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Comparing Relative and Additive Contents of Return with Cash Recovery Rate

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ABSTRACT

One of the goals of financial reporting is to provide the useful information in order to facilitate the decision making. Accounting information system is of high importance for the users to make specific decisions. The information should be analyzed to present the valuable information to the investors so that in this paper, the relative content and return additive with cash recovery have been addressed in the corporates of Tehran Stock Exchange. This research population includes the accepted corporates by Tehran Stock Exchange during a five year period (2010-2014). Finally, considering the research limitations and using the systematic deletion method, the information related to 109 corporates has been gathered and with respect to the defined goals, this research is regarded as an applied one. In terms of the research design, it is an event one because of background data and its deduction method is an induction and correlation one. Current study involves a primary hypothesis and six secondary hypotheses; here, a linear regression method has been used to examine the hypotheses. In order to analyze the data and test the research hypotheses, the software Eviews has been utilized.

1. Introduction

One of the applications which has been defined for the accounting is the presentation of suitable and useful information for the investors to determine the value of stocks and contribute them in making the knowingly investment decisions. Among accounting information, the accounting return has been accounted as the most important information source concerning the probability power and future cash flows. Given the importance of accounting return and role of cash flows as one of significant and vital resources for every economic unit as well as its usage in lots of financial decisions such as the evaluation models of securities, the relative content and return additive with cash recovery have been compared in this paper [2].
The evaluation criterion of valid and reliable performance allows the corporate to implement the giv-

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en goals and strategies in an efficient manner. Managers and researchers attempt to improve the management and control of the value chain. In addition to the mentioned issues, the selection of evaluation criteria of suitable performance, the corporate control and the goals achievement using the selected criteria have led to the significance of appropriate measurement of manager performance since 19th century. In this respect, plenty of corporates have applied such important accounting variables as sale, earnings and earnings to sale rate traditionally to evaluate their performance. Although these methods are more likely to be implemented, they are not so suitable methods to evaluate the performance of managers since the profitability has a close relationship with the amount of investment and none of these traditional methods may pay attention to the amount of investment [5]. Current research investigates the relative information content, the sale returns rate additive as a criterion based on earnings and the estimated internal return rate as a criterion based on the cash flow recovery in order to explain the economic performance of small and large corporates, low and high risk ones and low and high return ones. In this paper, ROE has been used as an economic performance index. Researchers in accounting, economics and finance are interested in identifying the best economic performance measures for businesses. Since the true economic performance measure is the firm's internal rate of return, which is unobservable, the goal is to find the best surrogate measure. Traditionally, accounting rates of return are used as proxies for the unobserved economic rates of returns. The informational role of accounting numbers has been front and centres in empirical tests. Earnings-based and cash flow-based measures are often used to evaluate performance due to the availability of accounting data in published financial statements.

Earlier studies provide evidence on the usefulness of accounting rates of return [20]. Despite of extensive research on the information content of accounting rates of return, the question of whether earnings based measures are superior to cash flow-based measures in explaining economic performance is inconclusive. Dechow and Subramanyam find that earnings dominate cash flows in explaining economic performance [9, 25], while Barth et al. document the superiority of operating cash flows [4]. In fact, Subramanyam and Venkatachalam. Market participants are interested in more relevant profitability measures [25]. Providing empirical evidence on competing metrics that can proxy for economic performance is an important contribution. Specifically, the information content of ROA and EIRR as alternative measures of performance is useful to analysts, researchers and regulatory agencies. Earnings-and cash-based measures are used extensively in financial statement analysis Brown et al., Fond and Hung, Liu et al., Livnat and Santicchia, if there are better tools to estimate economic returns, analysts can incorporate these alternatives [7,10,16,17]. From a research perspective, findings related to EIRR and ROA can provide additional information for future studies examining the usefulness of earnings measures. Accounting standards setters and regulators might benefit from the findings of this study given the interest and concern over the quality of earnings and how it affects various stakeholders. Regarding the mentioned issues in the study, it is tried to answer the following question:

Does the return-based criterion have a priority over the cash flow recovery-based one in the evaluation of corporate performance?

