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Accounting Choice, Annual Report Disclosures and Implied Cost of Equity

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Abstract: The study examined the effect of accounting choice and level of disclosure on the firm's implied cost of equity in Indian environment. For the study accounting choice was classified as aggressive or conservative depending upon the firm's choice of accounting methods, accounting policies and accounting estimates. Level of disclosure is the quantum of financial and non-financial information disclosed in firm's annual report, essentially in note to accounts section, schedules forming part of financial statements and Management Discussion and Analysis report.

Regression models were developed with cost of equity as a dependent variable and accounting choice, level of disclosure as an independent variable along with selected control variables. Cost of equity was measured using Edward-Bell-Ohlson (EBO) valuation model, to measure accounting choice Modified-Jones-Model (MJM) was used and level of disclosure was measured using a disclosure index essentially drawn from Botosan study.

Results indicated a negative association between the implied cost of equity and conservative accounting choice and also between level of disclosure and cost of equity.

JEL Classification: M41, G14, G1

Keywords: Accounting choice, Disclosure, Implied cost of equity

INTRODUCTION

The study examines the effect of accounting choice and level of disclosure on the firm's cost of equity in Indian environment. An accounting choice is any decision whose primary purpose is to influence the output of the accounting system in a particular way [T.D. Fields *et.al.* (2001)]. It is a collective effect of firm's accounting policy, accounting method and accounting estimate on firms reported financial position and financial performance. When it comes to accounting policy Indian accounting standards at times provides options to firms in deciding their accounting policy, for instance accounting standard-6 on depreciation permits firms to decide depreciation method (mostly followed WDV or SLM), accounting

standard -2 on valuations of inventory permits firms to decide inventory valuation method (FIFO or weighted average).

Such options though provided with the good intention that one method cannot fit for all, these are at times exploited by the firms in a pursuit to report a better financial position and performance.

As per accounting standard-26 on intangible assets, regarding R&D expense it states, research expense should be treated as a revenue expense and development expense maybe capitalized, it is silent on difference between 'research' and 'development', virtually giving a free hand to an accountant for accounting treatment of R&D expense. Readers of annual reports have to rely on notes to account section for description of accounting policy, where many a times it appears as if purposefully firm is maintaining ambiguity; the reporting is more of a 'ritual' then 'actual.

R&D expense for the year ended March 31, 2014 for Piramal Enterprise Ltd. (PEL) and Ciplawere Rs. 255.87 crs and 517.51 crs.respectively. If we want to know accounting treatment and policy for R&D cost, notes to accounts section is supposed to give required information. Following excerpts were taken from the annual reports of PEL and Cipla respectively,

Piramal Enterprise Ltd.

Research and Development

The research and development (R&D) cost is accounted in accordance with Accounting Standard - 26 'Intangible Assets'.

Research

Research costs, including patent filing charges, technical know-how fees, testing charges on animal and expenses incurred on development of a molecule till the stage of Pre-clinical studies and till the receipt of regulatory approval for commencing phase I trials are treated as revenue expenses and charged off to the Statement of Profit and Loss of respective year.

Development

Development costs (costs incurred when the lead molecule enters phase I trial and after obtaining regulatory approval for conducting phase I studies) relating to design and testing of a new or improved materials, products or processes are recognized as intangible assets and are carried forward under Intangible assets under development until the completion of the project as it is expected that such assets will generate future economic benefits. During the course of the studies, if it is observed that the studies are not proceeding as per expectations, the same are discontinued and the amount classified under Intangible assets under development is charged off to Statement of Profit and Loss.

The unit has made significant progress, with an R&D pipeline having several molecules in different phases of development. After successful pre-clinical studies, the Company makes application to requisite regulatory authorities for conducting phase I/II/III studies. Currently major development programs are in phase I/II studies. In Oncology, P276, P1446, P7170 and PL225B are in phase I/II studies. In Diabetes and Metabolic Disorder, P1736, P11187 and P7435 are in Phase I/II studies. (Page 108, Annual Report 2013-14 of PEL)

Cipla Ltd.

Research and Development

Revenue expenditure on Research and Development is recognised as expense in the year in which it is incurred. Capital expenditure on Research and Development is shown as addition to Fixed Assets. (Page 59, annual report 2013-14, Cipla Ltd)

PEL capitalized Rs. 15.75 crs. and expensed remaining Rs. Rs. 240.12 crs. Whereas, Cipla capitalized Rs. 5.58 crs.and expensed Rs. 511.93 crs. In case of PEL disclosure is providing sufficient information regarding R&D expense policy whereas Cipla's disclosure is more of a 'ritual', Cipla's R&D expense is not very clearly evident from its reporting.

