Prediction of Future Returns through Earning Management: A Case of Pakistan

Marria Hassan, Universiti Utara Malaysia.

ARTICLE DETAILS	ABSTRACT
History *Revised format:* *May 2019* *Available Online:* *June 2019* **Keywords** *Workplace belongingness, affective commitment, job crafting, appreciative leadership*	Companies world over are often found indulge in activity of hiding their real financial positions by decorating their financial statements with false digits. This concept referred to as earning management, which plays a significantly critical role in investor performance in stock market. In this paper analysis of probability of earnings manipulation using Beneish Model is performed. Sample comprised of two sectors; Sugar and Cement as listed at Karachi stock exchange. Various firms in Cement and Sugar Sector were distinguished as manipulators and non-manipulators as per the data analysis. Results predicted that 54.65% of the companies were manipulating their performance through window dressing and remaining 45% were non manipulators. Methodology to apply Beneish Model as opted from Beneish basic paper (1997) was used which marked manipulator companies with value as "1" and non-manipulator companies by "0" with the objective to benefit investor of the stock market and save them from getting misguided by false financial statements. The variable of the study as calculated by the help of those 8 variables included in Beniesh model is called PROBM (Probability of Manipulation). The study also explores ability of PROBM to predict the future returns. Results revealed that PROBM and other variables remained insignificant in predicting future period returns in the context of Pakistani stock market.

Introduction

Usefulness of accounting earnings to investors cannot be denied. More than half of the information about any firm, which is presented in a year, is confined in that year's income figure and accounting earning is significantly connected with changes in stock prices (Ball and Brown 1968). An interesting connection between earnings and stock prices has been proved. First link shows that current earnings help in the forecast of future earnings. Second, Future earning helps in estimating expected future dividends and third connection establishes that the current value of

these anticipated future dividends decide the share price. (Beaver 1998; Nichols and Wahlen 2004).

As we have discussed that current level of earnings can predict future levels of earnings. Hence the present level of earning is probable to get repeated in the future time periods. The repetitive occurrence of earning figures in future is termed as earning persistence (Francis and Smith 2005). It has been established that more persistent earnings are translated into better stock returns (Kormandi and Lipe 1987).

Earnings can be improved by manipulating the earning figure. (Xie et al 2001).Stock price generally fail to reflect any effect of accrual anomaly and investors do not incorporate public information. (Bernard and Thomas 1989, 1990; Sloan 1996, Beneish 1997).
In this study we have identified the manipulation of earnings by the firms in Pakistan. We have also tried to establish if probability of earning manipulation can consider the relation between accruals and future returns.

In this paper using we predicted either if a company is a manipulator or a non-manipulator using Beneish model. PROBM was used as an identifier of a company's category of either manipulator or nor manipulator. Our major objective for this paper was to gather information for capital markets. In context of the benefits for the capital market participants to incorporate market information effectively, our findings raise the question of why PROBM predicts this. We show that PROBM has implications for future earnings that market participants seemingly ignore or misunderstand (Beneish et al., 2007).

Literature Review

Recent studies have examined manager's intentions to control the valuation of stock that influence equity offering by exaggerating earnings, (Teoh et al. 1997), or manage earnings to come upto the expectations of the market analyst's prediction. (Burgstahler and Eames 1998). Efficient Market Hypothesis states that investors cannot be misguided by accounting manipulations as stock prices already utilize all available information, as reported by Fama (1970) Mayer-Somners (1979) Hines (1982).

Analysts, investors, senior executives, and boards of directors consider earnings as the single most important item in the financial reports issued by publicly held firms (Francois et al., 1999). It's is established that investor will feel more certain toward a company that announces constant earnings (Hepworth 1953).

It is reported by Sloan that the cash flow constituent of earnings is more continual than accrual factor of earnings (Sloan 1996), and that when earnings persistence is high, there is a positive relationship and following stock returns move in the similar direction as that of changes in earnings. He shows that market investors usually fail to precisely distinguish the differing level of persistence in earnings from both cash flows and accrual element of earnings. This is so called 'accrual anomaly' in securities returns.