2. Literature and Research Background

A study named "Comparative Investigation of Information Content of Operational Cash Flow and Return Additives in Tehran Stock Exchange Corporates" has been conducted by to investigate the relationship between the cash flow resulted from the operations and net profit as well as the stock

return of corporates while comparing the information content additive of cash flows and return. Research findings indicated that the cash flow to return rate of operations was of high information content. In an article named "Relative Information Content and Return Increase versus Cash Flow Recovery Rates for the Performance Evaluation of Corporates" performed by Khodaparast Shirazi et al. the relative information content and increased return criteria vs. the cash flow recovery rate criteria have been examined by the means of Qiu-Tobin method and stock return regarded as the corporate performance indices. Results have shown that the relative information content based on the return is more than the cash flow recovery rate and the increased information contents cannot be tested [15]. In a research entitled "Determination of Explanatory Power of Accounting Criteria in Anticipating a New Definition of Stock Return" done by Yazdi et al. the information content of ROE criteria and assets return were studied to propose a new definition of stock return; in this research, the stock return has had a new definition and computed with respect to the market value of stock in the early period and the added value of stakeholder [2]. The main reason for testing this relationship is the complexity of stock return calculations with a new definition. Results demonstrated that there existed a meaningful positive relationship between the stock return and assets return whereas there was no significant relationship between the stock return and ROE.

Said and Hasseb Alnaby have studied the relative information content and performance criterion additive based on the cash flow recovery as well as the estimated internal return rate as compared to the performance criterion based on the earnings, and assets return while explaining the economic performance of corporates accepted by New York Stock Exchange. Results of experimental tests displayed that the estimated internal return rate had better relative information content and additive than the assets return in long and short-term periods. Also, the estimated internal return rate had a predictive ability concerning Qiu-Tobin and stock return in comparison with the assets return in long and short-term periods [1]. Belkaoui investigated the relationship between the relative and gradual contents of added value for the earnings and cash flows in the USA. Results displayed that the information content of added value is the main determinant of market return if it creates better information content as compared to the achieved data of net earnings and cash flows [6]. In a research entitled "Investigating Relative and Additive Information Contents of Return as Compared to Cash Flow Recovery" conducted by Hosseinvand and Karimi, the relative and additive information contents of internal return rate of assets as a return-based criterion have been addressed as compared to the estimated internal return rate as a cash flow recovery-based criterion in determining the economic performance of corporates. Findings indicated that the return-based performance criterion has more relative information content than the cash flow recovery-based one. In addition, the return-based performance criterion had additive information content in comparison with the cash flow recovery-based one [12].

Salehi in a study to investigate, the aims of this study is to determine and compare the relative and incremental information content of accounting variables in relation to the stock price or stock return. Statistical population of the study contains listed companies on Tehran Stock Exchange for the period of 2006 to 2010. The results indicate the correlation ratio of net profit and partial correlation of operational profit in relation to stock return and indicate unrelated quotient of debit to stockholder's equity in relation to dependent variable. The results also indicate that the net profit has information content in proportion to other two variables. Jonathan & milian the in a study to investigate Information Content of Guidance and Earnings Paid Overall, this study indicates that bundled quarterly earnings guidance contains more information than quarterly earnings and that investors incorrectly overweight the

earnings news and underweight the guidance news during the post-announcement period until the next earnings announcement [18]. Ng et al. I find that hedge portfolios based on each of the earnings signals generate, insignificantly different, post-announcement abnormal return drifts of about 200 basis points, on average. Although I do not find a significant difference in the post-announcement abnormal returns for the signals, I do find a significant difference in the timing of the post-announcement abnormal returns [19].

Beaver et al This study examines the information content of quarterly earnings announcements, measured as the magnitude of stock price revision at earnings announcements relative to price revision at other times. We investigate whether quarterly earnings announcements are informative using a non-parametric approach and 1971-2011 sample period. The findings provide unequivocal evidence that significantly more information is conveyed to investors in the three days around earnings announcements than in randomly chosen three day periods. Furthermore, we find that information content increases over time and dramatically so from 2001 onward. In addition, we investigate cross-sectional variation in the information content of earnings announcements and find it is positively associated with profitability, firm size and analyst coverage [5].

