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Does Conservatism Alleviates Firms from Under-over Investments in Pakistan?

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Abstract:
This study investigates the relationship between timely recognition of losses in financial reporting and investment efficiency, claiming that accounting conservatism improves the investment efficiency through mitigating under (over) investments of firms listed on Pakistan Stock Exchange (PSX). For this purpose, annual reports of 142 firms were selected on sample basis from six different sectors covering the period from 2006 to 2011. We find the existence of conservatism in financial reporting of Pakistani firms which was measured through Basu (1997) model, later to develop hypotheses that conservatism improves investment efficiency by alleviating firms from under and over-investments. The results found that accounting conservatism improves investment efficiency of Pakistani firms at insignificant level; however we found that conservatism restricts firms from over-investments at highly significant level. Furthermore, we find significant relation of CEO duality with investment efficiency and conservatism, which inferred that CEO duality, has influenced to improve investment efficiency in Pakistan. As a first study in context of Pakistan, it plays an important role in academic literature of accounting from developing country.
Keywords: Investment efficiency, Conservatism, Corporate Governance, Pakistan.

1. Introduction

Accounting conservatism is lavishly debated and being discussed by academic researchers. Basu (1997) claimed that conservatism exists in our accounting system since many years and stated that conservatism is recognition of bad news (losses) as compared to good news (gains). Similarly, Watts (2003) also defined that conservatism is realization of losses before gains in reporting. Many studies documented that conservatism improves investment efficiency. Investment efficiency is how the companies utilize their financial resources for profitability or sustainability of the business. We can define investment efficiency as the ratio of investment in positive NPV and negative NPV projects selections for investment, also refer as under or over-investment respectively. In line with prior research, this study also contributes to the existing literature of conservatism and investment efficiency, Biddle (2009), Lara et al., (2010, 2015) and Tao Ma (2014) explained accounting conservatism cause (improve) investment efficiency and also sheds light on conservatism association with managers investment incentives and corporate governance. They also explained conditional conservatism reduces (causes) firms from under/over investments. The empirical research investigates that conditional conservatism alleviates the firms from under-overinvestment. We find that accounting conservatism exist in accounting system of Pakistan. In addition to this, we also found that accounting conservatism causes to reduce the firms from overinvestment. While this study did not provide any evidence that accounting conservatism alleviates Pakistani firms from under investment. In sum, we examine that conditional conservatism improve firm's investment efficiency. However, we did not find a significant positive relationship of conservatism and investment efficiency, and alleviates firms from underinvestment.

Accounting literature about accounting conservatism and investment decision or managers investment incentives reveal two views , one is related to under(over) investment and another is managers incentives and agency cost (Ball & Shivakumar, 2005). Accounting conservatism can constraint the managers and decrease agency problem which caused to firms from overinvestment. While on the other hand accounting conservatism causes to abnormal or not performing well investment incentives for managers and waive them to give up positive NPV projects relating to firms underinvestment (Watts, 2003; Guay and Vierrecchia, 2007; Roy chowdhury, 2010). Further according to Jensen (1986) and Stulz (1990), Firms overinvested by managers make excessive use of free cash flow in negative NPV projects and managers involvement in personal benefits become cause of agency problem.

Conservatism expected to give the access to external funds at lower cost and decrease firm's underinvestment chances in absence of agency problem (Chen et al. 2007). Conservatism controls managers from manipulation in accounting, provide access to other sources and gives timely warning signals to corporate governance (Guay and Verrecchia, 2007; Duellman, 2007; LaFond and Watts, 2008). Jackson et al. (2009) examine firms that may use conservatism approach have huge capital investment which is consistent with theory that conservatism affects the investment decisions, whether this caused to increase investment efficiency. Some studies fail to explain that conservatism causes to underinvestment problem. This paper contributes to find that conservatism cause (reduce) the firms from under or overinvestment. Conservative firms are less likely to under or overinvest at good investment level (Lara et al. 2010).Timely loss recognition restricts the manager to pursue less risky projects and discourage to invest in negative net present value projects, it may cause to affect manger incentives indirectly and cause to firms under invest. Tao Ma (2014) argues that conservatism can cause to adverse managers investment incentives and encourage them to ignore positive net present value projects. Further, Roy chowdhury (2010) explains that mostly risky projects tend to negative projects, so conservatism may motivate risk-aversive manger to give up risky projects even positive net present value for investors. In addition, prior researchers argue that conservatism or timely economic loss recognition discipline managers to avoid negative net present value projects.

