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The Study Content And Its Relation To Depreciation And Return On Equity Prices In The Industry With Emphasis On The Tehran Stock Exchange

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ABSTRACT: The present study sought to examine the content and relationship of depreciation expense and accumulated depreciation of assets with abnormal returns and stock prices of listed companies in Tehran Stock Exchange for a period of 6 years from the April 2007 till the end of March 2013 in various industries been obtained for the aforementioned questions: Is there any impact of depreciation expense on abnormal stock returns? The result shows that from 800 observations, there is no significant correlation between depreciation expense and abnormal return in listed companies at Tehran Stock Exchange.
Keywords: accumulated depreciation, abnormal returns of stocks, depreciation expense, Stock Exchange, Stock Price.

INTRODUCTION

Firms use long-term operating assets to provide a variety of services extending over periods ranging from 1 to 40 years or more. Factory buildings used for 30 years or more and automated manufacturing equipment's used over periods ranging from 5 to 10 years are examples of long-term assets.

The cost of using long-term operating assets, also known as depreciation, is recorded gradually as the assets are used. Depreciation is an allocation of the cost that is calculated using an asset's acquisition cost, it's expected life, and expected residual value.

The expected life of an asset is the period of time over which the business anticipates using the asset. The expected life can be estimated in terms of measurement units (e.g., tones of mineral oil) or units of time (e.g., number of years). The expected residual value of a depreciable asset is the estimated amount of cash or trade-in-value that the business expects to recover at the end of an asset's expected life. The residual value is also known as salvage or scrap value. The depreciable cost is the difference between the acquisition cost and the estimated residual value. The accumulated depreciation is the amount of depreciation that has been recorded for an asset at any given time. An asset's net book value is the difference between the acquisition cost and accumulated depreciation.

Accumulated depreciation is that part of the cost of a fixed asset that is not recoverable when the asset is finally put out of use. Depreciation is the value of the benefit the asset has provided during a given accounting period. The benefit is valued at the portion of the cost of the asset. It does not provide funds for the replacement of a depreciable asset. Depreciation provides funds for the replacement of an asset, if the entity has invested that amount in outside securities.

Depreciation accounting attempts to allocate the acquisition costs and estimated residual value (salvage value) over the useful life of the asset. Depreciation is simply the allocation of the cost of an asset to the periods that benefit from the services of the assets, with the intention to allocate the same as an expense and to be matched with revenues in each period. It is related to the income statement which shows the net income after accounting for depreciation.

METHODS OF CHARGING DEPRECIATION

The following are the various methods applied for measuring allocation of depreciation cost: (1) Straight Line Method (2) Written Down Value Method (3) Annuity Method (4) Sinking Fund Method (5) (6) Insurance Policy Method, (7) Depletion Method, (8) Sum of the Digits Method, (9) Machine Hour Rate Method, (10) Revaluation or Appraisal Method.

Effects of Not Providing for Depreciation

If depreciation is not provided, then the income statement and the balance sheet will not exhibit a true and fair view of the business. The following problems may arise if depreciation is not provided. Σ - Periodic expenses will be understated, Σ - Profits will be overstated, Σ - Asset valuation will be overstated, Σ Capital depletion will take place, Σ Cost of production will be understated, Σ Price determination will be inappropriate, Σ Net worth will be overstated.

A proper management of the value of an asset is essential for depiction of its real value in the statement of financial position. This involves measurement of depreciation in case of long-lived assets. Usually, the fixed assets are shown on the balance sheet at original cost less depreciation. It is, therefore, essential that the amount of depreciation to be charged periodically as expense, is determined rationally and systematically.

Review of Literature: Various Definitions of Depreciation

Depreciation is defined as gradually reducing the value of fixed assets due to its decrement, wear, and the obsolescence.

Depreciation is defined as gradual and permanent decline in value of property items, caused by normal use or natural causes or effects over time or obsolescence.

Depreciation is defined as prorate amount of depreciation over estimated useful life of a property.