In a study named "Comparison of Information Content and Profit and Loss Statement Usefulness of the 3, 6 and 9 Month Mid-periods in Tehran Stock Exchange" performed by Yazdi and Jamalpour, their anticipation power has been applied to anticipate the stock return, earnings achievement capability, cash flows and financial conditions and to investigate these statements' information content. Finally, results have shown that almost all the figures registered in these statements have additive information contents; using these figures, reliable statistical models can be achieved for predicting the desired goals of users. In addition, the figures registered in the 9-month statement had high information content an almost all the cases.

3. Proposed Methodology

3.1. Research Hypotheses

Concerning the theoretical basics and research goals, below hypotheses are presented:

H: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one.

H1: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in small corporates.

H2: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in large corporates.

H3: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in high risk corporates.

H4: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in low risk corporates.

H5: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in low return corporates.

H6: Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in high return corporates.

3.2. Research Methodology

Current research is an applied one using the after-event approach. Also, the used data in examining the hypotheses are the panel ones. The required information and research data have been collected through referring to financial statements and explanation notes of the selected firms, the library method and software of Novin Rahavard and Tadbirpardaz Company. Research statistical population involved all the accepted corporates (520 corporates) in Tehran Stock Exchange in 2014.

3.3. Assumptions

Table1: Different stages of sampling

Sampling stages	Number
Number of companies listed on Tehran Stock Exchange at the end of 1393	520
Number of companies that have been in the time domain out of stock	(55)
Number of companies that have been in the time domain research into stock	(57)
Number of companies in the financial year had changed in the time domain research	(57)
Number of companies with financial information for the periods of study not available	(77)
Number of companies in the time domain lag of more than 6 months are transactional	(121)
Number of corporates that have not had a fiscal year of 12/29 during the given period.	(59)
The number of sample firms	109

Therefore, according to the items 1-6, 109 corporates were selected as a systematic research sample and there were 545 data-years to test the statistical hypotheses for every variable.

3.4. Research Models and Variables

In this section, a regression model has been presented with respect to each hypothesis:

$$ROE_{it}=\alpha+\beta_1 ROS_{it}+\beta_2 EIRR_{it}+\beta_3 LEV_{it}+\beta_4 TAGR_{it}+\beta_5 SGR_{it}+\varepsilon_{it}$$

Where
ROEi,t: ROE return of corporate *i* in the year *t*
ROSi,t: Average sale return of corporate *i* in the year *t*
LEVi,t: Financial leverage degree of corporate *i* in the year *t*
EIRRi,t: Estimated internal return rate of corporate *i* in the year *t*
SGRit: Sale growth rate of corporate *i* in the year *t*
TAGRit: Growth rate of fixed assets of corporate *i* in the year *t*

3.4.1. Dependent Variable

ROE:
Various criteria exist concerning the evaluation of corporates return; one of them is the ROE which is computed by the net profit divided by the book value of ROE. This ratio indicates the efficient use of investments by the corporate management and their power in increasing the corporate value in an acceptable manner. In fact, ROE is a status in which the manager controls all the activity aspects precisely in order to use the available resources in a better and more profitable way. One of management tasks is to evaluate and extend the ROE.

$$ROE = \frac{PAT}{BVE} \quad (1)$$

Where
ROE: Return on equity
PAT: Net profit after tax
BVE: Book value of ROE

3.4.2 Independent Variable

Average sale return (operational profitability index): Net profit to sale ratio is called the sale return as one of the components of ROI in the financial analyses [22].

$$ROS = \frac{net\ profit}{sale} \quad (2)$$

3.4.2.1 Estimated Internal Return Rate

It is introduced as an approach to estimate the economic performance, and cash recovery rate (CRR). Like the return-based performance criterion, the cash recovery rate is estimated by the means of financial statements. The advocates of this model declared that this performance criterion has no capital evaluation problems due to the selected accounting method as compared to the operational cash flows [14] .