Another area, accounting estimates made by management, wherever required gives a scope for manipulation if a firm wants to do so. Few area where estimation is required are, creating provisions, writing off bad debts, deciding economic life of self-constructed assets, amortization period for intangible assets etc. The current reporting framework does not require from a firm to disclose that on what basis a particular estimate was made, situation may be different under the proposed Indian accounting standards (Ind-AS). If a firm wants to play with profit figure very conveniently they can exploit it through the use of estimates.

The current study is an attempt to examine the influence on cost of equity of firms accounting choice and level of disclosure. For the purpose of the study disclosure is defined as quantum of voluntary financial and nonfinancial information disclosed by firm in its annual report. Essentially in notes to accounts section and management discussion & analysis section of the annual report. Cost of equity is defined as the internal rate of return that equates the market value of equity and forecasts of future earnings.

LITERATURE REVIEW

From a theoretical perspective there are two approaches for the research; the first approach [Demsetz (1968), Copeland and Galai (1983),Glosten and Mlgrom (1985), Amihud and Mendelson (1986)] investigates the effect of increased disclosure on stock market liquidity and in turn on firms cost of equity. Second approach [Diamond (1985), Diamond and Verrecchia (1991), Handa and Linn (1993), Bloomfield and Wilks (2000), Lambert et al (2007)] links increased disclosure with non-diversifiable risk and its effect on cost of equity. Both the approaches suggest that increased disclosure by a firm is negatively associated with its cost of equity.

Empirically, there is a little consensus about the effect of disclosure and accounting choice on firms cost of equity. Botosan (1997)showed a negative association between disclosure and cost of capital for firms with low analyst following, whereas Cuijpers and Buijink (2005) confirmed the same for firms with high analyst following. Botosan and Plumlee (2002) research showed positive association of disclosure with cost of capital, at the same time there are studies [Daske (2009)]proving no association between the two. Gietzmannand Ireland (2005) criticized this and on the contrary proved a negative association between the two variables, selecting different proxies for the variables. Most of the studies [Hail (2002), Francis et al (2005), Richardson and Welkar (2001), Espinosa and Trombetta (2007)] showed a negative association between disclosure and cost of capital.

Botosan (1997) examined the association between disclosure level and the cost of equity capital by regressing firm-specific estimates of cost equity capital on market beta, firm size, and measurement of disclosure level. A disclosure index with five heads was prepared to capture the amount of voluntary disclosure provided in the 1990 annual reports of a sample of 122 manufacturing firms. It was observed firms that with low analyst following, greater disclosure is associated with a lower cost of equity capital. For firms with a high analyst following, however, no evidence was found.

Botosan and Plumlee (2002) examined the association between the cost of equity capital and levels of annual report and timely disclosure, and investor relations activities. Study found that the cost of equity capital decreases in the annual report disclosure level but increases in the level of timely disclosures. Study found no association between the cost of equity capital and the level of investor relations activities.

Gietzmannand Ireland (2005) criticized Botosan (1997) study which found no evidence of a negative relationship for firms with a high analyst following, and moreover, Botosan and Plumlee (2002a) find that firms' cost of capital increases with timely disclosures. Gietzmannand Ireland explained that these inconclusive results may have arisen due to problems with the measurement of disclosure, they constructed an innovative measure of timely disclosure, that attempts to capture quality rather than quantity of strategic disclosures. In addition, they controlled a possible omitted variable, accounting policy choice. With this revised research design, they found the expected negative relationship for firms adopting aggressive accounting policies.

Dhaliwal et. al. (1979) examined the impact of an increase in disclosure on the cost of equity capital through analysis of the impact of the Securities and Exchange Commission's (SEC) segmental disclosure requirement. The cost of equity capital was compared before and after the segmental disclosure requirement for 25 firms affected by the requirement and 2 control groups of firms not affected by the requirement. Results of the study lend support to the hypothesis that increased disclosure, as required by the segmental disclosure regulations of the SEC, produced lower costs of equity capital.

Cheynel (2013) explored the link between firms' voluntary disclosures and their cost of capital, find that when disclosure is voluntary firms that disclose their information have a lower cost of capital than firms that do not disclose. Bertomeu (2011) developed a model of financing that jointly determines a firm's capital structure, its voluntary disclosure policy, and its cost of capital, model predicts a negative association between firms' cost of capital and the extent of information firms disclose.

