Management of IPOs

Modified Jones' Model is applied to measure discretionary accruals of IPO in order to test for detection of earnings management of IPOs in Bangladesh. The hypothesis concerning earnings management of IPOs, using discretionary accruals being managed by IPO-entrepreneurs, is tested first. The earnings manipulation hypothesis in IPOs states that:

$H_1$ : When entrepreneurs take their firms into public, they behave myopically in enhancing reported earnings systematically through managing discretionary accruals prior to the period of going public.

Whether or not this earnings management will be detected in the market, entrepreneurs perceive that they can influence the initial price of IPO.

The above-mentioned hypothesis ( $H_1$ ) leads to the following null ( $H_0$ ) hypothesis that discretionary accrual, as proxy for earnings management one year prior to IPO, is zero.

Hence,

$$H_0 : \text{Managed Accruals} = 0$$

$$H_1 : \text{Managed Accruals} > 0$$

To detect earnings management the null ( $H_0$ ) hypothesis should be rejected. In other words, the significantly positive discretionary accrual of IPOs on average reveals the presence of earnings management of IPOs in Bangladesh.

### Hypothesis for Relevance between Firm's Value and Earnings Management

As stated earlier investors have to depend only on the information provided by the prospectus to measure the value of the firm and price of the share. So, the issuers of IPO have substantial opportunity and incentives to manipulate earnings to attract investors to invest in their shares. There is a widespread belief among managers that external users of financial statements do not fully adjust for the effects of accounting policy differences across firms. This also influences the issuers to manipulate earnings. As a consequence, investors may be deceived, temporarily, about firm fundamental values. Therefore, it can be assumed that issuers manipulate earnings with the intention to increase the initial firm value before going public. The value relevance hypothesis in IPOs states that:

$H_2$ : Pre-IPO earnings management by issuers is positively related to firm's initial value.

In order to test this hypothesis, a regression of firm's value on managed accruals will be conducted while controlling for other variables that affect firm's value. An empirical regression model for testing value relevance hypothesis has been developed in Section IV.

In that regression of earnings management, the co-efficient of earnings management must be positive and statically significant. Thus, the null and alternative hypotheses are as follows:

$$H_0 : C_4 = 0$$

$$H_2 : C_4 > 0$$

Where,  $C_4$  is the co-efficient of managed accruals, a measure of earnings management.

## DEVELOPMENT OF EMPIRICAL MODELS

### Empirical Model to Test the Earnings Management Detection Hypothesis

Researchers have investigated two venues of earnings management: (i) the choice of accounting methods, and (ii) the management of accruals.

This paper focuses in management of accruals approach because accruals reflect not only the choice of accounting methods but also the effect of recognition and timing of revenues and expenses, asset write-downs and changes in accounting estimates. In this study total accruals are analyzed separating into two parts – discretionary (managed) accruals and non-discretionary (unmanaged) accruals.

Jones (1991) suggested cross-industry approach as well as time series approach to decompose accruals into normal (unmanaged) and abnormal (managed) components. DeFond and Jiambalvo (1994) used both Jones' time series model and a modified cross-industry model in their investigation of earnings management near to debt covenant violations. They reported that the magnitudes of the coefficients from the cross-sectional models were quite similar to those obtained from the time-series models, and that their conclusions were the same under either estimation method.

Accruals depend upon the economic conditions faced by firms (Kaplan, 1985). The cross-industry models control for economic factors that influence accruals using the same independent variables as Jones' time-series model. For each relevant industry, accruals are regressed on the control variables taking data from one year prior to the IPO. This regression model provides the benchmarks for the unmanaged

or normal accruals. These benchmark coefficients along with the data of the IPO firm give us the unmanaged accruals of the IPO firm. We then get the managed accrual by subtracting unmanaged accruals from total accruals. The standardized cross-sectional model that was used by Teoh, Welch and Wong (1998) is as follows:

$$TAC_{iy}/TA_{iy-1} = a_{0j} [1/TA_{iy-1}] + a_{1j} [\Delta REV_{iy}/TA_{iy-1}] + a_{2j} [PPE_{iy}/TA_{iy-1}] + e_{iy} \quad [I]$$

Where,

$TAC_{iy}$  = Total accruals (net income before extraordinary items minus cash flow from operations) in the year 'y' for the 'i-th' firm in the industry group matched with offering firm 'j'.