In fact, CRR does not ignore the investments in the operational assets.

$$CRR=GN(G)/(1-e^{-Gr}) \quad (3)$$

Where
CRR: Cash recovery rate which is given by the cash income divided by the average gross assets.
The gross assets will be calculated through the sum of book values of assets and accumulated depreciation of fixed assets and the average net assets will be given as follows:

(Gross assets at the end of period + gross assets at the beginning of period) / 2 (4)

Investing period = the divided costs of property and machinery
T: Equipment divided by depreciation expense
G: Annual growth rate in the corporate investment computed by the following equation.
G= log (gross fixed assets at the end of financial period / gross fixed assets at the beginning of financial period) (5)

In the equation (5), the gross fixed assets equal to the cost of fixed assets given by the sum of book values of fixed assets and accumulated depreciation.

N(G): Current value of cash flow input for the function N(X) using the growth rate as the continuous discount rate
i: the estimated internal return rate which can be computed by the integration of Griner and Stark models as follows [11]:

$$\frac{CRR(G^2T^2+\pi^2)(1-e^{-Gr}+1)}{G(e^{-Gr}+1)(i^2T^2+\pi^2)} = 1 \quad (6)$$

Where
π : 3.14
e : 2.17
Other variables have been defined in the equation (3). It should be noted that i equals to the estimated internal return rate as the only unknown in the equation (4) and can be calculated by substituting the other variables in the equation (6) [1].

3.4.3 Control Variables

LEV: Financial leverage which is estimated by the total corporate debts divided by total corporate assets.

LEV=DEBT/ASSET (7)
LEV: Financial leverage
DEBT: Total debts
ASSET: Total assets

3.4.3.1 Growth of Fixed Assets:

At the end of each fiscal year, total sum of all the fixed assets of corporate is used to calculate the growth of fixed assets. Generally,

$$TAGR_{iq} = \frac{TA_q - TA_{q-1}}{TA_{q-1}} \quad (8)$$

I: Growth rate of fixed assets

TAGRiq: Growth rate of fixed assets of corporate i in the year q
TAq: Fixed assets of corporate i in the year q
TAq-1: Fixed assets of corporate i in the previous year
i: Growth rate of corporate sale

$$SGRiq = \frac{S_q - S_{q-1}}{S_{q-1}} \quad (9)$$

SGRiq: Growth sale rate of corporate i in the year q
Sq: Sale income of corporate i in the year q
Sq-1: Sale income of corporate i in the previous year

3.4.4 Moderating Variables

SIZE: Corporate size is given by the logarithm of sum of corporate assets.

$$SIZE=LN\ (ASSET) \quad (10)$$

Where
SIZE: Corporate size
ASSET: Total assets
LN: Natural logarithm
Risk: Corporate stock risk (Beta coefficient)
It is a section of total risk of a stock set which cannot be removed and is created due to some elements affecting total price of stock. To compute the systematic risk, the stock price index indicating the general level of stock price in the stock exchange is used. Beta coefficient for a specific stock is determined as the systematic risk degree of that stock is compared to that of stock price index.

$$\beta=\frac{COV(Rm,Ri)}{\sigma^2 Rm} \quad (11)$$

Where
R_i: corporate stock return
R_m: Stock return of market index
σ^2 Rm: Variance of stock return of market index

3.4.4.1 Return of Assets

It demonstrates the management efficiency in applying the available resources to achieve the profit, and growth and it can be stated that the simplest profitability analysis in the corporate is to create a relationship between the reported net profit and the reflected total assets in the statement. Assets return rate is one of the financial ratios given by the net profit divided by total assets.
Assets return is related to the sale and production skills which may not affected by the financial structures of corporate [15]

$$\text{ROA}=\frac{net\ profit}{total\ assets} \quad (12)$$

ROA: Assets return

4. Research Findings

4.1. Descriptive Statistics

Descriptive indices of research variables have been summarized in Table2.

