

## A Study of The Relationship Between Accounting Conservatism and Investment Efficiency in Tehran Stock Exchange

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### ABSTRACT

It is expected that accounting conservatism will increase the investment efficiency of trading firms by timely identification of losses in financial statements through three ways:

1. It facilitates the monitoring of managerial investment decisions by mitigating information asymmetry between the shareholders and the managers.
2. It encourages the managers to immediately abandon dysfunctional projects and negative net present value investments.
3. It facilitates external financing of project with a lower cost.

We found a significant relationship between accounting conservatism and investment efficiency measures, examining samples in Tehran Stock Exchange during the period 2005 to 2009. Also, our findings show that the firm size is effective on this relationship, while the growth opportunity has no significant effect on it. Moreover, our results (regarding the growing body of accounting research) suggest that excluding the element of conservatism from the accounting regulatory framework may lead to adverse economic outcomes.

**KEYWORDS:** Accounting Conservatism, Investment Efficiency, firm size, growth opportunity.

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### INTRODUCTION

In this paper, we will study the relation between accounting conservatism and the firm's investment efficiency. According to agency theory, managers have more information about the expected benefit, project delivery time, and investments in hand (Lambert, 2001), thus they can make investment decisions which may harm the interests of investors (Jensen and Meckling, 1976). In particular, we expect that accounting conservatism will affect the firm's investment in three ways.

Firstly, recent studies have shown that conservatism emerges as a reaction to information asymmetry. Conservatism mitigates the existing information asymmetries between managers and external investors by narrowing managerial skills and providing higher stability and high quality financial reporting (LaFond and Watts). This is in accordance with the findings of Ahmed and Duellman (2009) that conservatism is associated with strong corporate governance mechanisms, reducing the power of the chief executive officer.

Secondly, conservatism plays an important role in resolving the conflicts of management agencies. Since the identification of losses cannot be delayed in conservative reports, managers know that they must incur the consequences of their decisions during their tenure. Therefore, it can limit the management investments in negative net present value (NPV) projects, and motivates the management to immediately react against negative projects: thus they will be replaced with the strategies of sustained investments with positive (NPV), and this, in turn, will increase the investment efficiency (Balland Shivakumar, 2005).

Thirdly, and last, conservatism reduces the conflicts between the financiers (the bondholders) and shareholders over share dividends, and it also results in lower cost of financing through borrowing, hence less risk in debt collection. This, by itself, reduces the debt caused by negative effect on investment efficiency (Ahmed, Billings, Morton, and Stanford, 2002). It is predicted that conservative accounting will mitigate the cost of equity capital (Guay and Verrecchia, 2007; Suijs, 2008). It is also expected that these reductions in the costs of debts and equity capital, will facilitate the opportunities of financial investment (SAB).

### LITERATURE AND THEORETICAL FRAMEWORK

#### Accounting Conservatism

The objectives of financial reporting and accounting fundamentals require some particular attributes for the information that provide the financial reporting. They are commonly referred to as the qualitative attributes in accounting concepts of Iran. Conservatism is one of these attributes.

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According to Kieso, Weygandt, and Warfield (2001), relatively associated with minimum unwanted consequences, accounting conservatism is an approach to take when in doubt about choosing a procedure that would not unfavorably reflect the assets and profit higher than the actual values. From the viewpoint of Pure (1998), conservative behavior is an approach that prioritizes lower incomes (compared to higher incomes), and higher costs (compared to lower costs), and thus while identifying the unpredicted losses, it does not identify the unrealized profits.

Conservative accounting results in an increase in the firm's liquid assets, by reducing the outflow and increasing the inflow of liquidity through a decrease in cash investments, avoiding from investing in negative net present value projects, keeping the agency cost at a low level, and increasing the savings level (Gary, 2010).

### Investment Efficiency

A firm is defined as *efficient in investment* when it selects all positive NPV projects. We define the investment efficiency as the deviations from the expected investment in a project that predicts the expected investments as a function of growth opportunity. Consequently, the investments below (negative deviations from the expected investment) and above the standard level, will be associated with investment inefficiency.

