Investigating the Relationship between Volatility – Taking of Comprehensive Income and Net Income and Stock Price with Market Risk in the Capital Market in Accepted Companies in Tehran Stock Exchange

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ABSTRACT

This research investigates the relationship between volatility – taking of comprehensive income and net income and stock price with market risk in the capital market in accepted companies in Tehran stock exchange. In this study, statistical community is all active companies in Tehran Stock Exchange. This research includes a period 6 year from beginning 2009 until 2013. In this study, multivariate regression is used in order to calculate the coefficients and testing hypothesis. Applied data in tests are extracted manually from annual reports of the company’s board and their explanatory notes. Collected data are analyzed using excel software and by SPSS software. In this research, a multivariate regression is used to calculate coefficients and testing hypothesis. Fixity, F limmer and Husman test indicated fixity of research variables and verification of fixed effects model versus random effects in studied models. The results of model estimation show that research sub-hypotheses are confirmed due to a significant difference between volatility – taking of comprehensive income and net income with market risk and due to a significant relationship between comprehensive income and stock price in capital market.

KEYWORDS

Income, Comprehensive, Comprehensive income, Stock Price, Market risk

INTRODUCTION

In capital market, one of the important information for decision making of many investors, analysts and other groups of users is information related to the profit. If precipitated profit by companies does not involve enough accurate, it will cause to concern, confusion, and falling investment security in capital markets and perhaps, many investors have received a lot of profit and loss due to intensive profit volatilities and specially negative volatility and deviations and due to reliance on the released information [5].

One of the most important goals for providing financial statements is to being usefulness for a wide range of users including internal or external in order to make reasonable decisions. Transparent quality of reporting and information is one of the expectations in capital market. What is certain and there is consensus about this, is that all regulators and investors are applicant for financial reporting with high quality because they believe that financial reporter influences capital market directly [5].

Information which are provided in the form of financial statements by accounting systems, always are paid users’ interest and they are used in decision-making [1]. Based on the standard, No 6, accepted companies in Tehran Stock Exchange should provide comprehensive loss and profit statements. It is expected that disclosure of comprehensive income and its items help shareholders to evaluate stock return and the managers to improve financial resources allocation. Comprehensive profit and loss items are different in different countries. Comprehensive profit and loss in USA and Canada includes net income, loss and profit of currency exchange, loss and profit of investments, minimum pension liability [2]. But in New Zealand, this financial statement includes net income, revaluation of assets loss and profit, and profit and loss of currency exchange [8]. These items in Japan include net income, loss and profit of currency exchange, and loss and profit of investments and in Tehran Stock Exchange, it includes net income, loss and profit of currency exchange, unrealized profit and loss of investments and annual adjustments (standard, No. 6, Article 10). In the recent year, quality of companies’ income combination has attracted researchers’ interest in this study, information content of comprehensive income, net income and alternative models for comprehensive income will be

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investigated in terms of being usefulness of separated disclosure of comprehensive loss and profit items in Tehran Stock Exchange. Based on this fact, it is proposed that one of the final goals in financial reporting is to provide reliable and significant figures for investors in order to help to make economic decisions and also for managers to help to their internal control goals [3].

On the other hand, risk and return in investment and funding are always with together and we cannot separate them, since, decisions related to the investment is always conducted based on the relationship between risk and return and investors should always consider them in their investment decisions. Since stock return in different periods is variable and dose not fixed and steady process, therefore volatility and variability are inseparable components of stock return over the time. According to the volatility and variability, we cannot trust returns of future periods if investors do not trust future return of stock, they will face with risk, therefore, gaining return expectation by investors is a rational affair [3].

**RESEARCH BACKGROUND**

**Domestic background:**

Valipour and mohammad (2011) gad conducted a research entitled the investigation of profit instability and predictability of future income in accepted companies in Tehran Stock Exchange during 2003 to 2008. To analyze data, regression analysis is used. The results of research indicate that there is inverse and significant relationship between current instable income and predictability of future income. The results also show that by deducting accrual, from operational profit, predictability will be increased[9].