We follow the previous studies and examine the relationship of conservatism and investment efficiency by selecting 142 firms data sample from 6 industries of Pakistan. We check conservatism existence in Pakistani accounting practices which will open new debate for researchers and useful for regulators and standards setters. We hypotheses that conservatism improves firm's investment efficiency and reduces the firms from under-over investments. Therefore, we examine this association by using 142 Pakistani firms for period from 2006 to 2011. Our results predict that accounting conservatism has no significantly effect on investment efficiency in Pakistan. More accurately, results show that conditional accounting conservatism does not improve Pakistani firm's investment efficiency and mitigates firms from under-investments. However, this paper evidences that conservatism alleviates firms from over-investments and extend the same study literature. This paper contributes towards the previous existing literature about conservatism and investment efficiency in context of Pakistan and also tries to explain the association of conservatism, investment efficiency and corporate governance in emerging market. The remainder of this study proceeds as follows. The next section presents the relevant literature on accounting conservatism. We develop our main hypothesis in section 3 followed by our empirical design and sample in section 4. We discuss our main empirical results in section 5. Finally section 5 summarizes findings and draw conclusions.

2. Literature review:

Pakistan is developing country and belongs to emerging market. Pakistan legal system is not developed like other western countries. We unable to find accounting conservatism literature from Pakistan, however, we can discuss corporate governance and legal system of Pakistan which reveals conservatism implication. Parvez R. (2012) investigated shareholder rights and legal systems of Pakistan and concluded that legal unfair bias remedy in Pakistan is not efficient and weak to compensate against unfair bias petition. Further, Javid Y. &Iqbal R. (2010) examined the corporate governance in Pakistan such as corporate ownership, corporate structure and corporate finance. They claimed that family and foreign owners conveys good corporate governance and monitoring practices consistent with agency theory. Their study also shed a light on law enforcement and concluded that firm performance is not associated with legal environment of the countries. The results predicted that Corporate Governance Code 2002 possibly alleviates the corporate governance and decision making process of listed companies at PSX (Pakistan Stock Exchange). The weak corporate governance system in developing countries can support the fact that conservatism mechanism may be present in Pakistani firm's financial statements or accounting practices. Proposed study literature reviewed that more concentrated ownership structure demands conservatism. However current study shows accounting conservatism and its economic consequences.

Researchers are investigating effect of conservatism on investment efficiency. The high accounting measures leads to a good investment efficiency process and conservatism is a characteristic of the good quality accounting. Biddle and Hilary (2006) and Bushman et al. (2007) investigated the conservatism at a country level, which associated with investment efficiency. In line with text, investment efficiency literature influences to increase the quality of reporting. In addition, conservatism has positive effect on firm's corporate governance and resolve agency problem.

The implication of accounting conservatism causes to reduce the agency cost and resolve the moral hazards problems between managers and investors. While conservatism decreases the company investment in negative projects and also gives the signals to elect positive projects Bushman et al., (2007); Lara et al., (2010) and Francis and Martin, (2010) analysed and reported that conditional conservatism is acting a major role in easing management agency cost dispute by helping to choose positive projects than negative projects (NPV

projects). Lara et al., (2010) examine that conservative firms invest less when likely overinvest and invest more when firms likely under invest in years. They also claim that conservatism mitigates firms from underinvestment by giving access to external funding at low cost. Further, Bushman et al., (2007) examined asymmetric timeliness of losses (bad news) than gains (good news) in earnings. They showed negative effect of conservatism influencing on managers behaviours additional intensely in circumstances where managers fronting worsen working environment.