From the perspective of stock market, earning persistence is important because its understanding can be used to estimate returns on stocks (Sloan, 1996). Where, yearly stock returns are significantly related to the symptoms of annual changes in earnings (Ball and Brown 1968). Earnings persistence is an extent to which a current period earnings shock affects future earnings (Lipe 1990). Earnings increasing accounts change is accompanied by a positive abnormal stock return and vice versa irrespective the effect of the change on the present value of cash flows (Ball

and Brown, 1968). (Ball 1972) and (Kaplan and Roll 1972) assume that financial statements are the solitary source of information about the firm, and investors prediction of stock prices is only based on the accounting earnings. They found that stock prices are related to the variations in the accounting methods. Transitory earnings contribute much less to value of stock returns than persistent earnings (Nichols and Wahlen 2004). It was reported that earning persistence helps explaining differences in the relation between stock return and earnings (Kormandi and Lipe 1987).

Although structure of GAAP says earning management is legal, but it may lead to a special case that is intertemporal smoothing of reported earnings relative to economic earnings (Anand and Thakor 2003). Smoothing represents garbling, performed by managers to fool analysts and others and to enhance managerial compensation (Li and Richie 2009).

Sometimes earning persistence arising from earning manipulation is due to accruals which are primary indicators of earnings persistence and unusual stock returns (Sloan 1996). Where, total accruals are decomposed into nondiscretionary and discretionary components using the Jones model. It is further said that the out of discretionary and non-discretionary accruals it is assumed that managers distort discretionary accruals to manipulate earnings Xie (2001), Defond and Kothari (2001).

It is well documented that earnings are incrementally informative to operating cash flows (Bowen et al., 1987), and (Dechow 1994). Where expected stock returns emerge because investors do not foresee the lower persistence of the less consistent accrual components of earnings (Sloan 1996). Economy is pillared on conviction and reliability of financial information, here; stakeholders look for ways to identify earnings manipulation (Beneish and Nichols 2007).

Earnings management can either be an opportunistic attitude of manager for maximizing their utility on account of other stakeholders or a method used by management to use provision in accounting policies to reduce the interest rates on debt or to refrain from huge fluctuations in the stock prices, which is an example of income smoothing (Scott 1997). Earnings manipulation commonly happens through use of discretion over accruals, keeping in mind that accruals are one of the eight inputs into the PROBM model (Probability of Manipulation) (Beneish and Nichols 2007).

An assessment of earnings persistence determined by fundamentals to persistence expectations entrenched in stock prices using the Mishkin's (1983), evaluated that earnings persistence implied by stock prices is higher (lower) than fundamentally determined earnings persistence when the persistence is low (high).

Also the non-reliability of Jones approach with its predictable degree of error (Guay et al. 1996; Beneish, 1998) calls for an alternative provided by Mesood D. Beneish in 1999, where he improved his previous model in a work along with Craig Nichols.

It is reported that managers doing dubious accounting practices along with other value-destroying dealings to maintain overvalued stocks (Jensen 2005). Where, fake financial reporting imposes a big cost upon financial markets (Beneish and Nichols 2007). On the other hand, research continuously finds that behavior of prices manifest that investors forgo the implications of instantly available public information (Lakonishok et al., 1994). Recent analytical and experimental research has tried to explain post earnings announcement drift (PEAD) and other market anomalies in a context of behavior and identify conditions for stock price under- and overreaction.

This phenomenon is called moderated confidence because investors expectations are moderated toward an average level that is insufficiently extreme. The moderated confidence model suggests that the stock price under- and overreaction are predictable based on information's statistical reliability. When investors have received signals having noise shocks about the statistical reliability of information, stock prices underreact to reliable information and overreact to unreliable information (Bloomfield et al. 2000). Stock prices behave as if investors use a immature earnings expectation model and systematically underestimate earnings persistence (Bernard and Thomas 1990), (Ball and Bartov 1996), (Soffer and Lys 1999). In this way if market participants are unsuccessful to use available information to evaluate the probability of manipulation, PROBM should negatively relate to future returns (Beneish and Nichols 2007).