Table 2: Descriptive indices of research variables

	ROE	Average sale return	Financial leverage
Average	0.323248	0.183174	0.041227
Mean	0.380000	0.220000	0.038800
Most	9.490000	1.120000	0.2504000
Least	-10.41000	-1.490000	0.002600
Standard deviation	0.873653	0.265171	0.025429
Skewedness	-1.483811	-0.890989	2.267149
Elongation	76.30563	9.964285	11.12441
Jack-bra	0.122455	0.114758	0.192547
Probability	0.824655	0.895254	0.812458
Sum	176.1700	99.83000	22.46870
Sum of standard deviation	415.2188	38.25181	0.351776
Observations	545	545	545
Sections	109	109	109

Table 3: Descriptive indices of research variables

	ROE	Average sale return	Financial leverage
Average	0.530000	0.090000	0.230000
Mean	2.380000	412.2100	3.670000
Most	9.490000	1.120000	0.2504000
Least	0.010000	-0.920000	-0.720000
Standard deviation	0.261777	17.67593	0.464047
Skewedness	1.994982	23.15222	2.283637
Elongation	11.18458	538.9442	13.91156
Jack-bra	0.185456	0.652454	0.312547
Probability	0.721547	0.352146	0.695544
Sum	320.8500	594.3020	175.9700
Observations	545	545	545
Sections	109	109	109

In Tables 2 and 3, considering that the Jack-bra statistic is more than 5%, H_0 cannot be rejected; so, the data of desired variables are normal.

4.2. Reliability Test of Variables

The reliability test of variables (unit root) has been presented in Table 4.

Table 4: Reliability test of ROE

Method	Test statistic	Probability	Number of sections	Number of observations
	H_0: Existence of	unit root	(common unit	root)
Levin, Lin and Chu	-33.8863	0.0000	109	436
	H_0: Existence of	unit root	(single unit	root)
W test	-6.85505	0.0000	109	436
ADF-Fisher (two chi square)	309.74	0.0000	109	436
PP-Fisher (two chi square)	346.722	0.0000	109	436

In Table 4, H_0 is rejected on the basis of single unit root, Im and Shin test, and ADF and PP methods with 109 sections and 436 observations at the significance level of 5%.Results of unit root test indicated lack of unit root concerning all the variables.

4.3. F-Limerand Hausman Test

Results of F-Limer and Hausmantest concerning the research hypotheses have been shown in Table5.

Table 5: F-Limerand Hausmantest of research hypotheses

Hypothesis	F-Limer test	Significance level	Result	Hausman test	Significance level	Result
H	3.724557	0.000	Panel data	99.833365	0.0080	Fixed effects
H_1	9.157	0.000	Panel data	35.3254	0.000	Fixed effects
H_2	14.326	0.000	Panel data	65.321	0.000	Fixed effects
H_3	35.26545	0.000	Panel data	48.354	0.000	Fixed effects
H_4	25.3245	0.000	Panel data	52.32	0.000	Fixed effects
H_5	32.124	0.000	Panel data	63.85	0.000	Fixed effects
H_6	45.6587	0.000	Panel data	28.324	0.000	Fixed effects

5. Analysis of Hypotheses

Results of main hypothesis test have been displayed in Table 6.

5.1. Analysis of Main Hypothesis

Hypotheses 1-Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one.

H_0: $\beta_1 \leq \beta_2$

H_1: $\beta_1 > \beta_2$

Table 6:.Estimation of main hypothesis model coefficients

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.104740	0.038132	2.746794	0.0063
Average sale return	0.508993	0.056702	8.976569	0.0000
Internal return rate	0.128864	0.032809	3.927719	0.0001
Financial leverage	0.038576	0.050446	0.764703	0.4449
Sale growth rate	0.000896	0.000294	3.044803	0.0076
Growth rate of fixed assets	0.152807	0.014838	10.29829	0.0000
Coefficient of determination	73%	Adjusted coefficient of determination 66%	Durbin-Watson 1.83	probability level 0000.0

For the significance of the fitted model, the F probability statistic F level should be referred. It has been shown that F Fischer is lower than 5% so that the model is accepted statistically.

ROE_{it}=0/104740+0/508993ROS_{it}+0/128864$EIRR_{it}$+0/038576LEV_{it}+0/000896$TAGR_{it}$+ 0/152807SGR_{it}

In this paper, the parent test was used for the analyses. This test was implemented by two statistics of F and X_2 (chi square). F test is applied; if the probability of this statistic is lower than 5%, H_0 is rejected. Otherwise, it will be confirmed.