Despite of that conservatism has negative impacts on managerial behaviour and distorts their opportunist behaviour, accounting conservatism acts to improve the investment efficiency of the firms. Timely recognition of losses before gains (return earnings) gives the treatment to ease the firms from under (over) investments by choosing positive NPV than negative NPV projects. This signalling role of accounting conservatism facilitates companies for better investment decisions. Prior research documented that how accounting conservatism alleviates the firm's investment efficiency, to reduce the information asymmetry inside (managers) and outside (investors) of the firms, to arise managerial opportunity behaviour etc. Lara et al (2010) examined that more implicated conservative firms have less chances to over (under) invest, also found positive association between accounting conservatism and future profitability but unable to evident that more strictly followed accounting conservatism firms have less chance to invest in negative or risky projects. Chen et al. (2007) found that conservatism bounded manager from managerial accounting manipulation action. Accounting conservatism associated with investment efficiency by firm level conservative reporting (Biddle et al., 2009). Accounting conservatism affects the investment decisions by limiting to over-investment, providing access to external sources of financing to ease from under investment (Francis and martin, 2010; Bushman et al., 2007). In line, accounting conservatism improves all the investment monitoring by decreasing incentives of executives on negative projects (negative NPV) , also sheds light on the degree of conservatism, like firms with higher degree of accounting conservatism have good future cash flows and lower some special items charges. Further, conservatism to be predicted in the absence of agency problem and offers to external funding at lower cost, reduce firm under investment problem.

3. Hypotheses development:

Prior research examined the association of accounting conservatism and investment efficiency and showed that conservatism has significantly positive (negative) impact on investment efficiency. As Watts (2003) stated that accounting conservatism improves firm investment efficiency. In line with present study, old studies reported that Biddle et al. (2009), Lara et al., (2010, 2015) and Tao (2014) investigated the relationship of accounting conservatism with investment efficiency and showed that accounting conservatism may causes (improves) investment efficiency. Their proposed studies comb that conservatism alleviates (causes) firms from under-over investments. Furthermore, Lara et al. (2010, 2015) investigated and find that more conservative firms are less over or under invested. To follow these studies our first and main hypothesis is that conditional conservatism alleviates investment efficiency. Our hypotheses are consistent with prior research to depict that conditional accounting conservatism causes to reduce the overinvestment.

The prior research has mixed views about the conditional conservatism and investment efficiency, like some found positive and negative association between conditional accounting conservatism and investment efficiency. In addition, according to the Garcia Lara et al., (2010), more conservative firms are less likely to over and under investment. Conversely, the conditional accounting conservatism causes the firm to over or under investment (Tao Ma, 2014), Houcine (2013) also find the association between conservatism and investment association in emerging market in context of Tunisian and reported that conservatism does not improve investment efficiency in emerging economy.

Conditional accounting conservatism timeliness information asymmetry (recognising bad news (losses) timely then good news (gains)) is increasing investment efficiency by decreasing the overinvestment and underinvestment and lowering investment in negative NPV projects. Further, accounting conservatism alleviates investment efficiency by giving the access to the firms to finance (external finance) and reducing the cost of new funds for the new investment. In other words, give the access to invest in new projects for the sake of reducing the underinvestment.

This paper proposed three hypotheses which are consistent with prior study in line with examine the relationship between conservatism and investment efficiency.

H1: *Greater the accounting conservatism and greater the investment efficiency*
H2: *Accounting conservatism alleviates firms from underinvestment*
H3: *Accounting conservatism alleviates firms from overinvestment*

The above developed hypotheses are consistent with prior research such as they documented the conservatism and investment efficiency (over or underinvestment). Bushman et al., (2007); Francis and Martin, (2010) and Lara et al., (2010, 2015) examined that conservative accounting choices effecting investment decision and limiting firms overinvestment and underinvestment. This paper focuses on the conditional

accounting conservatism timeliness information asymmetry effect the investment efficiency, eases firms from under-overinvestment.

4. Research design

In this section, we describe empirical models to examine the conservatism relationship with investment efficiency. In our model, specification is based on prior studies on same vein or research topic such as Lara et al., (2010, 2015), Tian et al., (2013), Wang (2013), Tao (2014) and Biddle et al. (2009). First, we measure the conservatism by using Basu model (1997), which modified by Khan and Watts (2009) at year firm level and then examine how conservatism affects investment efficiency. Further, we explain our sample size to be used in this research.