Li (2010) examined whether the mandatory adoption of International Financial Reporting Standards (IFRS) in the European Union (EU) in 2005 reduced the cost of equity capital. Using a sample of 6,456 firm-year observations of 1,084 EU firms during the 1995 to 2006 period, study find evidence that, on average, the IFRS mandate significantly reduces the cost of equity for mandatory adopters, only in countries with strong legal enforcement.

Studies support that accounting conservatism reduces the cost of capital [Bauman (1999), Ahmed *et. al.* (2002), Francia *et. al.* (2004), Monahan (2005)]. Gietzmann and Ireland (2005) in their paper modified the Jones (1991) model as a proxy for measure for accounting choice; the model is based on discretionary accruals approach, Ball and Shivakumar (2006) in their study showed that Jones (1991) model incorporates conservatism.

Several proxy for measuring cost of equity are available, Botosan&Plumlee (2002) and Li (2010) used CAPM, Edwards and Bell (1961), Ohlson (1995), Feltham and Ohlson (1995), Gebhardt et al (2001), Hail (2002), Espinosa and Trombetta (2007) used EBO valuation formula as a measure of cost of equity. The EBO approach use earnings estimate by analysts, based on which implied cost of equity is calculated.

RESEARCH METHODOLOGY

Research Objective

i. To study the association between accounting choice and cost of equity

ii. To study the association between level of disclosure and cost of equity

OLS regressions were performed of cost of equity against the measure of disclosure, accounting choice and selected set of control variables. Regression models were developed, the principal model under study was as given below:

$$r = \beta_0 + \beta_1 DAM + \beta_2 DSCORE + \beta_3 LNMV + \beta_4 LNBMV + \beta_5 SIZE + \beta_6 LNDISPANA + e$$

where,

r = Cost of equity

DSCORE : Disclosure score scored by the firm based on disclosure index

DAM : Discretionary accruals measure

LNMV : Natural log of opening market value

LNBMV : Natural log of opening book-to-market ratio

SIZE : Size of the firm measured as natural log of total assets

LNDISPANA : Natural log of ratio of dispersion in estimated earnings to number of analysts

Measuring Cost of equity : Cost of Equity was calculated using following EBO Valuation Formula

$$P_t = b_t + \sum_{\tau=1}^{n} (1+r)^{-\tau} E_t \left[x_{t+\tau} - r b_{t+\tau-1} \right]$$

where,

r = Cost of Equity

P_t = Price of equity share at date 't'

b_t = Current book value per share at date 't'

$b_{t+\tau}$ = Future book value per share at date 't+τ'

E_t = Expectations operator

x_t = Earnings for year 't'

Edwards and Bell (1961), Ohlson (1995), Feltham and Ohlson (1995), Gebhardt et al (2001), Hail (2002), Gietzmann and Ireland (2005), Espinosa and Trombetta (2007)used EBO valuation formula as a measure of cost of equity.The EBO approach use earnings estimate by analysts, based on which implied cost of equity is calculated. For the study earnings estimate for two years were taken, terminal value was calculated for year two.

For each of the firm we got two values one positive and one negative, as implied cost of equity cannot be negative, so positive value was taken as the value of cost of equity.

Measurement of Accounting Choice: Accounting choice can be classified as conservative or aggressive, to identify the accounting choice adopted by the firm modified Jones model is used, Gietzmann and Ireland (2005) in their paper modified the Jones (1991) model, the model is based on discretionary accruals approach. It is a three step process, first we calculate TA_t using equation no. (i) as follows,

$$TA_t = \Delta(CA_t - CASH_t) - \Delta(CL_t) - DEPN_t \quad (1)$$

In the equation (1), CA is current assets, CASH is cash and bank balance, and DEPN is depreciation and amortization expenses.

After calculating TA_t, we run a OLS for calculating the values of coefficients β_0, β_1 and β_2 in equation (2) below, in equation (ii) ASSETS is total assets, REV is revenue and PPE is gross value of tangible fixed assets.

$$\frac{TA_t}{ASSETS_{t-1}} = \beta_0\left(\frac{1}{ASSETS_{t-1}}\right) + \beta_1\left[\left(\frac{\Delta REV_t}{ASSETS_{t-1}}\right) - \left(\frac{\Delta REC_t}{ASSETS_{t-1}}\right)\right] + \beta_2\left(\frac{PPE_{t-1}}{ASSETS_{t-1}}\right) + \in_j \quad (2)$$

$$DAM_t = \frac{TA_t}{ASSETS_{t-1}} - \beta_0\left(\frac{1}{ASSETS_{t-1}}\right) - \beta_1\left[\left(\frac{\Delta REV_t}{ASSETS_{t-1}}\right) - \left(\frac{\Delta REC_t}{ASSETS_{t-1}}\right)\right] - \beta_2\left(\frac{PPE_{t-1}}{ASSETS_{t-1}}\right) \quad (3)$$

The values of coefficients β_0, β_1 and β_2 is used in equation (3) above to calculate the value of parameter DAM_T, positive value of DAM indicates aggressive accounting choice and negative DAM value signifies conservative accounting choice. REC is receivables.

