Indian Journal of Fundamental and Applied Life Sciences ISSN: 2231– 6345 (Online)
An Open Access, Online International Journal Available at www.cibtech.org/sp.ed/jls/2015/02/jls.htm
2015 Vol. 5 (S2), pp. 2665-2672/Azemi and Mohammadabadi
Research Article

INVESTIGATING THE EFFICACY OF BASU'S DIFFERENTIAL TIMELINESS MODEL IN EVALUATING CONSERVATISM

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ABSTRACT
This study aims to estimate the efficacy of Basu's differential timeliness model in evaluating conservatism in listed firms in Tehran Stock Exchange. Generally the main principle in conservatism is based on accelerating the recognition of cost and debt as well as identification of earning and assets. Basu developed a model to measure the conservatism. It is known as Basu's Model which sets a pattern for different studies and researches on conservatism. Considering the wide application of Basu's model, this study investigates t whether it is effective in evaluating the predictable differences in conservatism during an overstated period. Data for 93 listed firms in Tehran Stock Exchange was employed over a 5-year period from 2006 to 2011. Findings show that Basu's Differential Timeliness Model shows higher levels of conservatism for test firms during post-overstatement period than control firms.

Keywords: *Conservatism, Basu's Differential Timeliness Model, Earning-Return Relationship, Restatement Firms*

INTRODUCTION
Accounting conservatism is an approach to handle the problem of lack of confidence during the process of financial reporting. It consists of income recognition policies that require greater verification when recognizing gains than when recording losses (Ettredge *et al.,* 2012). Due to Enron's and Worldcom's financial scandals during the last decade, conservatism, as one of the prominent features of financial reporting, has attracted a great deal of attraction. Watts (2003), Roychowdhury and Watts (2007), LaFond and Roychowdhury (2008), are specifically focused on conservatism. Basu (1997) defines conservatism as employing higher degrees of verification to recognize and register good news and gains (increase in values) as well as lower degrees of verification to recognize and register bad news and losses (decrease in values). He states that conservatism procedures lead the identification of losses to be done swiftly and during the current period, while the identification of gains is done slowly and over different periods. In conservatism accounting, thus, bad news influences earning in a more quick way. This effect, however, cannot be sustainable. Basu's (1997) investigation of conservatism has motivated a substantial body of research. However, some recent papers (Dietrich *et al.,* 2007; Givoly *et al.,* 2007; Patoukas and Thomas, 2011) have challenged the usefulness of Basu's primary conservatism measure, the differential timeliness (DT) coefficient. Givoly *et al.,* (2007) show that in order for Basu model to be valid, lower conservatism must be shown for period with earnings manipulated upward. Having studied firms which correct their overstated earning, they concluded that Basu DT coefficients during overstated period are not different from periods with no misstatement. Basu DT model fail to pass their validity test. The authors state that validity hypothesis for Basu model is not able to identify conservative report during overstatement period. Responding to critiques of the DT measure (GHN, 2007; Dietrich *et al.,* 2007; Patoukas and Thomas, 2011), Ball *et al.,* (2011) recently call for new evidence on the usefulness of the measure. They note that the importance of the Basu-based conservatism literature, together with the recommendation by some critics that its results be discarded, make the issue worthy of further study.
According to what stated above, managers are expected to exaggerate evaluation criteria-including profitability- through earning overstatement. However, due to the fact that overstated earning is left undetected, they issue restatement during the next periods. This is carried out so conservatively by managers and corrected by yearly modifications in cumulative earning. Companies' earnings are expected to be more conservative after managers stop overstating. In addition to this passive, definitional increase

in conservatism, managers and directors of restating companies have strong incentives to actively ensure that post-restatement earnings are conservative, in order to repair their reputations for good management and corporate governance. Based on his conservatism model, Basu believes that modifications to overstated earning are detectable through DT conservatism measurement. Some researchers question Basu model validity, on the other hand. Considering what stated above, this study aims to study the effectiveness of Basu's DT measurement in evaluating conservatism in overstated earning modifications. It investigates whether Basu-based measurement is an effective pattern for earning conservatism or not.