In this connection American Institute of Certified Public Accountants (AICPA) (1953); defines Depreciation Accounting in its Accounting Research Bulletin, as "a system of accounting which aims to distribute the cost or other basic values of tangible capital assets, less salvage, if any, over the estimated useful life of the unit (which may be a group of assets) in a systematic and rationale manner. It is a process of allocation, not of valuation. A closely identical view is maintained by the International Accounting Standard Committee, IAS-4, (1989); on Depreciation Accounting defining it as "the allocation of the depreciable amount of an asset over its estimated useful life. Hendriksen (1992); says that the most commonly accepted definition of depreciation is that "it is a systematic and rational method of allocating costs to periods in which benefits are received. Anthony and Reece (1994); have defined the term depreciation as follow, they said, "with the exception of land, most items of plant and equipment have a limited useful life; that is, they will provide service to the entity over a limited number of future accounting periods. A fraction of the cost of the asset is therefore properly chargeable as an expense in each of the accounting periods in which the asset provides service to the entity. The accounting process for this gradual conversion of plant and equipment capitalized cost into expense is called depreciation. In the words of Maheshwari S.N. (1999); he said depreciation is nothing but "that portion of the cost of the assets that is deducted from revenue for assets services used in the operation of a business. Further, Jain, Khandelwal (2000); depreciation has been defined as "the allocation of total cost of the asset as a business expense of the various years of its useful life.

Investopedia (2012); explains Depreciation for accounting purposes, depreciation indicates how much of an asset's value has been used up. For tax purposes, businesses can deduct the cost of the tangible assets they purchase as business expenses; however, businesses must depreciate these assets in accordance with IRS rules about how and when the deduction may be taken based on what the asset is and how long it will last.

Investor words (2012); 1.A noncash expense that reduces the value of an asset as a result of wear and tear, age, or obsolescence. Most assets lose their value over time (in other words, they depreciate), and must be replaced once the end of their useful life is reached. There are several accounting methods that are used in order to write off an asset's depreciation cost over the period of its useful life. Because it is a non-cash expense, depreciation lowers the company's reported earnings while increasing free cash flow.

2. A decline in the value of a given currency in comparison with other currencies. For instance, if the U.S. dollar depreciates against the Euro, buyers would have to pay more dollars in order to obtain the original amount of euros before depreciation occurred.

Technical Committee Audit Organization of I.R. Iran (1992); defines depreciation as a systematic allocation possible depreciation amount of an asset during its useful life, which "possible depreciation amount" refers to total cost of asset or other finance amounts replacement total cost of asset after deducting its residual value.

American Institute of Certified Public Accountants (AICPA); defines depreciation as follow;

Reduced service capacity of long-term assets due to exhaustion (wear) and devaluation of it caused by obsolescence.

Hendriksen E. S. (1992); studies shows that depreciation is first allocation of property and equipment valuation process to the use periods that is classification and separation of costs and allocation a part of it to the period of times.

Kalantari, Morteza (1994); studies indicate that by collecting various opinions within frame of depreciation accounting from domestic and foreign scholars, discuss various concepts of depreciation, in the specific four dimensions as:

Depreciation as a reduction in price, 2 - depreciation as physical deterioration,
depreciation as devaluation, 4 - depreciation as cost allocation and then interpret the relationship between costs and incomes according to the characteristics A) direct match of tolerated costs with a particular income and B) direct match of tolerated costs with a period and C) allocate cost to the courses that have benefited from and D) expend all costs have been occurring in the period, except ones that they have future benefits, Then divide the whole concept of depreciation into operational concepts and financial concepts.

Mahdavi and sharifinia, (2002); states that in general 79 percent of respondents agree that there is mismatch between depreciation ratios in the depreciation's law of direct tax law with accounting principles and standards (theory number one), and 74.6% agreed that there is mismatch between depreciation ratios of direct tax law with actual performance of assets 84 percent agreed that non coordination between depreciation ratios in the depreciation's law of direct tax law with real depreciation of assets in the various geographic regions (theory number 3), and 64 percent agreed that there is no coordination between depreciation ratios of direct tax law with company's nature (theory number 4) and 90 percent agreed with this subject which Iranian companies just use rates reflected in the direct tax law as criteria for calculating depletion.

Vincent (1999); presented a comprehensive analysis of information content and explanatory power of funds from operation against of other known company performance criteria titled as profit of each share. He has applied two methods of levels and changes of performance criteria for reducing the dependences discussed above and with use of annual data of 181 property companies find that funds from operation each share has significantly associated with stock returns, but profit of each share has no this features. From other hand with use of seasonal data of 850 companies found that profit of each share has significantly associated with stock returns which in return funds from operation is not like that.

Gore and Stott (1998); in one study tested information content of depreciation of 597 property companies in the period of 1991-1996. They found that funds from operation and gain or loss of property mainly associated with stock returns, while depreciation is not the same. Of course should be consider that previous studies have forgotten the role of depreciation costs for each property companies.