Significance of earnings anticipation for financial-statement evaluation, where paradigm is, and earnings will be consistent if no monetary shocks and problems in seminal of accounting income (Dichev and Tang 2009) and cash flows (Sloan 1996 and Fairfield et al. 2003), (Dechow and Ge 2006) and (Fairfield 2006).

Methodology
We have collected data for companies in cement and sugar sector from year 2001-2009.Most of the balance sheet data has been gathered from Balance Sheet Analysis whereas historical prices and stock data has been extracted from Business recorder and Karachi Stock Exchange website. Basic Beneish equation was run and results were demonstrated for the two sectors by calculating their respective M-score.

Beneish Model
We are using Beneish model (1997 and 1999) for our research. Beneish model detects and distinguishes which firm is manipulating earnings and which firm is not. The model is based on eight variables which expose manipulators and non manipulators. The model has been previously tested for the measurement of fraud in firms like Enron etc. It effectively calculates the probability of manipulation (PROBM). The equation specifically employed for the measurement of fraud is as follows:

PROBM= -4.84 + 0.920*DSR + .528*GMI + .404*AQI + 0.892*SGI + 0.115*DEPI (1)–(0.172*SGAI) + 4.679*ACCRUALS - 0.327*LEVI

Where:

1. DSR = (Receivables $_t$/Sales $_t$) / (Receivables $_{t-1}$/Sales $_{t-1}$).
The above formula indicates Day's sales receivable measured as the ratio of days' sales in receivables in year t to year t-1. A large increase in DSR shows that revenue has been overstated.
2. Gross Margin Index is measured as the ratio of gross margin in year t-1 to gross margin in year t. Gross margin is assumed to be deteriorated when this index is above 1. A firm with weaker growth opportunities is more likely to manipulate earnings. The formula for measuring GMI is as follows.

$$GMI= \frac{Sales_{t-1}-Cost\ of\ goods\ sold_{t-1}}{Sales_{t-1}} \div \frac{Sales_t - cost\ of\ Goods\ Sold_t}{Sales_t}$$

3. Asset quality is measured as the ratio of non-current asset divided by total assets. AQI ratio measures the asset quality in year t to year t-1. The formula for measuring AQI is as follows.

$$\text{AQI} = 1 - \frac{\text{Current Assets}_t - \text{PPE}_t}{\text{Total Assets}_t} \div 1 - \frac{\text{Current Assets}_{t-1} - \text{PPE}_{t-1}}{\text{Total Assets}_{t-1}}$$

4. Ratio of sales in year t to sales in year t-1 is called sales Growth Index. This index is not a direct predictor of manipulation but firms are likely to manipulate growth to improve earnings... The formula for measuring SGI is as follows.

$$\text{SGI} = \text{Sales}_t / \text{Sales}_{t-1}$$

5. Depreciation Index is measured as the ratio of the rate of depreciation in year t-1 to the rate of depreciation in year t. DEPI greater than 1 indicates that assets are being depreciated at a slower pace. This shows that the firm is adopting a new method for depreciation that is income friendly. The formula for measuring DEPI is as follows.

6.

$$\text{DEPI} = \frac{\text{Depreciation}_{t-1}}{\text{Depreciation}_{t-1} + \text{PPE}_{t-1}} \div \frac{\text{Depreciation}_t}{\text{Depreciation}_t + \text{PPE}_t}$$

7. Sales and General administrative Index is the ratio obtained by dividing SGA expenses in year t from those in year t -1. The formula for its calculation is given.

$$\text{SGAI} = \frac{\text{SGA expense}_t}{\text{Sales}_t} - \frac{\text{SGA Expense}_{t-1}}{\text{Sales}_t}$$

8. LEVI denotes Leverage Index here. The ratio of total debt to total assets in year t relative to year t-1. An LVGI >1 indicates an increase in leverage. It is calculated using the formula given below.

$$\text{LEVI} = \frac{\text{Long term Debt }t - \text{Current Liabilities}_t}{\text{Total Assets}_t} - \frac{\text{Long term Debt }t\text{-}1 - \text{Current Liabilities}_{t-1}}{\text{Total Assets}_{t-1}}$$

TATA is the ratio of total accruals calculated as the change in working capital accounts less depreciation. The formula given below represents TATA calculation.