Literature Review

Naturally managers and owners tend to be extremely optimistic about an entity. This excessive optimism leads to assets and earning overstatement. Conservatism is the antidote to excessive optimism whose consequences are more dangerous than those of excessive pessimism. Conservatism is one of the qualitative features related to financial information content. It is a cautious reaction to ambiguity. When there is no ambiguity, there is no need to conservatism. In other words, the more the ambiguity, the higher the need to conservatism.

In order to improve the quality of financial reporting, it is vital to recognize the importance of verifiability and asymmetric verifiable role of conservatism in settling such problems as agency conflicts. Conservatism decreases the probability of earning overstatement and payout. On the one hand, managers tend to overstate earning and to exaggerate firm's condition. On the other hand, employing conservative accounting requires managers to behave more conservatively and to wait until post-overstatement period to issue restatement. This, therefore, can be an important area to study for listed firms in Tehran Stock Exchange. Representing precise information in financial statements helps users and capital market analysts as well as top managers of institutes and organization to make decision.

Research Background

By studying the way managers' ownership percentage influences the firm performance, LaFond and Roychowdhury (2008) show that conservatism in financial reporting is a suitable means to reduce agency problems and conflicts between managers and owners. Their findings show that firms with lower percentage of ownership in managers' hands use lower levels of conservatism. Although conservatism is a firm-specific feature, it undergoes changes over time (Khan and Watts, 2009). Being on the basis of Basu model, their findings suggest that firm's timing to issue good news in each year is different from that to issue bad news. Having studied the impact of conservatism on corporate governance rules as well as changes to establish conservatism in American firms, Ahmed and Duellman (2010) showed that conservatism in accounting avoids managers to invest in projects with negative or probable negative return. They are obliged to invest in projects with current positive net value. Ettredge at al. (2012) develop new evidence for the effectiveness of Basu-based measurement is studying non-conservative occasional earning recognition. Their findings suggest that increase in post-overstatement conservatism relies on trade regulation improvement.

In Iran, Kordestani *et al.,* (2008) state that conservatism is one of the prominent characteristics of financial reporting, they study the relationship between earning asymmetric timeliness and market –to-book value of stock and reveal a negative relationship between the two measures. The longer the period of estimating the earning asymmetric timeliness, the more negative the above-mentioned relationship. By studying the impact of conservatism on earning sustainability, Mashayekhi *et al.,* (2009) state that in order to remark upon the relationship between earning asymmetric timeliness and market –to-book value of stock further research and more robust measures are needed. Badavar *et al.,* (2011) show that there is no meaningful relationship between some corporate governance mechanisms and conservatism among listed firms in TSE. Folad *et al.,* (2012) measure conservatism according to Khan and Watts (2009) and study its impact on lowering the risk of fall in share price. Their findings show that conservatism can lead to a decrease dilution of share price in the future, while there is no strong relationship between conservatism and dilution of share price for firms with high levels of information asymmetry. In spite of the considerable numbers of studies on conservatism, the effectiveness of Basu DT model has not been investigated yet. Using innovative and novel methods, this study aims to fill the gap in the literature.

Hypotheses Development

Providing a background to estimate the efficacy of Basu conservatism measurement model to verify the reliability of Basu-based studies is the main goal of the current study. Accordingly, our hypotheses are as follow:

H1: Basu's DT model show lower conservatism for test firms (restatement firms) during overstatement period than control firms over the same period.

H2: Basu's DT model show higher conservatism for test firms (restatement firms) during post-overstatement period than control firms over the same period.

MATERIALS AND METHODS

Methodology

In this fundamental correlation study, the relationship between variables is analyzed through regression equations. Our population consists of all listed firms in TSE over the 9 year period 2004-2012. An organized method is used to select the sample firms. For the firms to be included in our population following conditions are required:

1. The firm must be listed in TSE for at least 3 years before the study period.

2. Firm's share must be traded in TSE market over the period 2004-2012 and the data thereof must be available.

3. The firm must not belong to bank industries, financial and credit institutes, financial mediators, investment corporate, or multi-field industrial companies.