Table 7: Hypothesis analysis using the parent test

Statistic	Amount	Freedom degree	Probability
F statistic	16.658890	(1, 430)	0.0000
Chi square	14.63221	1	0.0000

As it has been observed in the above model, the average sale return coefficient of corporate is positive and larger than the positive internal return rate, thus, the main hypothesis is accepted.

5.2. Analysis of H_1

Hypotheses 2-Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in small corporates.

H_0: $\beta_1 \leq \beta_2$

H_1: $\beta_1 > \beta_2$

Probability level of F statistic is lower than 5% so that the model is statistically confirmed.

ROE_{it}=0/187403+0/441239ROS_{it}+0/740106$EIRR_{it}$-0/042735LEV_{it}+0/001828$TAGR_{it}$+ 0/146276SGR_{it}

Amount of F statistic in the parent test is more than 5% so that H_0 is accepted.

Results of H_1 test is presented in Table7.

Table 8: Estimation of H_1 model coefficients

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.187403	0.058813	3.186405	0.0017
Average sale return	0.441239	0.049781	8.863667	0.0000
Internal return rate	0.740106	0.346308	2.137134	0.0337
Financial leverage	-0.042735	0.077989	-0.547956	0.5843
Sale growth rate	0.001828	0.000216	8.476537	0.0000
Growth rate of fixed assets	0.146276	0.018624	7.854116	0.0000
Coefficient of deter-mination	0.82	Adjusted coefficient of determination 0.77	Durbin-Watson 1.93	probability level 0.0000

Table 9: Analysis of H_1 using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	0.63524	(1, 211)	0.3154
Chi square	0.66254	1	0.3231

Test results have shown that the average sale return coefficient of corporate is positive and smaller than the internal return rate; therefore, H_1 is not accepted.

5.3. Analysis of H_2

Hypotheses 3- Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in large corporates.

H_0: $\beta_1 \leq \beta_2$
H_1: $\beta_1 > \beta_2$

Results of H_2 test have been demonstrated in Table10.

Table 10: Estimation of H_2 coefficients

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.166403	0.052437	3.173391	0.0017
Average sale return	0.394843	0.051906	7.606814	0.0000
Internal return rate	0.734002	0.037833	19.40105	0.0000
Financial leverage	-0.057402	0.066255	-0.866389	0.3873
Sale growth rate	0.000132	0.002858	4.604209	0.3873
Growth rate of fixed assets	0.112913	0.021619	5.222963	0.0000
Coefficient of deter-mination	0.73	Adjusted coefficient of determination 0.657	Durbin-Watson 1.93	probability level 0.0000

F probability level is lower than 5% so that the desired model is statistically confirmed.
ROE_{it}=0/166403+0/394843ROS_{it}+0/734002$EIRR_{it}$-0/057402LEV_{it}+0/000132$TAGR_{it}$+ 0/1129136SGR_{it}

F value in the parent test is more than 5%; thus H_0 is confirmed.

Table 11: Analysis of H_2 using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	0.32545	(1, 211)	0.2548
Chi square	0.31546	1	0.5214

Test results indicated that Ho cannot be rejected and the average sale return coefficient is positive and smaller than the internal return rate; thus, H_2 is not confirmed.

5.4. Analysis of H_3

Hypotheses 4- Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in high risk corporates.

H_0: $\beta_1 \leq \beta_2$

H_1: $\beta_1 > \beta_2$

Results of H_3 test have been shown in Table12.

Table 12: Estimation of H_3 coefficient

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.045252	0.030110	1.502858	0.1344
Average sale return	0.546964	0.035853	15.25586	0.0000
Internal return rate	0.167710	0.034916	4.803299	0.0001
Financial leverage	0.088218	0.033311	2.648276	0.0087
Sale growth rate	-0.000339	0.000251	-1.348097	0.1791
Growth rate of fixed assets	0.083203	0.017784	4.678520	0.0000
Coefficient of determination	0.84	Adjusted coefficient of determination 0.80	Durbin-Watson 2.07	probability level 0.0000

F probability level is lower than 5%. Therefore, the model is accepted in terms of statistics.