$TA_{iy-1}$  = Total assets prior to the year 'y' for the 'i-th' firm in the industry group matched with offering firm 'j'.

$\Delta REV_{iy}$  = Change in revenues in the year 'y' for the 'i-th' firm in the industry group matched with offering firm 'j'.

$PPE_{iy}$  = Gross property, plant and equipment in the year 'y' for the 'i-th' firm in the industry group matched with offering firm 'j'.

$e_{iy}$  = Regression disturbances, assumed cross-sectional uncorrelated and normally distributed with mean zero.

We get the values of the coefficients from regression of the model. Then putting the data of the IPO firms with these coefficients' values and subtracting from total accruals we get the managed portion of accruals as a fraction of total assets. The following model is called by DuCharme, Malatesta and Sefcik (2000) as the 'Forecast Error Model'.

$$TAEM_{jy} = [TAC_{jy}/TA_{jy-1}] - a_{0j} [1/TA_{jy-1}] - a_{1j} [(\Delta REV_{jy} - \Delta REC_{jy})/TA_{jy-1}] - a_{2j} [PPE_{jy}/TA_{jy-1}] \quad [II]$$

Where,

$TAEM_{jy}$  = Managed component of total accruals.

$\Delta REC_{jy}$  = Changes in accounts receivable.

The term  $\Delta REC_{jy}$  is subtracted from the change in revenues because offering firm may inflate sales through easy credit policies.

Dechow (1994) showed that accruals are negatively associated with contemporaneous components of cash flow from operation. Her results suggested that cash flows are useful in determining expected accruals and she concluded that future research should consider inclusion of cash flows in models identifying them.

Therefore, if we include operating cash flow from operation among the variables in 'Forecast Error Model' we get the 'Cash Flow Model' to estimate managed accruals.

$$TAC_{iy}/TA_{iy-1} = a_{0j} [1/TA_{iy-1}] + a_{1j} [\Delta REV_{iy}/TA_{iy-1}] + a_{2j} [PPE_{iy}/TA_{iy-1}] + a_{3j} [\Delta CFO_{iy}/TA_{iy-1}] + e_{iy} \quad [III]$$

Where,

$$\Delta CFO_{iy} = \text{Changes in cash flow from operation.}$$

#### Empirical Model to Test the Value Relevance Hypothesis

The value relevance hypothesis developed earlier assumes that the initial firm value of a firm going public is positively related with earnings management. The initial market value of equity is a function of net income and other signals of firm's quality. Net income has decomposed into cash flow from operation, managed accruals and unmanaged accruals and has regressed on initial firm value with these variables and other signals. A positive slope of coefficients for managed accruals is assumed, which will make the value relevance hypothesis valid.

Most of the quality signals are suggested by previous IPO studies. Downes and Heinker (1982) and Clarkson, et. al, (1991) showed that the proportion of retained ownership is a determinant of IPO firm value. Some other quality signals have been shown to be related to the under-pricing of IPOs. This includes underwriters' reputation (Balvers, McDonald and Miller, 1988 and Carter and Manaster, 1990). Growth in sales prior to IPO is included to control for any value relevant information it may provide at the time of IPO.

In this paper another quality signal, size of the firm while going public, has been included further. So the model could be presented as follows:

$$V = c_0 + c_1 CFO + c_2 UMA + c_3 EM + c_4 RO + c_5 UW + c_6 GSA + c_7 FS + e \quad [IV]$$

Where,

- V = Offer price times the total number of shares outstanding after the IPO.
- CFO = Cash flow from operations for the last full fiscal year prior to the IPO.
- UMA = Unmanaged portion of total accruals equal to total accruals minus discretionary accruals.
- EM = Managed accruals, as a measure of earnings management, derived from total accruals.

- RO =  $\alpha + \ln(1 - \alpha)$ , where  $\alpha$  is the proportion of total shares outstanding held by the original entrepreneurs at the time of IPO.
- UW = Dummy variable for reputation of issue manager (lead underwriter).
- GSA = Growth rate of sales over the last fiscal year prior to the IPO.
- FS = Firm size measured by total asset.
- e = Regression disturbance, assumed cross-sectional uncorrelated and normally distributed with mean zero.

Firm size is taken as a quality signal based on the fact that higher the firms size lower the possibility of under-pricing. Big firms are more liquid as compared to small firm. Small firms are less traded because of illiquidity and there is incentive for management to attract investors by earnings management.