4. Fiscal year end close date must be March without any change during the period of study.

5. In order to retain the validity of the study, selected firms must have no trading halt longer than 1 month.

6. Selected firms must have no trading halt longer than 6 months during the period of study.

7. Firms must Restatements their annual reports.

Considering the above-mentioned conditions, 93 firms from different industries form our final population.

Research Model

In order to investigate whether Basu-based measurement in test firms reveal any changes in conservatism, a cross-sectional approach is used (Figure 1).

In our model which compares conservatism in test and control firms, each restatement firm (in test group) is matched to a non-restatement firm (in control group).

Each pair of firms has the same characteristics during the post-overstatement period. Next, conservatism measurement for both test and control groups are compared. Earning issuance in test firms is carried out with overstatement and subsequent to restatement.

If Basu's measurement is valid, test firms must show lower conservatism during overstatement years. Basu conservatism measure needs to reveal that the test firms report the same degrees of conservatism during post-overstatement period as control firms.

The advantage of this approach is its ability to control any kind of economical changes in conservatism over time.

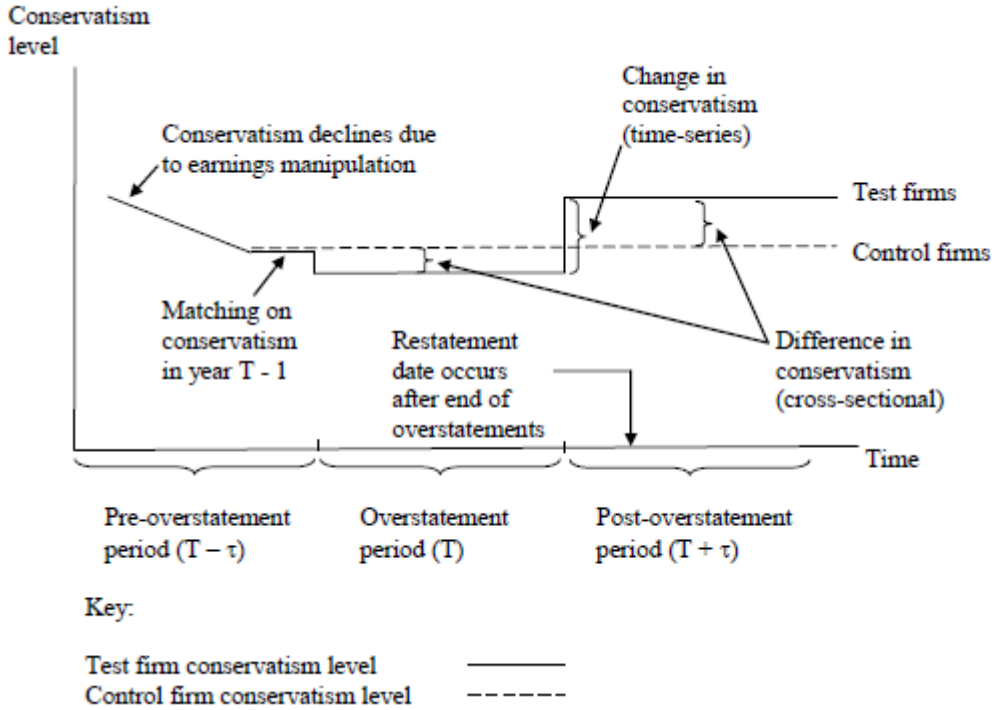

Figure 1: Timeline around restatements

Cross-Sectional Model

In this section, in order to find out the differences in conservatism in test and control groups, Basu-based cross-sectional model is presented. According to the model, "TESTFIRM" variable equals 1 if the selected firm is in test group, 0 otherwise. For the sake of simplicity, overstatement and post-overstatement periods are named as t=T and t=T+τ respectively. Test firms are matched with control firms for pre-overstatement years (t=T-τ) (see Figure 1). Test and control firms are compared over t=T+τ and t=T-τ. Model 1 is developed as follow:

Model 1 $NI_{it} = \alpha_0 + \alpha_1 NEG_{it} + \alpha_2 RET_{it} + \alpha_3 RET_{it} \times NEG_{it} + \alpha_4 TESTFIRM_{it} + \alpha_5 TESTFIRM_{it} \times NEG_{it} + \alpha_6 TESTFIRM_{it} \times RET_{it} + \alpha_7 TESTFIRM_{it} \times RET_{it} \times NEG_{it} + \alpha_8 MTB_{it-1} + \alpha_9 MTB_{it-1} \times NEG_{it} + \alpha_{10} MTB_{it-1} \times RET_{it} + \alpha_{11} MTB_{it-1} \times RET_{it} \times NEG_{it} + \alpha_{12} LEV_{it-1} + \alpha_{13} LEV_{it-1} \times NEG_{it} + \alpha_{14} LEV_{it-1} \times RET_{it} + \alpha_{15} LEV_{it-1} \times RET_{it} \times NEG_{it} + \alpha_{16} SIZE_{it-1} + \alpha_{17} SIZE_{it-1} \times NEG_{it} + \alpha_{18} SIZE_{it-1} \times RET_{it} + \alpha_{19} SIZE_{it-1} \times RET_{it} \times NEG_{it} + \varepsilon_{it}$

Where:

SIZE= firm size which is natural log of market value of firm's share

LEV=firm's total liability divided by total assets

MTB= market –to- book value of firm's equity

TESTFIRM= dummy variable, 1 if the selected firm is in test group, 0 otherwise.

It needs to be noted that α_3 and α_7 coefficients measure the conservatism for control firms and test firms respectively. A negative coefficient for α_7 is expected, if Basu model show lower conservatism for test firms during overstatement years than control firms. Test firms are expected to show the same level of conservatism as that of control firms during post-overstatement period (higher level of conservatism is expected for test firms too).

Time-Series Model

In this section data for test firms (restatement firms) is used to estimate Basu's measurement. In order to verify higher degrees of conservatism over next periods, one more period following t is added to the model. "POSTit" variable equals 1 for test firms, 0 otherwise.

Model 2 $NIit = \alpha 0 + \alpha 1\ NEGit + \alpha 2\ RETit + \alpha 3\ RETit \times NEGit + \alpha 4\ POSTit + \alpha 5\ POSTit \times NEGit + \alpha 6\ POSTit \times RETit + \alpha 7\ POSTit \times RETit \times NEGit + \alpha 8\ MTBit\text{-}1 + \alpha 9\ MTBit\text{-}1 \times NEGit + \alpha 10\ MTBit\text{-}1 \times RETit + \alpha 11\ MTBit\text{-}1 \times RETit \times NEGit + \alpha 12\ LEVit\text{-}1 + \alpha 13\ LEVit\text{-}1 \times NEGit + \alpha 14\ LEVit\text{-}1 \times RETit + \alpha 15\ LEVit\text{-}1 \times RETit \times NEGit + \alpha 16\ SIZEit\text{-}1 + \alpha 17\ SIZEit\text{-}1 \times NEGit + \alpha 18\ SIZEit\text{-}1 \times RETit + \alpha 19\ SIZEit\text{-}1 \times RETit \times NEGit + \varepsilon\ it$

Where:
SIZE= firm size which is natural log of market value of firm's share
LEV=firm's total liability divided by total assets
MTB= market –to- book value of firm's equity
POSTit= dummy variable, 1 if the selected firm is in test group, 0 otherwise.
This model is only tested by test firms (restatement firms). Coefficient of α3 shows overstatement during the overstatement period (t=T). A positive coefficient for α_7 reveals higher level of conservatism during post-overstatement period.