ROE_{it}=0/045252+0/5469643ROS_{it}+0/167710$EIRR_{it}$+0/0882182LEV_{it}-0/000339$TAGR_{it}$+ 0/0832036SGR_{it}

Table 13: Analysis of H_3 test using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	0.0000	(1, 211)	0.2578
Chi square	000.00	1	0.3524

Results of H_3 test have displayed that the average sale return coefficient is positive and larger than the internal return rate so that H_3 is accepted.

5.5. Analysis of H_4

Hypotheses 5- Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in low risk corporates.

H_0: $\beta_1 \leq \beta_2$

H_1: $\beta_1>\beta_2$
Results of H_4 test have been presented in Table14.

Table 14: Estimation of H_4 coefficients

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.179607	0.032705	5.491765	0.0000
Average sale return	0.501863	0.046839	10.71455	0.0000
Internal return rate	0.553016	0.034778	15.90112	0.0000
Financial leverage	0.003714	0.038639	0.096122	0.9235
Sale growth rate	0.000618	0.000314	1.971266	0.0494
Growth rate of fixed assets	0.051040	0.018951	2.693210	0.0076
Coefficient of de-termination	0.84	Adjusted coefficient of determination 0.80	Durbin-Watson 2.07	probability level 0.0000

F probability level is lower than 5% so that the desired model is statistically confirmed.
ROE_{it}=0/166403+0/394843ROS_{it}+0/734002$EIRR_{it}$-0/057402LEV_{it}+0/000132$TAGR_{it}$+ 0/1129136SGR_{it}
F value in the parent test is more than 5%; thus H_0 is confirmed.

Table 15: Analysis of H_4 using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	0.35554	(1, 211)	0.3255
Chi square	0.65411	1	0.3545

Test results indicated that the average sale return coefficient is positive and smaller than the internal return rate; thus, H_4 is not confirmed.

5.6. Analysis of H_5

Hypotheses 6- Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in low return corporates.

H_0: $\beta_1\leq\beta_2$
H_1: $\beta_1>\beta_2$

F probability level is lower than 5% so that the desired model is statistically confirmed.
ROE_{it}=0/166403+0/394843ROS_{it}+0/734002$EIRR_{it}$-0/057402LEV_{it}+0/000132$TAGR_{it}$+ 0/1129136SGR_{it}

F value in the parent test is more than 5%; thus H_0 is confirmed.
Results of H_5 test have been shown in Table16.

Table 16: Estimation of H_5 coefficient

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.177858	0.025473	6.982337	0.0000
Average sale return	0.594582	0.031511	18.86897	0.0000
Internal return rate	0.200579	0.019007	10.55263	0.0000
Financial leverage	-0.017997	0.034689	-0.518806	0.6044
Sale growth rate	0.000792	0.000742	1.067129	0.2871
Growth rate of fixed assets	0.127196	0.015433	8.241621	0.0000
Coefficient of determination	0.90	Adjusted coefficient of determination 0.87	Durbin-Watson 2.07	probability level 0.0000

Table 17: Analysis of H_5 using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	56.325	(1, 211)	0.000
Chi square	32.254	1	0.000

Test results indicated that the average sale return coefficient is positive and larger than the internal return rate; thus, H_5 is confirmed.

5.7. Analysis of H_6

Hypotheses 7- Return-based performance evaluation criterion has more information content as compared to the cash flow recovery-based one in high return corporates.

H_0: $\beta_1 \leqq \beta_2$

H_1: $\beta_1 > \beta_2$

Results of H_6 test have been shown in Table18.

Table 18: Estimation of H_6 coefficient

Variable	coefficients	Standard deviation	t-statistic	probability
Width from source	0.284757	0.035167	8.097351	0.0000
Average sale return	0.130307	0.046532	2.800377	0.0056
Internal return rate	0.185569	0.037361	4.966900	0.0000
Financial leverage	0.008196	0.042559	0.192583	0.8475
Sale growth rate	-0.002875	0.005277	-0.544709	0.5865
Growth rate of fixed assets	0.113857	0.022202	5.128277	0.0000
Coefficient of determination	0.90	Adjustedcoefficient of determination 0.87	Durbin-Watson 2.07	probability level 0.0000

F probability level is lower than 5% so that the desired model is statistically confirmed.