Impact of cash flow from operation on firm value is expected to be positive, because more cash flow from operation is a good sign of the firm value. Impact of managed accruals and unmanaged accruals is also expected to be positive because healthy earnings are reported after manipulation. Impact of issue managers reputation is expected to be negative because the more the issue managers are reputed, the less the chance of being manipulated. Impact of growth rate in sales on firm's value is expected to be positive because sales growth directly boosts up firms value. Proportion of ownership has negative impact on firm value because the more the firm is closely held; the less the entrepreneurs will be interested to increase firm's initial value by earnings manipulation. The expected sign of impact of variables on firm's initial value is reported in Table II.

*Table II: Expected Impact of Variables on Firm's Initial Value*

Variables	Expected Sign of the Coefficient
Cash Flow from Operation	(+)
Managed Earnings	(+)
Unmanaged Portion of Total Accruals	(+)
Issue Manager's Reputation	(-)
Growth Rate in Sales	(+)
Proportion of Ownership ( $\alpha$ )	(-)
Size of the Firm	(+)



## CRITERIA OF SAMPLE, DATA AND VARIABLES

### Selection of the Sample

This study observed all IPO firms came to the public between January 1991 and December 2000 excluding Banks, Insurances and other non-banking Financial Institutions. IPOs of Banks, Insurances and other non-banking Financial Institutions are excluded from the sample because their nature is different from non-financial institutions and post-IPO industry data of those financial institutions are not readily available. All IPOs (of non-financial institutions) within this period, which provide adequate data, have been taken into the sample. It is found that a total of 79 IPOs went into public within this period. In those IPO firms 26 were green field, so that those firms are not considered into the sample because they do not have required data and management of those firms have no scope of manipulating earnings. Three IPO firms are excluded from the sample because of inadequate data in prospectus of 2 firms (Wata Chemical Ltd.-1992 and National Oxygen Ltd.-1991) and could not make available prospectus of one firm (Texpick Industries Ltd.-1991). Another three firms are also excluded from the sample which went on public in 1991 because cross-sectional regression is conducted with IPO data and industry data, in which industry data is also collected from 1991 to 2000 and changes in cash flow from operation and changes in adjusted revenue are calculated with those data, so regression for IPOs of the year 1991 has not conducted for lacking of data. At last 47 IPO firms are included in the sample which have prospectus with required data of at least two years prior to going public with information of current assets, cash in hand and at bank, accounts receivable, current liabilities, gross property plant and equipment, depreciation of the year, total asset, net sales, net income, EBIT, proportion of ownership shares, offer price per share, total number of issues, and the name of issue manager(s). A summary status of data of IPO firms is given in Table III.

*Table III: Status of Data of IPO Firms*

<b>IPO Period – January 1991 to December 2000</b>	
IPOs Came into Public	79
Green Field IPOs	26
Inadequate Data in Prospectus	02
Unavailable Prospectus	01
IPOs of 1991	03
<b><i>Sample Size of the Study</i></b>	<b>47</b>

Table III shows the distribution of sample according to the industry classification. According to Bangladesh Bank's "Balance sheet Analysis of Joint Stock Companies", industries are classified into ten categories within which there is no accepted IPO in Fuel and Power, and Cement categories. There are highest numbers of IPOs in miscellaneous category followed by food and allied products, and textile categories respectively.

*Table IV: Distribution of Sample IPOs across Industry*

<b>Industry</b>	<b>Frequency</b>	<b>%</b>	<b>Cum. Freq.</b>	<b>%</b>
Engineering	3	6.38	3	6.38
Food and Allied Products	12	25.53	15	31.91
Jute	1	2.13	16	34.04
Textile	11	23.40	27	57.45
Pharmaceuticals and Chemicals	4	8.51	31	65.96
Paper and Printing	1	2.13	32	68.09
Services and Real Estate	2	4.26	34	72.34
Miscellaneous	13	27.66	47	100.00
<b>Total</b>	<b>47</b>	<b>100.00</b>		

Table IV shows the distribution of accepted sample IPOs according to the year of going public. In 1992 total of 3 IPO firms came into public in which prospectus of one IPO had inadequate data and the rest were green field. Hence the sample of IPOs in the year of 1992 turns out to be zero. The largest number of IPOs floated in the year of 1994 followed by the year of 1996 and 1997 respectively.