4.1. Accounting conservatism and investment efficiency

In old and recent research two methods are very popular to measure conservatism. Both methods are based on accounting measure. First method, asymmetric timeliness of earnings introduced by Basu (1997) and second is accrual based method produced by Givoly and Hayn (2000). However, these conservatism measure methods are based on accounting practices of firm performance. In this study, first we measure the conditional conservatism (C-Score) type which is based on model introduced by Basu (1997), however further developed by khan and Watts (2009). Basu (1997) investigated that earnings associated with bad news (negative return) than good news (positive return). According to Basu (1997), conservatism is defined as the more strict verifiability requirements for the recognition of gains relative to losses into accounting earnings. In line with prior research, first we do estimation of Basu (1997) standard model and examine incremental timeliness coefficient and we refer as CCONS also increases. From these specification and estimation, we find the existence of accounting conservatism in Pakistan. Second, i estimate CCONS with investment efficiency with control variables.

To measure the investment efficiency we imply the Richardson (2006) model to find the investment efficiency (over or underinvestment). Accounting techniques and information is important to easing information asymmetry problems. These are accounting related effects that projected to improve firms' investment decisions cause to increase the firm values. We measure the residual for firm investment efficiency. If residual more than zero is overinvestment, vice versa underinvestment, however if residual is zero then investment is efficient and it's impossible.

Lara et al., (2010, 2015); Tian et al., (2013) and Wang (2013) documented the association of accounting conservatism and investment efficiency and argued that conservatism may cause (reduces) firms from under and over investments. As we mentioned above that these tests are based on prior studies which allows analysing the influences of accounting choices in reducing firms from under-overinvestment. Moreover, conservatism improves investment efficiency by mitigating firms from underinvestment to provide external financing and overinvestment to limit manager's investment decisions. Further, conservatism reduces the agency conflict between managers and investors by reducing asymmetric information. We employ following model to capture the effects of conditional conservatism on investment efficiency as follows:

$$\mathbf{INVR_{it}} = CCONS_{it}+FCashf_{it}+MBRS\%_{it}+DPOF_{it}+TOP1_{it}+DUAL_{it}+SIZE_{it}+MNGRSH_{it}+e_{it}$$

Where, **INVR** is investment efficiency residual of industry i at year t, which we measured from Richardson (2006) model, INVR<0, INVR>0 underinvestment and over investment respectively, underinvestment if INVR is less than 0 and overinvestment if INVR greater than 0. **FCashf** is free cash flow, **MBRS%** is percentage of board members, **DPOF** is dividend payoff, **TOP1** is top one shareholder of the firm, **DUAL** is CEO duality, if chairman and CEO are same is equal to 1 otherwise 0. **SIZE** is firm size and **MNGRS** is manager's shareholder in the firms. Table 1 explain all variables with detail.

In line with prior research to analyse the effect of accounting adoptions in reducing over and underinvestment and net effect as well. Similarly, we claim that conditional accounting conservatism alleviates investment efficiency. In addition, conservatism also reduces the information asymmetry between managers and investors. So, accounting conservatism decreases the agency problem by examining corporate governance.

4.2. Data sample selection:

This paper examines conservatism relation with investment efficiency in same vein of our objectives. For this purpose, a sample of 142 listed companies from non-financial sector is selected with time period from 2006 to 2011. We use annual reports to get accounting data and market related data from Pakistan stock exchange (PSX). Most of the data is extracted from annual reports of listed companies. In our data sample all companies are registered in Pakistan Stock Exchange (PSX); we only include non-financial companies because financial company's structure, investment environment and accounting practices are different. This panel data consists of 852 observations. However, after matching all variables data according to year and industry, we estimated 265 observations to infer our finding and results.

5. Empirical findings and results

5.1. Descriptive statistics

Table 2 shows the descriptive statistics of all dependent and independent variables. The average, mean, median and standard deviation values of investment efficiency are 17.9%, 18.7% and 0.279 respectively. Our measured C-Score (CCONS) mean, median and standard deviation values are -3.318, 0.329 and 57.283 respectively. Conditional conservatism (CCONS) ranges from minimum of -1423.1 to a maximum 168.5. Prior study also suggests that it is difficult to compare descriptive statistics conservatism (CCONS) with prior study, for the reason that Givoly and Hayn (2000), Khan and Watts (2009) Lara et al. (2010), used different models to calculate accounting conservatism and reported different figures.