ROE_{it}=0/166403+0/394843ROS_{it}+0/734002$EIRR_{it}$-0/057402LEV_{it}+0/000132$TAGR_{it}$+0/1129136SGR_{it}

F value in the parent test is more than 5%; thus H_0 is confirmed.

Table 19: Analysis of H_6 using parent test

Statistic	Amount	Freedom degree	Probability
F statistic	0.32154	(1, 211)	0.1654
Chi square	0.25445	1	0.2545

From table 19, test results indicated that the average sale return coefficient is positive and smaller than the internal return rate; thus, H_6 is rejected.

6. Discussion and Conclusion

This paper aimed to compare the relative and additive contents of return and cash recovery in large and small corporates with high and low risks or high and low returns during 2010-2014 among 109 corporates accepted by Tehran Stock Exchange. Results indicated that the main hypothesis expresses that the return-based performance evaluation criterion has more relative information content than the cash recovery-based one since the return coefficient is estimated as 0.508 and the cash recovery rate is given as 0.128; in other words, the return criterion is larger than the cash recovery rate. As a consequence, the main hypothesis is accepted. Regarding H_1, in small corporates, the cash recovery-based criterion has more relative information content as compared to the return-based one. The return-based and cash recovery-based criteria have been computed as 0.441 and 0.740, respectively; as a result, H_1 is rejected Regarding H_2, in large corporates, the return-based criterion has more relative information content than the cash recovery-based one. The return-based and cash recovery-based criteria have been computed as 0.394 and 0.734, respectively; as a result, H_2 is rejected. Regarding H_3, in the high risk corporates, the return-based criterion has more relative information content than the cash recovery-based one. The return-based and cash recovery-based criteria have been computed as 0.546 and 0.176, respectively. The return-based one is larger; as a result, H_3 is accepted. Regarding H_4, in the low risk corporates, the cash recovery-based criterion has more relative information content. The return-based and cash recovery-based criteria have been computed as 0.501 and 0.553, respectively. The return-based one is smaller; as a result, H_4 is rejected. Regarding H_5, in the low return corporates, the return-based criterion has more relative information content than the cash recovery-based one. The return-based and cash recovery-based criteria have been computed as 0.549 and 0.200, respectively. The return-based one is larger; as a consequence, H_5 is accepted. Regarding H_6, in the high return corporates, the return-based criterion has more relative information content. The return-based and cash recovery-based criteria have been computed as 0.130 and 0.185, respectively. The return-based one is smaller; as a result, H_6 is rejected.

Results of a research conducted by Subramanyam and Venkatachalam, indicated that the return has superiority over the cash flows in determining the economic performance of corporates whereas the findings reported by Barth et al. have confirmed the superiority of operational cash flows[25,4]. On the other hand, Subramanyam and Venkatachalam have mentioned that the return-based and cash recovery-based criteria had no qualitative values. The return-based criteria have the errors resulted from the application of basic assumptions of accounting commitment and the optional use of accepted accounting methods whereas the operational cash flow-based ones ignore the investments of operational assets [25]. Another approach to measure the economic performance of corpo-

rates is the application of cash recovery rate.
Like the return-based performance criteria, this approach is estimated by the means of the financial statements. Cash recovery rate is regarded as a cash flow based on the active investments. Advocates of cash recovery rate declared that this performance criterion is not influenced by the capital valuation in order to select the accounting method [10]. Contrary to the operational cash flows involving the cash components of return, cash recovery rate does not ignore the investments of operational assets. Salamon stated that using the CRR as a corporate performance criterion which is directly related to the cash flow return rate, the corporate performance can be determined more precisely. The research done by Chen and Lee reported that the CRR is a more accurate criterion than return on investment (ROI) to measure the economic performance [8]
All the participants in capital market, decision makers, financial analysers and potential investors in the active corporates of Tehran Stock Exchange are recommended to study the return-based and cash recovery-based performance evaluation criteria in order to analyse the investment plans in the assets and stocks, and evaluate the corporate risks, timing and investments with respect to various heterogeneous levels of risk during a boom or recession in a variety of life cycles in the active stock corporates. [5]

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