*Table V: Time Distribution of Sample IPOs*

<b>IPO Year</b>	<b>Frequency</b>	<b>%</b>
2000	3	6.38
1999	5	10.64
1998	2	4.26
1997	8	17.02
1996	11	23.40
1995	4	8.51
1994	13	27.66
1993	1	2.13
1992	0	0.00
<b>Total</b>	<b>47</b>	<b>100.00</b>

## Collection of Data

IPO data are collected from the published prospectus of IPO firms. Calculation of discretionary accruals needs to run the regression with IPO data and cross-sectional industry data. Those industry data for the same period between January 1991 and December 2000 are collected from the “Balance Sheet Analysis of Joint Stock Companies” of 1998, 2001 and 2002 issues published by the Bangladesh Bank. Because of limited access to the original annual reports of the public listed companies, Bangladesh Banks’ data is preferred. Moreover in some cases original annual reports and data from Dhaka Stock Exchange are used when required.

## Description of the Variables

### *Total Accruals ( $TAC_{iy}$ )*

Total Accruals ( $TAC_{iy}$ ) are calculated considering net income before extraordinary items minus cash flow from operations in the year ‘y’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Total Asset ( $TA_{iy-1}$ )*

Total Asset ( $TA_{iy-1}$ ) is considered one year prior to the year ‘y’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Change in Revenues ( $\Delta REV_{iy}$ )*

Change in Revenues ( $\Delta REV_{iy}$ ) are calculated considering revenues in the year ‘y’ minus revenues in the year ‘y<sub>-1</sub>’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Property, plant and equipments ( $PPE_{iy}$ )*

Property, plant and equipments ( $PPE_{iy}$ ) are taken as the gross property, plant and equipment in the year ‘y’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Changes in accounts receivable ( $\Delta REC_{iy}$ )*

Changes in accounts receivable ( $\Delta REC_{iy}$ ) is calculated considering receivables in the year ‘y’ minus receivables in the year ‘y<sub>-1</sub>’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Changes in cash flow from operation ( $\Delta CFO_{iy}$ )*

Changes in cash flow from operation ( $\Delta CFO_{iy}$ ) is calculated considering cash flow from operation in the year ‘y’ minus cash flow from operation in the year ‘y<sub>-1</sub>’ for the ‘i-th’ firm in the industry group matched with offering firm ‘j’.

### *Value of the firm (V)*

Value of the firm (V) is the offer price times the total number of shares outstanding at the time of IPO.

### *Cash flow from operation scaled (CFOs)*

Cash flow from operation scaled (CFOs) is calculated considering cash flow from operations for the last full fiscal year prior to the IPO divided by total assets.

*Unmanaged portion of total accruals (UMA)*

Unmanaged portion of total accruals (UMA) is calculated from total accruals less discretionary accruals.

*Managed accruals*

Managed accruals, a measure of earnings management (EM), are derived from the cross-sectional regression of IPO data with industry data of the same period.

*Retained ownership (RO)*

In the Lilen and Pyle (LP) model, the observable information signal given by the entrepreneurs in terms of ownership retention is,  $LP_{sig} = \hat{\alpha} = \alpha + \frac{1}{n} (1 - \alpha)$ , where  $\hat{\alpha}$  is the proxy of LP signal of a firm's future cash flow, as a function of  $\alpha$ , the fraction of ownership retained by the entrepreneurs.

*Issue managers reputation (UW)*

Issue managers reputation (UW) is measured on the basis of 47 sample IPOs. For this purpose the reputation of the issue managers depends only on its activity in the IPO market. Therefore it is assumed that an issue manager builds reputation by underwriting of more and more IPOs over the period. It is further assumed that the underwriters' reputations increase at a decreasing rate over time. Thus underwriters' reputation has been measured as square root of the number of IPOs being already underwritten, after the issue manager starts building reputation at a certain number of underwriting. The number of underwriting at which the issue managers are assumed to build reputation is arbitrarily chosen iii.

*Growth rate of sales (GSA)*

Growth rate of sales (GSA) are calculated as sales in the IPO year minus sales in previous year divided by previous year's sales.

*Firm size (FS)*

Total asset is considered to be the proxy of firm's size because the data of market price of shares was not readily available.

Summary lists of variables used in this study are reported in Table A1 in the appendix.