Fields and et al (1998); have compared funds from operation and net profit based on general accepted accounting principles, with use of manually collected data of 201 property companies for the years of 1991-1995. They found that funds from operations will present better prediction than funds from annual operation and operating cash flow, moreover that net profit based on the accepted principles significantly explain larger deviation of annual net profit. However, funds from operations and net profit in terms of stock prices expositor have no differences.

Kang (2010); in his study has paid attention to the review information content and assessment between relevance of depreciation in state and non-estate industry, and results are as; 1) There is no relation between shares returns and depreciation cost. 2) There is no relationship between stock price and accumulated depreciation. 3) The relationship between stock price and accumulated depreciation in the estate and non-estate companies are different. 4) There is no relationship between gain and loss of sales and accumulated depreciation of sold property. 5) There is a relationship between gain and loss resulting from sales and accumulated depreciation of property in the estate and non-estate companies. 6) There is no relationship between future earnings and accumulated depreciation exists. 7) The relationship between future income and accumulated depreciation between estate and non-estate companies are different.

Gore and Stott (1998); directly tested information content of assets depreciation for 597 review in the period between 1991-1996, found that funds from operation and gain from assets sale related with stock returns in general while depreciation is not the same. Vuong (1989); presented in his study that neither funds from operation nor net profit has more expositor power on the other one. Kothari and Zimmerman (1995); noted that the error in variables caused from use of level of variables can make slope of a returns model to reach zero, thus their results about superiority of funds from operation on the net profit remained uncompleted. Vincent (1999); with use of general data of estate companies in period of 1994-1996, presented a comprehensive analysis of information content and descriptive power funds from the operations against other known company performance criteria, namely earnings per share, profit before tax deduction. He has used the annual data of 181 estate companies found that funds from each share operation and not profit of each share has significant relationship with shares return. Fields and et al (1998); had compared benefit of funds from operation and net profit based on accepted accounting principles, using manually collected data for 201 review in the period 1991-1995, and found that funds from operation predict better than annual operation and operational cash flow, and that net profit based on accepted accounting principles explain considerable deviation compared to annual net profit. However, funds from operation and net profit have no differences in descriptive periods.

Subject Of The Study

The Subject of the study is the population consists of eight Industries that are Iron, Automobile, Chemical, Tiles, Metal, Food & beverage, Pharmacy Cement & stucco from all that 800 companies were accepted and list

in the Tehran Stock Exchange. According to that the systematic removal method has been used in this research the following conditions have been considered in terms of statistical community;

The year, for the purpose of present study is 6 financial year i.e. 2007-08 means from 1st April 2007 to 31st March 2013. And during the investigation their financial year has not changed.

Corporate activity in the Stock, temporarily or permanently should not be stopped during research period.

Financial information of the company should completely be available.

Investment companies, banks and leasing companies because of their special features are not among the statistical community.

Expression of the problem

In studying the behavior and information content of factors which affecting the market and inevitably market economy, searching for variable or variables that can explain relationship between real sector of economy or financial sector of economy is very important. Money and capital markets as main components of financial sector of economy are responsible for to finance real sector of economy. Real sector economy, is including markets that real assets that are visible, physical and tangible such as buildings, machinery, equipment, that transaction is done within them. In other word real sector of economy is sector of goods and services that in regard of point of view of industry's owner has from depreciation cost, has no information content, and record and reflecting it in the financial statements is only for respecting General Accepted Accounting Principles.

This study will test relationship between share price and returns with depreciation cost and accumulated depreciation of property, and briefly evidences with use of capital market data will be tested to answer study's main question which are as follow;

Whether assets Depreciation costs affects on abnormal stock returns?

Research Hypothesis

In light of the above mentioned objectives, the study attempts to test the following hypothesis:

Relationship between abnormal returns of stocks and Depreciation costs does not exist.

Scope Of The Study

The scope of this study includes two different dimensions as follows:

A) Time scope; considering information close to the time of study and availability of them, for a period of 6 years from the April 2007 till the end of March 2013.

B) Place Scope; studies the 800 companies listed at Tehran Stock Exchange and their financial information is used for purpose of calculating study's variables.

RESEARCH METHOD

With considering the terms in the previous studies, we used the two models of returns and prices, which showed the relations between depreciation cost and accumulated depreciation with abnormal stock returns and stock price.