### Research Background

Table (1): Background studies

Scholar	year	Results
Bushman and Smith	2001	They showed that financial accounting improves the allocation of resources through its monitoring role and attention to management decisions.
Ahmed and Duellman	2007	More conservative firms show higher measures of profitability (such as net profit margin and cash flow). They interpreted this evidence by stating that more conservative firms invest more efficiently.
Lambert	2007	This study shows that higher quality financial reports lower the cost of equity capital, and have an effect on investment (that is one profitable element of management).
Bosman	2007	This paper reveals that in national scales, there is a negative relationship between cash flow sensitivity of investment and accounting conservatism.
Hope and Thomas	2008	The results of this study showed that undisclosed information have a negative effect on efficiency of external investment.
Biddle	2008	Demonstrated that higher quality reports of income, result in less above-standard and below-standard investment, and improves the investment efficiency.

### Research Hypotheses

**H<sub>1</sub>:** There is a significant relation between accounting conservatism and investment efficiency.

**H<sub>2</sub>:** The firm size is effective on the relationship between accounting conservatism and investment efficiency.

**H<sub>3</sub>:** Growth opportunity is effective on the relationship between accounting conservatism and investment efficiency.

## RESEARCH METHODOLOGY

The spatial scope of this study includes the companies listed in Tehran Stock Exchange. The temporal scope is the period 2005 to 2009. This is a descriptive research, and aimed to be an applied one. The regression analysis is used to test the relationship between variables of the model and to assess the mediating variable. The sampling method is systematic elimination, during which only firms under these conditions are selected:

- 1- Information about their recent 4 years has been delivered to Stock Exchange Organization.
- 2- Their fiscal year terminates in March (the end of the solar calendar year).
- 3- Have no exchange lags of more than 6 months.
- 4- Contribute in the research providing the required information for the research parameters.

### Mathematical Model of the Research and the method of measuring variables

$$Inveff = a + \beta_1 CONS + \beta_2 Size + \beta_3 Group + \varepsilon_{i,t} \quad (1)$$

### Investment Efficiency (Inv. Eff)

We use the formula of deviation from expected investment, with investment prediction model as a function of income growth.

$$Invest_{i,t} = a_0 + a_1 NEG_{i,t} + a_2 \% RevGrowth_{i,t-1} + a_3 NEG.RevGrowth + \varepsilon_{i,t} \quad (2)$$

Where:

$Invest_{i,t}$ : Total investment, sum of investment in machinery, equipment, acquisition, plant, capital and research and development expenditure, minus cash receipts from sale of property, divided by the total assets of firm  $i$  and fiscal year  $t$ .

$NEG_{i,t}$ : An indicator variable that takes the value of one if the firm's income growth is negative, and zero otherwise.

$RevGrowth_{i,t-1}$ : annual income growth rate for firm  $i$  at year  $t-1$ .

$\varepsilon_{i,t}$ : The residual error from the regression model.

$\alpha_1, \alpha_2, \alpha_3$ : Coefficients of variables (slope).

$\alpha_0$ : Coefficient calculated by the regression model.

Based on the study of Biddle (2009) the amount of deviation from the expected investment (residual error) indicates the investment inefficiency. Investment below/ above the standard level represents a negative/positive value for the residual error.

### Conservatism (Cons)

$$ACC_{i,t} = NI_{i,t} + DEP_{i,t} - CFO_{i,t} \quad (3)$$

$$oACC_{i,t} = \Delta AR_{i,t} + \Delta PE_{i,t} - \Delta AP_{i,t} - \Delta TP_{i,t} \quad (4)$$

$$NoACC_{i,t} = ACC_{i,t} - oACC_{i,t} \quad (5)$$

Where:

$\Delta I$ : Change in Inventory

$\Delta PE$ : Change in Prepaid Expenses

$\Delta AP$ : Change in Accounts Payable

$\Delta TP$ : Change in Taxes Payable

$NoACC$ : Non-operational Accruals

$\Delta AR$ : Change in Accounts Receivable

$ACC$ : Total accruals

$NI$ : Net profit before Items

$DEP$ : Depreciation Expense Payable

$CFO$ : Cash Flow from Operations

$oACC$ : Operational Accruals

Since the lower (more negative) values of non-operational accruals represent a higher level of conservatism, the opposite of these items is used to uniform the algebraic values of them.