## EMPIRICAL TEST RESULTS

### Results of Testing of Earnings Management Detection Hypothesis ( $H_1$ )

Mean and Median managed accruals as a percentage of total assets for the year prior to going public are presented in Table VII. Both parametric ‘t’ test of significance of means and non-parametric ‘Wilcoxon sign (rank)’ test of significance of median are reported. However ‘Kolmogorov-Smirnov Z’ test of normality for the managed accruals data suggests that normal distribution for managed accruals data is marginally rejected at 10% level of significance. Hence non-parametric test would expect to be more reliable.

*Table VII: Detection of Management’s Earnings Manipulation*

Managed Accruals for sample IPO firms one year prior to IPO as a % of total assets			
Modified Jones’ Model			
Mean	6.00***	Skewness	2.08
(t statistics)	(3.21)	Kurtosis	8.88
N	47	Kolmogorov-Smirnov Z	1.27
Median	4.24***	Prob. < Z	0.08
Percent Positive	76.00	Std. Deviation	0.128

Note: a) ‘t’ and ‘Wilcoxon sign’ test are used to examine the statistical significance level of the mean and median respectively.

b) \*\*\* indicates 1% level of significance.

Mean and median managed accruals of sample IPO firms account for 6.0% and 4.24% of the total assets under the Modified Jones’ Model. The results of ‘t’ test of the significance of mean managed accruals are given in Table VIII.

*Table VIII: One-Sample Test – Test of Mean Managed Accruals*

Test Value = 0						
t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference		
				Lower	Upper	
Managed Accruals	3.208	46	0.002	0.060043	0.0224	0.0977

Both 't' test and 'Wilcoxon sign' test indicate that the magnitudes of mean and median managed accruals are statistically as well as economically significant and different from zero. Thus Modified Jones' Model of discretionary accruals test does detect a significant portion of managed accruals, which indicates an evidence of earnings manipulation by entrepreneurs of IPOs in the year prior to going public.

In order to see whether there exists any pattern of managed accruals in the industry, managed accruals categorized by industry has been reported in Table IX. It has been observed that there is some-variation of mean and median managed accruals across industries. There is an evidence of earnings management in textile and miscellaneous industries while it is not in food and allied products category. However these variations across industries are not significant as reflected in ANOVA test implying that there exists no distinct pattern of earnings manipulation in the industry.

*Table IX: Earnings Management across Industry as a % of Total Assets*

<b>Industry</b>	<b>Number of IPOs</b>	<b>Mean</b>	<b>Std. Error of Mean</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
Engineering	3	7.45	8.71	2.18	-0.0430	0.2447
Food & Allied Products	12	0.13	3.28	1.09	-0.1862	0.1958
Jute	1	4.40	-	4.40	0.0440	0.0440
Textile	11	6.94	2.89	4.73	-0.1066	0.2492
Pharmaceuticals & Chemicals	4	5.38	5.82	2.62	-0.0555	0.2183
Paper & Printing	1	4.79	-	4.80	0.0479	0.0479
Services & Real Estate	2	3.25	0.65	3.25	0.0260	0.0391
Miscellaneous	13	11.14	4.79	7.21	-0.0014	0.6487
<i>Total</i>	<i>47</i>	<i>6.00</i>	<i>1.87</i>	<i>4.24</i>	<i>-0.1862</i>	<i>0.6487</i>

#### Results of Testing of Value Relevance Hypothesis ( $H_2$ )

The sign of expected and empirical test results of explanatory variables related to value relevance hypothesis is reported in Table X. It is evident in regression results that all the explanatory variables have the same sign as expected.

Before discussing the regression results, it is better to observe correlations among the explanatory variables and also variables with firm's initial value.



*Table X: Expected and Empirical Results of Impact of Variables on the Firm's Initial Value*

<b>Variables</b>	<b>Expected Sign of Coefficients</b>	<b>Empirical Test Results</b>
Cash Flow from Operation	(+)	+
Managed Earnings	(+)	+
Unmanaged Portion of Total Accruals	(+)	+
Issue Manager's Reputation	(-)	-
Growth Rate in Sales	(+)	+
Proportion of Ownership ( $\alpha$ )	(-)	-
Size of the Firm	(+)	+

Correlations among variables (Pearson's Correlations) and (Spearman's Non-parametric Correlations) are not reported in this paper. The correlation matrix suggests that such degree of relationship among the explanatory variables is not too high to have any multi-collinearity problem. This has also been reflected in diagnostic test, which covers variance inflation factor (VIF).