RESULTS AND DISCUSSION

Findings

In this section, results of hypotheses tests are presented

Hypothesis 1 Test

The first hypothesis states that Basu's DT model show lower conservatism for test firms (restatement firms) during overstatement period than control firms over the same period. Figure 1 shows the regression analysis findings for H1. As stated earlier, to investigate the rejection or acceptance of H1, the coefficients of α3 (RET*it* × NEG*it*) and α7 (TESTFIRM*it* × RET*it* × NEG*it*) are studied. It is noted that α3 and α7 coefficients measure the conservatism for control and test firms respectively. Findings show that Basu's DT model reveals lower conservatism for test firms (restatement firms) during overstatement period than control firms, but no meaningful relationship was detected.

Regression analysis also shows that coefficients for α8, α12, and α16, for book-to-market ratio (MTB*it*), leverage (LEV*it*), and firm size (SIZE*it*) respectively, have positive impact, but only leverage and firm size coefficients are acceptable with respect to statistical acceptance error level.

Regression findings for H1 show that adjusted coefficient o determination is near to 92.4%. It suggests that our dependent variable explains considerable changes through independent variables in table 1. It should be noted that result for Durbin-Watson test equals to 2.17 which shows that the assumption of lack of self-correlation is acceptable.

Hypothesis 2 Test

H2 states that Basu's DT model show higher conservatism for test firms (restatement firms) during post-overstatement period than control firms over the same period. Table 2 shows regression analysis findings for hypothesis 2.

To investigate the rejection or acceptance of H2, the coefficients of α3 (RET*it* × NEG*it*) and α7 (POST*it* × RET*it* × NEG*it*) are studied. It is noted that α3 and α7 coefficients measure the conservatism for control and test firms respectively. Findings show that Basu's DT model reveals higher level of conservatism for test firms (restatement firms) during post-overstatement period than control firms.

Regression analysis also shows that coefficients for α8, α12, and α16, for book-to-market ratio (MTB*it*), leverage (LEV*it*), and firm size (SIZE*it*) respectively, have negative impact, but only book-to-market ratio and firm size coefficients are acceptable with respect to statistical acceptance error level.

Regression findings for H2 show that adjusted coefficient o determination is near to 89.7%. It suggests that our dependent variable explains considerable changes through independent variables in table 1. It should be noted that result for Durbin-Watson test equals to 1.55 which shows that the assumption of lack of self-correlation is acceptable.

Discussion and Conclusion

Generally the main principle in conservatism is based on accelerating the recognition of cost and debt as well as identification of earning and assets. Although conservatism has not been mentioned in the

qualitative characteristics of information published by American Financial Accounting Standards Board (FASB), it is referred to as a convention in Concepts Statements No. 2, which is believed to be a prudent reaction to uncertainty to try to ensure that uncertainty and risks inherent in business situations are adequately considered. Basu interprets conservatism as a result of more rapid reflection of bad news, in comparison than good news. It indicated the systematic differences between bad and good news. Basu uses sustainability to measure the news. As to bas news, he employs returns' aspects, because annual return includes yearly news. This interpretation of conservatism influences earning-return relationship. Findings f H1 test suggest that Basu DT model shows lower level of conservatism for test firms listed in TSE (restatement firms) during overstatement period than control firms, but no meaningful relationship is detected. Findings of H2 test suggest that Basu's DT model reflects increases in conservatism of test firms (restatement firms) during post-overstatement period than control firms. Overall considering the results of the current study it can concluded that Basu's DT Model reveals higher level of conservatism for test firms (restatement firms) during post-overstatement period than control firms. It is consistent with the findings of Ettredge *et al.,* (2012).

Accordingly it is stated that users of financial reports can investigate the firms' agency problems by studying the level of conservatism of firms and their investments opportunities. Our findings can be of interest for Tehran Stock Exchange Organization to oblige all listed firms to restate their reports and enhance the quality and clearance of their activities.