### Mediating Variables

The firm size and growth opportunity are the mediating variables of this study.

1- The firm size, that is equal to logarithm of the firm's assets:

$$Size = \log(Asset_t) \quad (6)$$

$Asset_t$ : The firm's assets at year  $t$ .

2- Growth opportunity, which is the ratio of the market value to the book value of capital.

$$GROWOP = P_{ij} / BV_{ij} \quad (7)$$

$GROWOP$ : Growth Opportunity

$P_{ij}$ : The firm's capital market value.

$BV_{ij}$ : The firm's capital book value.

Before testing the research hypotheses, the variables of the research are briefly presented in table (2). The below table contains some statistics to describe the research variables.

Table (2): Descriptive statistics for the research variables, Central tendency statistics, Dispersion tendency statistics, and Distribution statistics

Variables	Investment Efficiency	Firm Size	Growth Opportunity	Conservatism
Number of Available	313	316	316	316
N/A	3	0	0	0
Mean	0.0367	5.999	7.0314	-0.0413
Standard Error of Mean	0.00228	0.04047	1.64233	0.0468
Median	0.0184	5.9772	2.707	-0.002
Mode	0	6.19	0.63	-14.56
Standard Deviation	0.04029	0.71948	29.19465	0.83201
Variance	0.002	0.518	852.328	0.692
Skewness	1.174	0.05	12.082	-16.971
Standard Error of Skewness	0.138	0.137	0.137	0.137
Kurtosis	0.391	-0.236	156.173	297.037
Standard Error of Kurtosis	0.275	0.273	0.273	0.273
Minimum	-0.02	4.19	0.05	-14.56
Maximum	0.16	7.9	419.8	0.55
1 <sup>st</sup> Quartile	0.0102	5.5414	1.4166	-0.0657
2 <sup>nd</sup> Quartile	0.0184	5.9772	2.707	-0.002
3 <sup>rd</sup> Quartile	0.0535	6.5114	5.5848	0.0762
Range	0.18	3.71	419.75	15.11

## ANALYSES AND RESULTS

### Analysis of the 1<sup>st</sup> Hypothesis

**H<sub>1</sub>:** There is a significant relation between accounting conservatism and investment efficiency.

Rephrasing the first hypothesis into a statistical framework, we will have:

$$\left\{ \begin{array}{l} H_0 = \beta = 0 \text{ There is no significant correlation between accounting conservatism and investment efficiency.} \\ H_1 = \beta \neq 0 \text{ There is a significant correlation between accounting conservatism and investment efficiency.} \end{array} \right.$$

Table (3): Kolmogorov-Smirnov (S-K) test for the variable of investment efficiency

Total Number	Mean	Standard Deviation	Maximum Absolute Deviation	Maximum Positive Deviation	Maximum Negative Deviation	Kolmogorov-Smirnov	Significance Level
313	0.0367	0.04029	0.195	0.195	-0.115	3.454	0.000

According to table (3), since the values of significance level for the investment efficiency is below 5% (Sig<0.05), so the data are not normally distributed. We use the Spearman's correlation coefficient to determine the correlation between accounting conservatism and investment efficiency.