The regression results for empirical model equation [iv] in Section IV have been provided in Table XI. Among the explanatory variables, firm size and cash flow from operation have significantly influenced initial firm value. The co-efficient of firm size is 0.42 and it is statistically significant at 1% level of significance. This implies that the higher the firm size, the lower the chance of under-pricing. Cash flow from operation scaled by total assets has a positive co-efficient of 25,029.92, which is statistically significant. This implies that 10 percent change in scaled cash flow from operation leads to increase initial firm value by Tk 2,503.00 lac. Both unmanaged accruals and managed accruals have a significant positive impact on firm's initial value. This indicates that value relevance hypothesis has been accepted. This implies that entrepreneur's perception to that earnings management affects the firm value is borne out in the data.

All the explanatory variables taken together can explain 30% of the variation of the firm's initial value. The 'F' statistic on multiple regressions, the goodness-of-fit of the empirical model equation, is statistically significant at 1% level of significance.

*Table XI: Regression of Firm's Value on Managed Accruals and Other Explanatory Variables*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig. (one-tailed)
	B	Std. Error	Beta		
1 (Constant)	-53.36	867.75		-0.06	0.950
Firm Size (Total Asset)	0.42	0.12	0.56	3.66	0.001
Managed Accruals	16,561.64	7,212.48	0.75	2.30	0.015
Retained Ownership (LPsig)	1,476.62	2,698.09	0.07	0.55	0.295
Growth Rate of Sales	110.68	158.39	0.10	0.70	0.245
Cash Flow from Operation	25,029.92	7,719.71	1.04	3.24	0.001
Unmanaged Accruals	22,959.24	9,508.60	0.98	2.42	0.010
R <sup>2</sup> = 0.393	Adjusted R <sup>2</sup> = 0.302			df = 41	
F = 4.319	Prob. (F) = 0.002			N = 47	

In table XII, reputation of lead underwriters for issue management has been included as an explanatory variable in addition to other explanatory variables in Table XI. The magnitudes of co-efficient of variables have changed to some extent but the essence of the results remains the same. Among the explanatory variables, still firm size and cash flow from operation have significantly influenced initial firm value. The co-efficient of firm size becomes 0.45 instead of 0.42 and still statistically significant at 1% level of significance. Cash flow from operation scaled by total assets has a positive co-efficient of Tk 25,129.16 lac, which is very close to that of previous table. Issue managers reputation has a negative co-efficient of 1,083.86, which is statistically significant. However, this is marginally significant at 10% level (one-tailed test). Co-efficient of issue manager's reputation implies that a change in issue manager's reputation by one unit leads to decrease in initial firm value by Tk 1,084 lac. In this case also both unmanaged accruals and managed accruals have a significant positive impact on firm's initial value. This indicates that value relevance hypothesis has been accepted even after controlling for issue managers reputation.

*Table XII: Regression of Firm's Value on Managed Accruals, Issue Manager's Reputation and Other Explanatory Variables*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig. (one-tailed)
	B	Std. Error	Beta		
1 (Constant)	1,261.46	1,206.68		1.05	0.300
Firm Size (Total Asset)	0.45	0.12	0.59	3.88	0.000
Managed Accruals	14,931.76	7,170.12	0.68	2.08	0.020
Retained Ownership (LPsig)	232.34	2,773.07	0.01	0.08	0.465
Growth Rate of Sales	87.85	156.44	0.08	0.56	0.290
Cash Flow from Operation	25,129.16	7,590.68	1.04	3.31	0.000
Unmanaged Accruals	22,247.05	9,360.75	0.95	2.38	0.010
Issue Managers Reputation	-1,083.86	703.39	-0.21	-1.54	0.065
R <sup>2</sup> = 0.428	Adjusted R <sup>2</sup> = 0.325			df = 40	
F = 4.169	Prob. (F) = 0.002			N = 47	

In table XII, also all the explanatory variables, including reputation of issue managers, taken together, can explain 33% of the variation of the firm's initial value. The 'F' statistic on multiple regressions, the goodness-of-fit of the empirical model equation, is also statistically significant at 1% level of significance.