Theoretical basics related to subject to be extracted from internal and external sources and presented, and then to test the hypothesis, the field method is used, therefore, to extract the necessary information for companies, exchange information databases, journals, stocks reports, and the software of Microsoft Excel for calculating and SPSS software for statistical tests of coefficients to obtain necessary values for statistical analysis. So that with use of Pearson correlation coefficient, theories of the study tested in the level of 95 percent confidence, and decided regarding approval or rejection of research theories.

The study investigated meaningfulness of whole multiple variable regressions according to the F statistic and several independent variables based on the T statistic.

It should be noted that certainly the depreciation expense has information content the data in net profit and by virtue of the Gore and Statt model (1998) abnormal return is:

$$AR_{i,t} = \alpha_O + \alpha_1 \Delta DEP_{i,t} + \alpha_2 \Delta FFO_{i,t} + \alpha_3 \Delta GAIN_{i,t} + \alpha_4 LgMV_{i,t-1} + \alpha_5 BM_{i,t-1} + \varepsilon_{i,t}$$

Which is equal to total changes of operational funds and depreciation and …

So the changes of depreciation cost may show the fluctuations of abnormal return because of the changes of operational funds (Kang, 2010). If this relation is proved, it may conclude that the shareholders who pay attention to the appended notes and naturally to the depreciation cost they may benefit from the advantages of both abnormal and normal returns.

On this basis the models examined in current study is as follows:

$$AR_{i,t} = \alpha_O + \alpha_1 \Delta DEP_{i,t} + \alpha_2 \Delta FFO_{i,t} + \alpha_3 \Delta GAIN_{i,t} + \alpha_4 LgMV_{i,t-1} + \alpha_5 BM_{i,t-1} + \varepsilon_{i,t}$$

Where:

AR =   Abnormal return
FFO =   The funds from the operations
DEP =   Depreciation
GAIN = Gross profit
Log MV =   Natural logarithm of market value equal to company size
BM =   Book to market value
Abnormal return of the shares:
In current study the abnormal return of the shares is calculated from:
Shares market return in a period–Total return of the market shares in a period.
Total return of the shares in a period = Priority right + share profit + dividend + shares price increase / Primary price of the share Total return of the shares in a period = Primary price index & liquid + final price index & liquid / Primary price index & liquid

STATISTICAL METHODS

First, descriptive statistics for all companies present in the sample and also separately for each industry, calculated, and then test of Kolmogorov - Smirnoff done, and cause of abnormal data calculated $Ln(1/v^2)$ form data to be normal that displayed below of appropriate tables.

Table 1. Test of Kolmogorov - Smirnoff

Depended Variables	Kolmogorov-Smirnov Z	Sig
$\Delta DEP_{i,t}$	4.485	0
$\Delta FFO_{i,t}$	2.972	0
$\Delta GAIN_{i,t}$	7.693	0
$LgMV_{i,t-1}$	1.887	0.002
$BM_{i,t-1}$	2.625	0
$ACCUDEP_{i,t}$	3.134	0
$NI_{i,t}$	2.451	0
$BVE_{i,t}$	3.066	0
$DIV_{i,t}$	4.018	0
$SGR_{i,t}$	2.745	0
$LEV_{i,t}$	1.07	0.202

Table 2. Normal Test of Dependent Variables Drown From $Ln(1/V^2)$

Variables	$AR_{i,t}$ Kolmogorov-Smirnov Z	Sig	$P_{i,t}$ Kolmogorov-Smirnov Z	Sig
All Companies	1.292	0.071	0.991	0.28
Iron Industry	0.71	0.695	0.523	0.947
Tiles Industry	0.752	0.624	1.152	0.14
Automobile Industry	0.981	0.291	0.982	0.29
Chemical Industry	1.232	0.096	0.686	0.735
Metal Industry	0.567	0.905	1.123	0.097
Food and beverage Industry	0.664	0.77	1.283	0.075
Pharmacy Industry	1.095	0.182	1.069	0.203
Cement Industry	0.939	0.341	1.137	0.151