ACCRUALS= (Total Accruals) / Total Assets

All these eight variables collectively compute M Score. M Score has been donated by binary values 0 and 1 for manipulators and non manipulators respectively. If value of the M Score for a firm is less than -2.22, the firm is a non manipulator and is denoted by a zero in this paper. Whereas, if M Score is greater than -2.22 the firm is assumed to be a manipulator.

To find out the coefficients of Beneish Model to be used in the context of emerging economies like Pakistan, we employed Principal Component Analysis Technique (PCA) in Stata software, so that the component with the highest eigenvalue could be identified. The PCA Analysis showed the following results.

Principal Components/Correlation

Component	Eigenvalues	Difference	Proportion	Cumulative
Comp 1	1.28724	0.151403	0.143	0.143
Comp2	1.13583	0.0590172	0.1262	0.2692
Comp 3	1.07682	0.0722754	0.1196	0.3889
Comp 4	1.00454	0.00361967	0.1116	0.5005
Comp 5	1.00092	0.00934595	0.1112	0.6117
Comp 6	0.991576	0.0933662	0.1102	0.7219
Comp 7	0.89821	0.0214889	0.0998	0.8217
Comp 8	0.876721	0.148583	0.0974	0.9191
Comp 9	0.728138		0.0809	1

Principal Component Analysis (PCA-STATA)

Amongst all the eight components, Component 1 holds the highest Eigen-values. Hence we will extract the Eigen vectors of Component 1 from the Principal Component table to modify the coefficients in the Beneish Model equation. The Eigen vector for the component 1 to be used as coefficients in application of Beneish Model the context of Pakistan can be observed from the table given below:

Principal　　　　Component (eigenvectors)

Variable	Comp 1
PROBM	0.0135
GMI	0.638
AQI	0.0215
SGI	-0.6712
ACCRUALS	-0.1827
DSR	0.2548
LEVI	0.1775
SAGI	0.0818
DEPI	-0.0726

Hence, our equation for Beneish model using new coefficients would be

PROBM= 0.0135 + 0.2548*DSR + 0.638*GMI + 0.0215*AQI -0.6712*SGI-0.0726*DEPI+0.0818*SGAI-0.1827*ACCRUALS +0.1775*LEVI

After the application of this model, many firms were identified as manipulators and as non-manipulator. As predicted by the results of Beneish equation we found that 54.65% of the companies were manipulators and remaining 45% were non manipulator.

We have denoted non-manipulators with a "0" and manipulators with a "1" in M-score. In this paper the coefficients have been found to be used especially, for the firms in the developing economies like Pakistan.

PROBM includes the relation between Accruals and future returns:
We are now investigating whether one strategy hedge returns subsume others by excluding omitted variables related to future returns.

Year ahead returnst+1=a0 + a1 PROBM +a2 Accrual + a3 BETA+ a4 B/P+a5 RETt + a6 (MVE) + a7 Ret Vol + a8CFO/Pt+a9UEt + e t+1

Where independent variables represented by PROBM indicates probability of manipulation, Accruals, Betas have been calculated for each firm, B/P denotes Book Value of Stockholder's equity divided by price per share, yearly returns, Returns volatility (Gaarch), cash flow divided by price (CFO/P) and earnings surprises (UE).The dependant variable is one year ahead returns. We applied regression in stata software to find out whether the above-mentioned independent variables predict future returns. The results are summarized as follows:

Return one year ahead	Coef.	St Error	t	p>t
Earning surprise	0.0000115	0.0000883	0.13	0.896
Market value of equity	-0.136337	0.3207152	-0.43	0.671
Returns	0.0699648	0.0456098	1.53	0.126
Book/Price Ratio	-0.000622	0.001343	-0.46	0.644
Return Volatality	0.0008935	0.0008165	1.09	0.274
Cashflow/Price	0.0009896	0.0026173	0.38	0.706
Beta	-0.111806	0.1801225	-0.62	0.535
Accrual	-0.326043	1.46453	-0.22	0.824
PROBM	-6.81	2.17	-0.31	0.754
_cons	3.889185	1.889269	2.06	0.04

As p value of Current year returns is greater than the level of significance, therefore, we will accept the null hypothesis that Co-efficient of RET is equal to zero. Thus RET does not predicts one year ahead periods. This result is not consistent with Beneish (2007). The rest of the variables also remained insignificant in predicting the year ahead returns as the p value remained greater than the level of significance. Though prior researches have shown that above mentioned variables are correlated with subsequent returns (Chan et al, 1994, Jegadeesh and Titman 1993.Haugen and Bernard and Thomas 1989). The reason for the insignificant results can be the usage of a different time period and sample.

Conclusion & Recommendation
Future researches can explore the applicability of his model using paired sampling. Determination of a new cut off point would also be of utmost significance. The results can be improved if the

model is applied on those companies' who have been declared as manipulators over the last few years i.e. Steel Mills of Pakistan, PIA etc. The application of this model can be tested on other sectors as well.

After the application of this model, many firms were identified as manipulators and as non-manipulator. As predicted by the results of Beneish equation, we found that 54.65% of the companies were manipulators and remaining 45% were non manipulator. Because the fraud detection model relies on accruals, and because accruals also predict returns, we carefully distinguish the predictable returns from the two strategies. We have denoted non-manipulators with a "0" and manipulators with a "1" in M-score. In this paper the coefficients of Beneish Model have been found to be used especially, for the firms in the developing economies like Pakistan. The model is of immense significance to investors, industrialist, managers and even tax regulatory bodies. However, the PROBM and other variables employed for predicting future returns remained insignificant in Pakistan, a reason for such results can be highly unpredictable stock market of Pakistan and an economically unstable and underdeveloped country. According to the previous researches, the firms with high probability of manipulation should have high future returns whereas those with low probability of manipulation should also have higher expected future returns. Our findings also showed that PROBM does not explain any movement in future stock returns. We can also infer that investors fail to incorporate the information about manipulations in earnings while forecasting future returns.

References

Arrow, K., 1973. Social responsibility and economic efficiency. *Public Policy*, (21), P.303-317.

Barth, M., Hutton, A., 2004. Analysts' earnings forecast revisions and the pricing of accruals. *Review of Accounting Studies,* (59).

Becker, G., 1976. Altruism, egoism and genetic fitness: Economics and sociobiology. *Journal of Economic Literature*, p.817-826.

Beneish, M., 1999. The Detection of Earnings Manipulation. *Financial Analyst Journal,* p.24-36.

Beneish, M., 1997. Detecting GAAP Violation: Implications for assessing earnings management among firms with extreme financial performance. *Journal of Accounting and Public Policy,* 16(3), p.271-309.

Beneish, M., 1999a. Incentives and Penalties Related to Earnings Overstatements that Violate GAAP. *The Accounting Review,* (74), p.425-457.

Beneish, M., Vargus, M., 2002. Insider Trading, Earnings Quality, and Accrual Mispricing. *The Accounting Review*, p.755-791.

Bernard, V., Thomas, J., 1989. Post-earnings-announcement drift: Delayed price response or risk premium? *Journal of Accounting Research, (*27), p.1-36.

Carhart, M., 1997. On the persistence in mutual fund performance. *Journal of Finance,* (52), p.57-82.

Chan, L., Jegadeesh, N., Lakonishok, J., 1996. Momentum strategies. *Journal of Finance,* (51), p.1681-1713.