5.2. Spearmen correlation analysis

Table 3 reports correlation between all variables. Correlations table reveals that conservatism and investment efficiency only correlated with MNGRSH variable. There is no correlation between conservatism and investment efficiency.TOP1 variable negatively correlated with DUAL (CEO duality) and CEO duality variable is positively correlated with MNGRSH. However, our all most of independent variables are not highly correlated. So, we could not say that multicollinearity exist in the model. In addition, we employ variance inflation factor to detect multicollinearity in the model. We find VIF value 4.68 which is not big value but if VIF is 10 or greater than 10 then multicollinearity problem in model. As a result, VIF test shows that no multicollinearity in control variables.

5.3. Regression analysis

5.3.1. Existence of conservatism in Pakistan

First, this research examines the existence of conservatism in Pakistan. Table 4 Regression of Basu (1997) model shows the conservatism association of earning and returns. This estimation results of cross sectional data of Pakistani firms by controlling industry and year effect. The result of this table shows that return (R) variable coefficient (β_2) is positively significant at 10% level, which is representing that conservatism existing in our selected data sample or in Pakistani economy. In sum, this paper finds presence of conservatism in Pakistani firms accounting practices or financial reporting.

5.3.2. Conservatism and investment efficiency

This section explains the results of conservatism and investment efficiency estimation. Table 5 represents the empirical results of this research. Study regression model p-value is less than 1% which indicates the goodness of fit of the model. Further, we employ Housman test for random and fixed effect model treatment, then we regress regression model by having yearly and industry fixed effect. Therefore, First column of the tables shows all independent variables. Second of column reports the estimation of investment efficiency with conservatism and control variables. Results report that we did not find significant association of conservatism with investment efficiency. This paper, first hypothesis states that conservatism improves the investment efficiency, expecting positive relation between conservatism and investment efficiency. Therefore, our finding and results corroborate our hypothesis that greater the conservatism, greater investment efficiency from table 5 column 2 results. However, we found positive association between conservatism and investment efficiency but based on p-value effect is not significant. In same vein, Houcine (2013) studied conservatism and investment efficiency in context of Tunis; she also did not find that conservatism has positive significant effect on investment efficiency in emerging market.

However, we find that CEO duality (DUAL) is positively significant at 5% level (coeff. is 0.0864, t-value is 2.11) with investment efficiency. This finding indicates that CEO and chairman on same position increase the investment efficiency. Agency theory claimed that CEO and chairman role in board should be separated. In contrast, stewardship theory argued that if CEO working as chairman enhances the company performance because there is no information exchange barrier (Suleiman, 2014). Further, Wuchun et al. (2009) reported that CEO duality has greater demand for conservatism to improve corporate governance. Size of the firm is also positive significant at 1% level (coeff.= 0.0448, t- value= 3.7). This finding reports that bigger firms have good investment efficiency. According to Javid & Iqbal (2010), larger firm's size improves firm performance and investment opportunities.

This paper second hypothesised that conservatism reduces the firm from under investment. We find positive association of conservatism and firm underinvestment. However, we unable to find significant results (p-value effect). Thus, we reject our null hypotheses to support that conservatism reduce or mitigate firms from under-investments at an insignificant level based on p-values. However, this paper evident that conservatism reduces the firms from over-investment at significant level based on p-value which is consistent with our third hypothesis. Table 5 column 3 results shows that conservatism is negatively significant at 5% level (coeff. -0.0026, t-value= -2.46) with firms over-investments. Results are consistent with prior research that conservatism reduces the firm's over-investments Lara et al. (2010, 2015);Tian et al., (2013);Wang (2013) and Biddle et al.

(2009). However, this study unable to explain that how conservatism reduces the firms from over-investments. Further, we find that CEO duality (DUAL) is positive significant at 10% level (coeff. 0.0673, t-value = 1.66). Interestingly, this finding shows that CEO and chairman at same position can cause to over-invest. At end, from last finding we can say that conservatism mitigates firm from over-investment in Pakistan, this result is also indicating that conservatism improves investment efficiency by reducing firms from over-investments.