Table (4): Summary of finding resulted from the analysis of 1<sup>st</sup> hypothesis in single-variable regression

Statistical Component	Correlation Coefficient	R-Squared	Adjusted R-Squared	Durbin-Watson	F-Statistic	Total Number	$\beta$ Line Slope	a Line Intersection	Spearman's correlation coefficient	Significance Level	Confirmed Hypothesis
Research variables											
Relation between accounting conservatism and investment efficiency.	0.052	0.003	-0.001	1.789	0.833	313	0.002	0.037	0.143	0.011	H <sub>1</sub>

As shown in table (4), the coefficient of Spearman's correlation of relationship between accounting conservatism and investment efficiency is 0.143. It is notable that only 0.003 of change in investment efficiency is

interpretable with conservatism. The value of Durbin- Watson statistic is equal to 1.789, indicating that the errors are independent. According to the Significance Level (Sig = 0.011), investment efficiency is significantly effective on between accounting conservatism, thus the 1<sup>st</sup> hypothesis is confirmed.

**Analysis of the 2<sup>nd</sup> Hypothesis**

**H<sub>2</sub>:** The firm size is effective on the relationship between accounting conservatism and investment efficiency.

To examine the 2<sup>nd</sup> hypothesis, first we analyze the relations among the variables Firm Size, Conservatism, and Investment Efficiency as a 3-variable regression, and then using a 2-variable regression, compare the relation between the two variables Conservatism and Investment Efficiency, without considering the probable effect of the mediating variable Firm Size, with the former model. Table (5) shows the results:

Table (5): Summary of finding resulted from the analysis of 2<sup>nd</sup> hypothesis

Statistical Component Research variables	Pearson Correlation Coefficient	R-Squared	Adjusted R-Squared	Durbin- Watson	F-Statistic	Total Number	error level	Spearman's correlation coefficient	Significance level	Confirmed Hypothesis
Investment Efficiency, Conservatism	0.052	0.003	-0.001	1.789	0.833	313	0.05	0.143	0.011	H <sub>1</sub>
Investment Efficiency, Conservatism, Firm Size	0.227	0.051	0.045	1.787	8.939	313	0.05	0.203	0.00	H <sub>1</sub>

According to the results indicated in table (5), it is observed that by adding the Firm Size variable to the regression model, the Adjusted Coefficient of Determination has increased from -0.1% to 4.5%. This shows that the mediating variable Firm Size has an effect on the relation between Conservatism and Investment Efficiency, and must be added to the regression model. The value of Durbin-Watson statistic is 1.787, showing that the errors are independent, and there is no correlation between the errors.

**Analysis of the 3<sup>rd</sup> Hypothesis**

**H<sub>3</sub>:** Growth opportunity is effective on the relationship between accounting conservatism and investment efficiency.

To examine the 3<sup>rd</sup> hypothesis, first we analyze the relations among the variables Growth Opportunity, Conservatism, and Investment Efficiency as a 3-variable regression, and then using a 2-variable regression, compare the relation between the two variables Conservatism and Investment Efficiency, without considering the probable effect of the mediating variable Growth Opportunity, with the former model. Table (6) indicates the results:

Table (6): Summary of finding resulted from the analysis of 3<sup>rd</sup> hypothesis

Statistical Component Research variables	Pearson Correlation Coefficient	R-Squared	Adjusted R-Squared	Durbin- Watson	F-Statistic	Total Number	error level	Spearman's correlation coefficient	Significance level	Confirmed Hypothesis
Investment Efficiency, Conservatism	0.052	0.003	-0.001	1.789	0.833	313	0.05	0.143	0.011	H <sub>1</sub>
Investment Efficiency, Conservatism, Growth Opportunity	0.072	0.005	-0.001	1.788	0.814	313	0.05	0.104	0.066	H <sub>0</sub>

According to the results illustrated in table (6), it is observed that by adding the Growth Opportunity variable to the regression model, the Adjusted Coefficient of Determination has remained constant. This indicates that the mediating variable Growth Opportunity has no effect on the relation between Conservatism and Investment Efficiency. The value of Durbin-Watson statistic is 1.788, showing that the errors are independent.

Finally we perform the goodness-of-fit test for the multiple-regression model, to analyze the effect of all independent and mediating variables on the dependent variable.