Chan, K., Chan, Jegadeesh, N., Lakonishok, J., 2001. Earnings quality and stock returns: The evidence from accruals, University of Illinois at Urbana-Champaign, *Working paper.*

Ciesielski, J., 1998. What's Happening to the "Quality of Assets"?
The Analyst accounting observer 7(3).

Collins, D., Gong, G., Hribar, P., 2003. Investor Sophistication and the Mispricing of Accruals. *Review of Accounting Studies,* (8), p.251.

Davis, J., 1994. The cross-section of realized stock returns: The pre-COMPUSTAT evidence. *Journal of Finance* (49), p.1579-1593.

Desai, H., Rajgopal, S., Venkatachalam, M., 2004. Value-Glamour and Accruals Mispricing: One Anomaly or Two? *The Accounting Review,* (79), p.355-385.

Fama, E., French, K., 1992. The cross-section of expected stock returns. *Journal of Finance,* (47), p.427-465.

Fama, E., French, K., 1997. Industry costs of equity. *Journal of Financial Economics,* (43), p.153-193.

Francis, J., La Fond, L., Olsson, P., Schipper, K., 2005. The market pricing of accruals quality. *Journal of Accounting and Economics,* p.295-327.

Freeman, R., Tse, S., 1989. The multi-period information content of earnings announcements: confirmations and contradictions of previous earnings reports. *Journal of Accounting Research,* (27), p.49-79.

Gibbons, M., Ross, S., Shanken, J., 1989. A test of the efficiency of a given portfolio. *Econometrica,* (5), p.1121.

Harrington, C., 2005. Analysis of Ratios for Detecting Financial Statement Fraud. *Fraud Magazine,* p.24-27.

Haugen, R., Baker, N., 1996. Commonality in the determinants of expected stock returns. *Journal of Financial Economics*, (41), p.401-439.

Hirschleiffer, J., 1977. Economics from a biological viewpoint. *Journal of Law and Economics,* (52), p.1-52.

Jegadeesh, N., 1990. Evidence of predictable behavior of security returns. *Journal of Finance,* (45), p.881-898.

Jegadeesh, N., Titman, S., 1993. Returns to buying winners and selling losers. *Journal of Finance,* (48), p.65-91.

Jensen, M., 2005. Agency costs of overvalued equity. *Financial Management,* (34), p.5-19.

Karpoff, J., Lee, D., Martin, G., 2007. The Cost to Firms of Cooking the Books. *Journal of Financial and Quantitative Analysis*. Forthcoming.

Kothari, S., Loutskina, E., Nikolaev, V., 2007. Agency theory of overvalued equity as an explanation for the accrual anomaly. Working paper.

Lakonishok, J., Shleifer, A., Vishny, R., 1994. Contrarian investment, extrapolation, and risk. *The Journal of Finance,* (49), p.3-27.

Lee, C., Swaminathan, B., 2000. Price Momentum and Trading Volume. *The Journal of Finance,* (55), p.2017-2069.

Lev, B., Nissim, D., 2006. The persistence of the accruals anomaly. *Contemporary Accounting Research,* Forthcoming.

Mashruwala, C., Rajgopal, S., Shevlin, T., 2006. Why is the accrual anomaly not arbitraged away? The role of idiosyncratic risk and transaction costs. *Journal of Accounting and Economics,* Forthcoming.

McNichols, M., 2000. Research design issues in earnings management studies. *Journal of Accounting and Public Policy,* (19), p.313-345.

Nichols, D., 2006. Fundamental or information risk? An analysis of the earnings quality factor. Working paper.

Noreen, E., 1988. The economics of ethics: A new perspective on agency theory. *Accounting Organizations and Society,* (13), p.359-369.

Sloan, R., 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review,* (71), p.289-315.

Teoh, S., Wong, T., Rao, G., 1998. Are accruals during initial public offerings opportunistic? *Review of Accounting Studies, 3(1-2), p.209-221.*

Wells, J., 2001. Irrational ratios. *Journal of Accountancy,* p.80-83.

Xie, H., 2001. The Mispricing of Abnormal Accruals. *The Accounting Review,* (76), p.357-373.