6. Conclusions & recommendations:

Timely loss prediction is an oldest and significant characteristic of financial reporting tool. Former literature on conservatism and investment efficiency reported that conditional conservatism improves investment efficiency. Conservatism improves investment efficiency and reduces under-investments by providing access to external funds at lessen interest rate and mitigates firms from over-investments by controlling managers investment decisions. In same vein, this paper also investigates the associations of conservatism and investment efficiency by using Pakistani 142 firm's data sample. To infer this study and attain our research objectives, we performed Hausman test to select between random and fixed effect model. Therefore, we estimate the regression by keeping year and industry fixed effect to infer our results.

In particular, we found that conservatism is present in financial reporting system of Pakistani firms. This finding may open door for researchers in area in same line literature. However, we did not find a positive significant relationship between conservatism and investment efficiency. In the light of this finding, conservatism does not improve investment efficiency. Although our results are consistent with our hypotheses but likewise previous research, however, we unable to find significant value (p-value) to infer our results (Watts, 2003;Ball and Shivkumar, 2005; Biddle, 2009; Wang, 2013;andLara et al., 2010, 2015). However, this study found that conservatism alleviates firms from over-investments. This results indicating that conservatism improve investment efficiency by alleviates firms from over-investment in Pakistan. More accurately, this study coined accounting conservatism literature and its influence on investment efficiency.

We consider some limitation in this study. Our sample size is very small and it can affect our finding and results. In future, by extending the same vein of study, it will explore in detail that how conservatism mitigates firms from under (over) investments. Furthermore, it will be more interesting to put more emphasis on conditional conservatism, corporate governance, reporting quality and investment efficiency by selecting a multiple period of data sample and associations of variables. We will discuss this in future research with more detail and infer conservatism economic consequences.

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Table 1: Variables & explanation:

Variables	Explanation and Calculation
CCONS	Conditional accounting conservatism calculated from Basu (1997) which is further modified by Khan and Watts (2009)
INVR	Investment efficiency residual which is calculated from Richardson (2006)
FCashf	Free Cash flow which is extracted from cash flow statements or cash flow from operations. Calculated as cash & cash equivalent =net cash + short term investment
TOP1	Top one shareholder of the firm. Calculated as holding shares divided by total no. of shares
MBRS%	Member's percentages which is calculated as committee members divided by no of Directors.
MNGRSH	Managers shares such as Directors, Chief Executive Officer and their spouses and minor children. This data extracted from annual report.
DPOF	Dividend payoff and calculated as total dividend pay-out divided by total no. of shares holders.
SIZE	Firm size is natural log of total assets of firm.

Table 2 Descriptive statistics

Variables	No. Obs.	Mean	Median	Std. Div.	P25	Min	P75	Max
CCONS	851	-3.318	0.3294	57.283	-27.426	-1423.1	27.426	168.5
INVR	608	0.1794	.187	.2796784	-0.0016	-0.726	0.3608	2.796
FCashf	773	7.8467	.0224	60.03402	0	-0.017	.1103	1343.1
MBRS%	388	2.3421	2.3333	.5173929	2	0	2.666	4
MNGRSH	769	.295341	0	1.998599	0	0	.1435	31.32
SIZE	852	14.688	14.643	1.6114	0.0058	10.36	0.0595	19.38
TOP1	770	0.3958	0	1.817271	0	0	0.3762	23.83
DPOF	823	402174.5	0	2885267	0	0	26640	4.09e-07
DUAL	401	03392	0	0.4741	1	0	0	1

Notes: This table shows descriptive for 852 observations firm year during the period 2006 to 2011.This table shows mean, median , standard deviation ,25%, 75%, minimum and maximum values. CCONS is conditional conservatism (C-sore) which is obtained from khan and Watts (2009) method based on Basu model (1997). INVR is an investment efficiency residual which calculated from Richardson model (2006). MBRS% is the board of members' percentage. FCashf is free cash flow. MNGRSH is managers shares including children's, spouse etc. SIZE is firm size, log of all assets. TOP1 is top one share holder in the firm. DPOF is dividend payoff .DUAL is CEO and chairman are at same position is 1, otherwise 0, it's also called CEO duality. For detail see Table 1.