Guay et al (1996) and Young (1999)showed MJM model performs better compared to other models for Non-discretionary accruals. DeFond and Jiambalvo (1994) and Bartov et al (2001) showed MJM model perform better on cross sectional data compared to time series data. Gietzmann and Ireland (2005) used MJM model for identifying type of accounting choice. 336 sample firms were observed as adopting aggressive accounting choice and 182 firms were conservative in their approach.

Measurement of level of Disclosure: Lang and Lundholm (1993), Botosan (1997), Botosan and Plumlee (2002)constructed disclosure index to measure the level of disclosure, such approach mainly captures the frequency of disclosure. Hail (2002), Gietzmann and Trombetta (2003)used voluntary disclosures in the annual report as a measure for level of disclosure. Gietzmann and Ireland (2005)captures 'newsworthiness' of the disclosure rather than the absolute frequency of disclosure.

For the study a disclosure index used in Botosan (1997) was used, for each parameter if information is available a score of 1 was assigned. DSCORE was calculated as a ratio of total score (1's) divided by 53 (total number of parameters).

Control variables: Natural log of opening market value, natural log of opening book-to-market ratio, ssize of the firm measured as natural log of total assets, natural log of ratio of dispersion in estimated earnings to number of analysts were taken as control variables.

SAMPLE, DATA &EMPIRICAL RESULT

Sample Firms: Constituent firms selected indices of COSPI (CMIE Overall Share Price Index), were taken. Indices selected were for Food and Agro based products with 152 firms, data for 2 firms was not available, Textile with 183 firms, Consumer Goods with 77 firms and Transport Equipment with 115 firms.

For seven firms earnings estimate was negative, thus dropped for the study, the final sample size was 518.

Data for the year ended 2012 and 2013 was taken for sample firms from CMIE Prowess database.

Six regression models were developed with different combination of independent variables; table-1 gives the description of models developed and table-2 presents empirical results.

Table 1
Description of Models Developed

Variables	*Model-1*	*Model-2*	*Model-3 DAM: -ive*	*Model-4 DAM: -ive*	*Model-5 DAM: +ive*	*Model-6 DAM: +ive*
DAM			√	√	√	√
DSCORE		√		√		√
LNMV	√	√	√	√	√	√
LNBMV	√	√	√	√	√	√
SIZE	√	√	√	√	√	√
LNDISPANA	√	√	√	√	√	√

Table 2
Empirical Results

Variables	*Model-1*	*Model-2*	*Model-3 DAM: -ive*	*Model-4 DAM: -ive*	*Model-5 DAM: +ive*	*Model-6 DAM: +ive*
DAM	-	-	-1.860***(2.328)	-1.589***(2.339)	1.569(1.936)	1.467(1.809)
DSCORE	-	-0.781**(0.673)	-	-0.731**(0.679)	-	-0.61**(0.538)
LNMV	0.487**(0.224)	0.456**(0.225)	0.506**(0.226)	0.475**(0.227)	0.457**(0.291)	0.427**(0.272)
LNBMV	0.596*(0.238)	0.568**(0.239)	0.631*(0.243)	0.599*(0.244)	0.612*(0.246)	0.579**(0.237)
SIZE	-0.420**(0.225)	-0.378***(0.228)	-0.457**(0.231)	-0.413***(0.234)	-0.54**(0.218)	-0.532***(0.204)
LNDISPANA	0.199**(0.084)	0.195**(0.084)	0.209*(0.085)	0.204**(0.085)	0.157**(0.074)	0.147**(0.069)
Constant	-9.492*(3.449)	-8.972*(3.470)	-9.459*(3.459)	-8.977*(3.484)	-7.663*(3.154)	-7.126*(2.945)
R^2	17.7%	19.3%	18.5%	19.9%	18.8%	20.1%

*Significant at 1%, ** Significant at 5%, *** Significant at 10%

Based on empirical results study identified a negative association between level of disclosure and cost of equity, conservative accounting choice and cost of equity, no association was observed between firms with aggressive accounting choice with its cost of equity.

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