## SUMMARY OF FINDINGS AND CONCLUSION

This study is to examine detection of earnings management and testing value relevance hypothesis of IPOs in Bangladesh, which came into public between the period of January 1991 and December 2000. All IPOs, excluding Bank, Insurances and other Financial Institutions, having required data within this period have been considered. It has been found that the highest numbers of green field IPOs were floated in 1996 (7 in numbers) and in 1995 (6 in numbers). In the sample, there are highest numbers of IPOs in miscellaneous category followed by food and allied products, and textile category respectively. The largest number of IPOs floated in the

year of 1994 was followed by the year of 1996 and 1997 respectively.

The firm's values ranges from Tk 125 lac to Tk 18,000 lac while mean firm value is Tk 1,794 lac. The sizes of the firm, in terms of total asset, ranges from Tk 254 lac to Tk 23,782 lac while the mean and median are 2,943 and 2,144 respectively. The average portion of entrepreneur's ownership at the time of IPO is 47.27%, which ranges from 25% to 77%. The average cash flow from operation is negative.

Mean and median managed accruals of sample IPO firms account for 6.0% and 4.24% of the total assets under the Modified Jones' Model. The magnitudes of mean and median managed accruals are not only statistically significant but also economically significant. Thus Modified Jones' Model of discretionary accruals test does detect a significant portion of managed accruals, which indicates an evidence of earnings manipulation by entrepreneurs of IPOs in the year prior to going public.

An empirical model has been developed in line with the suggestions of various authors in order to test the value relevance hypothesis. It is hypothesized that the regression of the model provides a positive relation between earnings management and initial firm value. It is evident in regression results that all the explanatory variables have the same sign as expected. Also the 'F' statistic on multiple regressions, the goodness-of-fit of the empirical model equation, is statistically significant at 1% level.

Among the explanatory variables, firm size and cash flow from operation have significantly influenced initial firm value. Both unmanaged accruals and managed accruals have a significant positive impact on firm's initial value. This indicates that value relevance hypothesis cannot be rejected implying that entrepreneur's perception to earnings management that affects the firm value turnouts to be correct.

In short it can be concluded that there was earnings manipulation of IPOs in Bangladesh that came into public between January 1991 and December 2000 as evident from the study. It is also documented that earnings management had a positive impact on initial firm's value as perceived by the entrepreneurs.

This study reveals evidence of earnings management of IPOs considering only one year prior to going public. It is better to detect presence of earnings management of two or three years prior to the IPO year. While value relevance hypothesis proves positive relation between earnings management and firm's initial value, the next vital question arises whether there exists any relation between subsequent firms under performance and earnings management i.e., the long-run market performance of initial public offering firms, which is termed as disappointment hypothesis as opposed to value relevance hypothesis in the long run. It seems to be an interesting avenue for further study.

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## APPENDIX

**Table A1**

### List of Variables

Sign	Name of Variables	Computation
TAC <sub>iy</sub>	Total Accruals	Calculated as net income before extraordinary items minus cash flow from operations
TA <sub>iy-1</sub>	Total Assets	Considered one year prior to IPO
ΔREV <sub>iy</sub>	Change in Revenues	Calculated as revenue in the IPO year minus revenue of previous year
PPE <sub>iy</sub>	Property, Plant and Equipment	Considered gross amount of property, plant and equipment without depreciation
ΔREC <sub>iy</sub>	Changes in Accounts Receivable	Calculated as receivable in the IPO year minus receivable of previous year
ΔCFO	Changes in Cash Flow from Operation	Cash flow from operation in the IPO year minus cash flow of previous year
V	Value of the Firm	Offer price times the total number of shares outstanding at the time of IPO
CFOs	Scaled Cash Flow from Operations	Considered last full fiscal year prior to the IPO divided by total assets
UMA	Unmanaged Portion of Total Accruals	Calculated from total accruals minus managed accruals
EM	Managed Accruals	A measure of earnings management, derived from the cross-sectional regression of IPO data with industry data of the same period
RO	Retained Ownership	A proxy of LPsig = $\alpha + I_n (1 - \alpha)$ , where $\alpha$ is the proportion of total shares outstanding held by the original owners at the time of IPO
UW	Dummy Variable for Issue Managers' Reputation	Measured as a square root of the number of IPO being already underwritten
GSA	Growth Rate of Sales	Sales in the IPO year minus sales of previous year divided by previous year's sale
FS	Size of the Firm	Total asset is considered as a proxy for firm's size