Table (7): Correlation Coefficient, Coefficient of Determination, Adjusted Coefficient of Determination, and Durbin- Watson Test, for all variables of the model

Model	Correlation Coefficient	R-Square	Adjusted R-Square	Standard error of estimation	Durbin- Watson
1	0.228	0.052	0.043	0.03942	1.787

According to table (7), the Correlation Coefficient for the research model is equal to 0.228, which shows a significant relationship between the dependent and independent variables, at an error level of 5%. According to the output data of SPSS software, since Sig is below 5%,  $H_0$  is rejected at the error level of 5%, and the correlation among the variables is confirmed. Adjusted coefficient of determination reveals a value of 0.043, which is a low to moderate number, and represents a low goodness-of-fit. Durbin- Watson statistic according to table (7) is 1.787, showing that the errors are independent, and the hypothesis of correlation between the errors is rejected.

In further lines of the study we will explain the steps of Enter Method for performing a goodness-of-fit test.

According to table (8) and the significance level ( $\text{sig}= 0.048$ ) for Fisher-statistic, is below the error level 5%, therefore the goodness-of-fit of the regression model is confirmed, and the coefficient B for each variable, is calculated regarding its significance level (Sig). Since in this output, the significance level (Sig) in Equality of Regression Coefficients Test for the variable Growth opportunity is over 5%, thus the hypothesis of equality of regression coefficients with zero ( $H_0$ ) is confirmed, and this variable must be eliminated from the regression equation. This shows that there is no significant relationship between the variable Growth opportunity, and the variable Investment Efficiency.

Table (8): Summary of the results emerging from the multiple-regression by Enter Method

Model	Unstandardized Coefficients		Standardized Coefficients	t-statistic	Significance level	Collinearity Statistics	
	B	Std. Error				VIF	Tolerance
(Constant)	-0.038	0.019	—	-1.988	0.048	--	--
Conservatism	0.001	0.003	0.014	2.242	0.009	0.029	0.971
Firm Size	0.012	0.003	0.221	3.909	0.000	0.041	0.961
Growth Opportunities	0.000	0.000	0.027	0.492	0.623	1.013	0.988

But for other variables, the hypothesis of equality of regression coefficients with zero ( $H_0$ ) is rejected, and they must not be eliminated from the regression equation. Low tolerance value leads to less information about the variable, and this makes problems in the use of regression model. But as it is observed, the tolerance values for the variables of the model are in an acceptable range, and we can use multiple-regression, and the revised equation of the multiple-regression model will be as follows:

$$y = -0.038 + 0.001 \text{ Cons} + 0.012 \text{ Size} + e_i \quad (8)$$

## DISCUSSION

It is expected that accounting conservatism will increase the investment efficiency of trading firms by timely identification of losses in financial statements through three major ways: (1) By facilitating the monitoring of managerial investment decisions by mitigating information asymmetry between the shareholders and the managers, (2) By encouraging the managers to immediately abandon dysfunctional projects and investing in positive net present value projects, and (3) By facilitating the external financing of project at a lower cost. Studying a sample of companies listed in Tehran Stock Exchange during the period 2005 to 2009, we found a positive relationship between Accounting Conservatism and Investment Efficiency. Our findings show that accounting conservatism is associated with an increase in investment efficiency, and the mediating variable Firm Size is positively effective on the relation between accounting conservatism and investment efficiency, whereas the variable Growth Opportunity has no effect on the mentioned relationship.

This study is in accordance with the views of Guay and Verrecchia (2007), and LaFond and Watts (2008), stating that more conservative firms act more efficiently in their future investments. Our results add to the current flow of relevant experimental literature, such as the relationship between the higher quality reports and investment efficiency (Verdi, 2006; Biddle, 2006; and McNichols and Stubben, 2008), and particularly, the studies concerning how conservatism effects the investment decision (Hope and Thomas, 2008). Also, in line with Suijs (2008) it shows that eliminating the element of accounting conservatism is similar to pursuing the adverse economic outcomes.

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