Table 1: Regression analysis results for H1

Variable	Sign	Coef	Std Dev	T Statistic	Error Term
C	α_0	171850.5	144951.6	1.1855	0.2369
NEG_{it}	α_1	-200.7572	111980.2	-0.1792	0.8579
RET_{it}	α_2	731.004	867.239	0.8429	0.4001
$RET_{it} \times NEG_{it}$	α_3	-4730.205	4531.523	-1.043	0.2975
$TESTFIRM_{it}$	α_4	-29784.40	7969.606	-3.7372	0.0002
$TESTFIRM_{it} \times NEG_{it}$	α_5	-14464.25	1781.38	-0.8283	-04.82
$TESTFIRM_{it} \times RET_{it}$	α_6	-22.1528	104.5654	-0.21185	0.8324
$TESTFIRM_{it} \times RET_{it} \times NEG_{it}$	α_7	-575.141	559.5909	-1.0277	0.3050
MTB_{it-1}	α_8	0.0085	0.0240	0.355	0.7228
$MTB_{it-1} \times NEG_{it}$	α_9	-0.0279	0.02787	-1.0022	0.3171
$MTB_{it-1} \times RET_{it}$	α10	0.0005	0.0002	2.5222	0.0123
$MTB_{it-1} \times RET_{it} \times NEG_{it}$	α11	-0.002	0.0011	-2.3889	0.0176
LEVit-1	α12	24611.32	862.704	2.8522	0.0047
LEVit-1 × NEGit	α13	-13073.4	11013.2	-1.1870	0.2363
LEVit-1 × RETit	α14	-1.7993	131.965	-0.0136	0.9891
LEVit-1 × RETit × NEGit	α15	244.6641	585.27	-0.4180	0.7663
SIZEit-1	α16	15468.26	747.458	2.0689	.0395
SIZEit-1 × NEGit	α17	1650.49	6045.441	0.2730	0.7851
SIZEit-1 × RETit	α18	44.1485	44.6164	0.9895	0.3233
SIZEit-1 × RETit × NEGit	α19	306.4262	245.1753	1.2498	0.2128
AR(1)		0.7504	0.5537	13.5529	0.0000
Adjusted R2: 0.9248		**R2: 0.9475**	**F Statistic error term: 0.000**		**F statistic: 41.777**

Table 1: Regression analysis results for H2

Variable	Sign	Coef	Std Dev	T Statistic	Error Term
C	α0	171850.5	144951.6	1.1855	0.2369
NEGit	α1	-571676.1	179771.8	-3.1800	0.0016
RETit	α2	-502.8175	1203.845	0.4176	0.6764
RETit × NEGit	α3	-20168.49	6848.494	-2.9449	.0034
TESTFIRMit	α4	-30502.92	10160.35	-3.0021	0.0029
TESTFIRMit × NEGit	α5	13232.04	19796.78	-0.6683	0.5043
TESTFIRMit × RETit	α6	-316.1856	147.2052	-2.1479	0.0324
TESTFIRMit × RETit × NEGit	α7	1361.906	794.5986	-1.7139	0.0874
MTBit-1	α8	0.061458	0.028570	2.1511	0.0321
MTBit-1 × NEGit	α9	-0.141941	0.034132	-4.1585	0.0000
MTBit-1 × RETit	α10	0.000120	0.000374	0.3203	0.7490
MTBit-1 × RETit × NEGit	α11	-0.003278	0.001359	-2.4113	0.0164
LEVit-1	α12	-31068.38	15967.05	-1.9454	0.0525
LEVit-1 × NEGit	α13	-7430.919	22375.77	-0.3320	0.7400
LEVit-1 × RETit	α14	132.2369	211.7604	0.6244	0.5327
LEVit-1 × RETit × NEGit	α15	472..314	960.3331	0.4915	0.234
SIZEit-1	α16	13735.67	6294.216	2.0233	0.0438
SIZEit-1 × NEGit	α17	31870.05	9548.215	3.3378	0.0009
SIZEit-1 × RETit	α18	18.96104	60.44813	0.3136	0.7540
SIZEit-1 × RETit × NEGit	α19	1110.971	366.5982	3.0304	0.0026
Adjusted R2: 0.8970		**R2: 0.9217**	**F Statistic error term: 0.000**		**F statistic: 37.378**
			0.000		**37.378**

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