Table 3: Correlation of variables

	CCONS	INVR	FCashf	MBRS%	DPOF	TOP1	DUAL	SIZE	MNGRSH
CCONS	1								
INVR	0.0861	1							
FCashf	-0.0039	-0.0201	1						
MBRS%	0.0903	0.0113	-0.0036	1					
DPOF	0.0749	-0.0871	0.0363	0.2309*	1				
TOP1	0.053	-0.0319	0.1077	0.1622	0.1702	1			
DUAL	0.0655	0.0754	-0.0656	-0.0271	-0.0771	-0.2276*	1		
SIZE	-0.1504	0.1315	0.1989	0.0317	0.149	0.0234	-0.1525	1	
MNGRSH	0.2931*	0.2488*	0.0823	0.0189	-0.0815	-0.1739	0.3051*	-0.0686	1

Note: * is significant at the 0.05 level.

Table 4: Regression of Basu (1997) model

Dependent Variable is NetI

Independent variables	Sign	Coefficients(t-value)
DR (β_1)	(+)	1.86 (1.06)
R (β_2)	(+)	1.82 (1.86)*
DR*R(β_3)	(+)	4.49 (2.05)**
Intercept		4.31 (3.40)***
No. Obs.		774
R-Square		0.02 (2%)

Note: *significant at the 10% level,**significant at the 5%level and ***significant at the 1% level.
This table shows the results of Basu (1997) model
$NetI_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 R_{it} + \beta_3 DR_{it} \times R_{it} + e_{it}$
NetI is net income of firm I at year t. R is annual return of firm I at year t. DR is dummy variable, its equal to one if R_t is negative, 0 otherwise.e_{it} is error term.

Table 5: Regression results of conditional conservatism and investment efficiency

	INVR	INVR<0	INVR>0
CCONS	0.0001	0.0001	-0.0026
	(0.1)	(0.14)	(-2.46)**
FCashf	0.0002	0.0011	0.0001
	(0.38)	(1.31)	(0.18)
MBRS%	-0.0088	-0.0238	-0.0132
	(-0.25)	(-0.61)	(-0.36)
DPOF	-0.0025	-0.0008	-0.0011
	(-0.69)	(-0.3)	(-0.27)
TOP1	0.0028	0.01375	0.0007
	(0.17)	(0.75)	(0.04)
DUAL	0.0864	-0.0005	0.0673
	(2.11)**	(-0.01)	(1.66)*
SIZE	0.0448	0.0194	0.0176
	(3.7)***	(1.84)*	(1.34)
MNGRS	-0.0026	0.0176	-0.0054
	(-0.18)	(0.25)	(-0.39)
Intercept	-0.4658	-0.3719	0.0576
	(-2.38)**	(-2.31)**	(0.26)
No. Obs.	265	63	201
Fixed effect or random effect	Random	Random	Fixed
Year and industry fixed effect	No	No	yes
Model p-value	0.000	0.000	0.000
R-square	0.065	0.087	0.032

Note: *significant at the 10% level,*significant at the 5% level and *significant at the 1% level. Table 5 reports conservatism and investment efficiency estimation results. CCONS is C-score or conditional

conservatism).INVR is investment efficiency residual.INVR<0, INVR >0 underinvestment and over investment respectively, underinvestment if INVR is less than 0 and overinvestment if INVR greater than 0 MBRS% is the board of members' percentage. FCashf is free cash flow. MNGRSH is managers shares including children's, spouse etc. SIZE is firm size, log of all assets. TOP1 is top one share holder in the firm. DPOF is dividend payoff .DUAL is CEO and chairman are at same position is 1, otherwise 0, it's also called CEO duality. For detail explanation see Table 1.

Appendix

A. Conditional conservatism measure model:

In this study, first we measure the conditional conservatism (C-Score) type which is based on basu model measured by (Basu , 1997) , however further developed by khan and Watts (2009).Basu (1997) investigate that earnings associated with bad news (negative return) than good news (positive return).