Table 3. Descriptive statistics for all companies present in the sample

Variables	Mean	Median	Mode	Standard Deviation	Variance	Range	Minimum	Maximum
$AR_{i,t}$	-0.0537	-0.1329	-0.99	0.50542	0.255	2.91	-0.99	1.92
$\Delta DEP_{i,t}$	0.0053	0.0022	-0.08	0.0157	0	0.22	-0.08	0.14
$\Delta FFO_{i,t}$	0.0195	0.017	-0.69	0.16179	0.026	1.91	-0.69	1.23
$\Delta GAIN_{i,t}$	-0.0036	0	0	0.08805	0.008	1.61	-0.93	0.68
$LgMV_{i,t-1}$	26.385	26.1529	23.4	1.58159	2.501	9.43	22.12	31.55
$BM_{i,t-1}$	0.5462	0.4346	-0.14	0.40667	0.165	3.43	-0.14	3.29
$P_{i,t}$	5350.8	3341	1000	6529.696	42636928	64620	190	64810
$ACCUDEP_{i,t}$	716.56	589.169	3.3	544.04713	295987.3	3863.6	3.3	3866.9
$NI_{i,t}$	0.1945	0.1843	-0.83	0.18618	0.035	1.8	-0.83	0.98
$BVE_{i,t}$	2040.3	1773.89	1397	1144.35	1309539	9565.2	-672.47	8892.8
$DIV_{i,t}$	725.79	456	300	803.70188	645936.7	5099	1	5100
$SGR_{i,t}$	0.1589	0.1507	-0.97	0.31586	0.1	2.67	-0.97	1.7
$LEV_{i,t}$	0.657	0.6677	0.41	0.16936	0.029	1.38	0.15	1.52

Descriptive statistics and normality test data for the whole companies present in the sample: (800 reviews)

Pearson correlation test to confirm or reject our hypotheses

H_0; between abnormal stock returns and the cost depreciation relationship does not exist.

H_1; between abnormal stock returns and the cost depreciation relationship does exist.

Test results for all companies and separately for appropriate industries are given:

Table 4. Pearson correlation test

Table 5. Matrix of Pearson correlation test between the variables of returns Model

Model	$AR_{i,t}$	$\Delta DEP_{i,t}$	$\Delta FFO_{i,t}$	$\Delta GAIN_{i,t}$	$LgMV_{i,t-1}$	$BM_{i,t-1}$
$AR_{i,t}$	1	-.040	.052	-.034	.051	-.155*
$\Delta DEP_{i,t}$	-.040	1	.223*	.196*	-.310*	.369*
$\Delta FFO_{i,t}$	.052	.223*	1	.201*	-.216*	.278*
$\Delta GAIN_{i,t}$	-.034	.196*	.201*	1	-.327*	.249*
$LgMV_{i,t-1}$	.051	-.310*	-.216*	-.327*	1	-.485*
$BM_{i,t-1}$	-.155*	.369*	.278*	.249*	-.485*	1

* Meaningful at 95%

Regression Analysis

Regression results for all Companies and for each of the industries without exception shows that by F-test there is a linear relationship between dependent and independent variables. Also by Watson test shows that:

The errors have the independences and,

There is no correlation between independent variables.

T-test showed that the depreciation cost and accumulated depreciation in the mentioned models to predict abnormal stock returns are not meaningful and are excluded from the model.

Regression result of returns model for all of Companies:

Table 6. Regression Analysis

Durbin-Watson	F	Sig	Adjusted R Square	R	R Square
1.931	3.069	.010	.022	.180	.032

CONCLUSION

The cost associated with this item in stock prices and abnormal returns are measured and tested. According to this research to test the relationship between accumulated depreciation and depreciation expenses and stock price return is based on a discussion of core funds from operations to net income accounting in previous studies conducted in this study is related to the depreciation of so, if accounting depreciation for obsolescence and destruction of assets is a good indicator as a result, the book value of assets to market value of assets and the depreciation is close to market price and stock return correlation is significant. And if relevant accumulated depreciation and amortization expenses to be approved by the market, the opposite will happen. In this study simultaneously tests for abnormal returns and accumulated depreciation and depreciation expense and stock price have been conducted. The population consists of eight Industries Iron, Automobile, Chemical, Tiles, Metal, Food & beverage, Pharmacy Cement & stucco from all that 800 firms was selected and the result shows that, there is no relationship between abnormal return and depreciation expense. Also in the table No. 4. Correlation matrix shows that the ratio of book value to market value of equity is capable of the highest correlation with abnormal returns Shown in the table No. 5. there is a significant correlation between abnormal stock returns and depreciation expense is expected hypotheses are confirmed. In the case of regression analyses, as shown in Table No. 6. Depreciation expense was not significant at the 95% confidence level, and the model is eliminated. Results are consistent with previous results Gvrastat (1998), Vincent (1999), Kang (2010), which confirms their hypotheses.

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