$NetI_{it}= \beta_0 + \beta_1 DR_{it}+ \beta_2 R_{it} + \beta_3 DR_{it}\times R_{it}+e_{it}$ (a)

Where

$NetI_t$= Net Income of firm i at year t

R_t=Annual Return at year t

DR_t= is dummy variable, its equal to one if R_t is negative, 0 otherwise

In this study, first we measure the conditional conservatism (C-Score) type which is based on Basu model developed by (Basu, 1997), however further modified by khan and Watts (2009). Basu (1997) investigated that earnings associated with bad news (negative return) than good news (positive return).The timeliness of earnings reflects good news and bad news and conservatism at firm level. Ball, Kothari and Nikolaev (2009) employed Basu (1997) model to measure conservatism and stated that this model is able to capture the cross-sectional changes in conditional conservatism (cited in Lara et al., 2010). Khan and Watts (2009) the timeliness of good news refers as G-Score for each year and bad news refers as C-Score and CCONS for firm each year.

G-Score=CCONS=bad news= $\beta_3 =\mu_0+ \mu_1 Size_i+ \mu_2 MB_i+ \mu_3 Lev_i$ (1)

C-Score=Good news= $\beta_4 =\lambda_0 +\lambda_1 Size_i+\lambda_2 MB_i+\lambda_3 Lev_i$ (2)

Where μ_i and λ_i i= 0 to 3 are firm constant but it's vary over time. Size is size of the firm and MB is market to book value, Lev is referring as leverage of firm i. In above equations c-Score is measuring conservatism of firm year or increasing bad news timeliness. (Khan and Watts, 2009) C-Score and G-Score are varying across firms and year Characteristics (Size, MB and Lev) and increasing variation over time in μ_i and λ_i. Conservatism is increasing in CCONS (which referred as C-Score in Khan and Watts, (2009)). By substituting $\beta 3$ and β_4 in Basu, (1997) model $X_i = \beta_1 + \beta_2 DR_i + \beta_3 R_i + \beta_4 DR_i\times R_i$ +e or in equation (a), we got equation (3). The annual cross-sectional regression model used to calculate C-Score and G-Score is:

$Xi = \beta 1 + \beta 2Di + Ri(\mu_0+ \mu_1 Size_i+ \mu_2 MB_i+ \mu_3 Lev_i) + DiRi(\lambda_0 +\lambda_1 Size_i+\lambda_2 MB_i+\lambda_3 Lev_i) + (\delta 1Sizei + \delta 2M/Bi + \delta 3Levi + \delta 4DiSizei + \delta 5DiM/Bi + \delta 6DiLevi) + e_i$ (3)

B. Investment efficiency measure model:

To measure the investment efficiency we imply the Richardson (2006) model to find the investment efficiency (over or underinvestment).we measure the residual for firm investment efficiency. If residual more than zero is overinvestment, vice versa underinvestment, however if residual is zero then investment is efficient (if this happen then misspecification in model).

$$INVEST_{i,t}=\alpha+\beta_1 Growth_{it\text{-}1}+\beta_2 lev_{it\text{-}1}+\beta_3 cash_{it\text{-}1}+\beta_4 size_{it\text{-}1}+\beta_5 Age_{it\text{-}1}+\beta_6 return_{it\text{-}1}+\beta_7 INV_{i,t\text{-}1}+\varepsilon_{i,t}$$

$INVEST_{i,t}$=Investment expenditure , I is the firm in t

$Growth_{i,t-1}$= Growth opportunity

$Lev_{i,t-1}$= leverage ((sum of the book value of total debt and book value of total equity)

$cash_{i,t-1}$= is the balance of cash , short term investments deflated by total assets measured at the start of the year.

$size_{i,t-1}$= Log of the total assets

$Age_{i,t-1}$= Log of the number of the years firm has been listed.

$return_{i,t-1}$= return of the previous year investment

$E_{i,t}$= residual

C. Variance Inflation Factor Test of multicollinearity

Table A. Variance inflation factor test

Variables	VIF	1/VIF
CCONS	1.06	0.998186
FCashf	1.06	0.960879
MBRS%	1.06	0.970873
TOP1	15.09	0.905066
SIZE	1.13	0.914444
DPOF	1.16	0.934933
MNGRSH	15.61	0.972738
DUAL	1.28	0.973033
Mean VIF	4.68	