Haghighat and Motamed (2011) investigated the relationship between volatility- taking and predictability of profit. In this research, financial data of 165 accepted companies in Stock Exchange is used during 1995 to 2008. Finding show that there is a negative relationship between volatility- taking and profit predictability in short and long term temporal horizons. Also, research results indicated the positive relation between quarterly incomes volatility- taking and profit predictability which this relation is stronger than the relationship among annual income volatility- taking and profit predictability[4].

Heydarpour and Zare rafiee (2014) have conducted a research with goal of investigating the impact of growth opportunities and profit sharing policies on the relationship among financial reporting quality and stock return volatilities in Iran capital market level. Statistical community of research is total accepted companies in Tehran Stock Exchange. The result of research hypothesis rest indicate using panel data that in accepted companies in Iran capital market, financial reporting quality have inverse relation with stock return volatility -taking of companies and its increasing leads to decrease stock return volatilities of companies and following it, leads to reduce risk of companies. Also, the obtained results indicated that growth opportunities has had direct impact on the relationship among financial reporting quality and stock return volatility-taking and its increasing intensifies the relation between financial reporting quality on stock return volatility- taking of companies[5].

**Foreign background:**

Stephen and et.al (2007) investigated the operational income, net income, comprehensive income for investors using regression analysis in a research in Europe Union. The results show that first of all, comprehensive income has had lowest relationship towards other incomes. Second, total other comprehensive income items after net income have informational content and third, providing comprehensive profit and loss causes financial statements become transparent[7].

Petrovic, Mason , Coakle y (2006) investigated the relationship of revenues instability as standard deviation of revenue per share with future performance of companies in their research. They use standard deviation of profit per share as instability measurement index. Their findings show that whatever revenues become instable, future performance of companies becomes weaker and companies’ value will be decreased[6].

Biddle & Chio (2006) in a research entitled “comprehensive profit and loss usefulness* investigated the comprehensive income relationship in order to make decisions by using regression analysis. Their research results in the different field of definitions show that for information content, comprehensive profit definition is prior to net income and comprehensive income according to the standard, No. 13 from financial accounting standard board of America[2].

**RESEARCH HYPOTHESIS**

**Main hypothesis:**

Is there any difference between the relationship of volatility- taking of comprehensive income and net income with market risk and stock price?

**Sub-hypothesis:**

1. There is significant difference between volatility- taking of comprehensive income and net income with market risk.
2. There is a significant relationship between volatility- taking of comprehensive income and stock price in capital market.

**RESEARCH VARIABLES**

**Dependent variables:**

It is a variable which its changes are influenced by dependent variable.
P= final stock price
MR= market risk

**Independent variables:**

It means some variables which affect the other variables.
Independent variable is a environment feature from social or physical environment that accepts amounts after selection and researcher ’s intervention in order to observe its influence on the other variables.
NI= net income
CI= comprehensive income  
OCF= operational cash flow  
CF= OCF ratio to current liability  
DE= liability ratio to the owners

BVE=book value of equity per share  
AE= abnormal profit per share

RESEARCH METHODOLOGY

This research is applicable and in this research, econometrics method of panel data will be used that its explanation is as follows:

Generally, we can say that benefit of using consolidated data towards temporal series and cross-sectional data is that consolidated data, with a combination of temporal series and cross-sectional data, provides more information, more variability, and diversity, less co-linearity between variables, more degree of freedom and efficiency. Temporal series usually have co-linearity while in consolidated data, after cross-sectional data, causes to increase more variability which by having these data, we can have more valid estimations. Meanwhile this method provides more possibility for identifying and measuring effects which are not identified just by cross-sectional statistics and or just by temporal series simply.

RESEARCH COMMUNITY

Statistical community is all people and ingredient which have common and specified features in a specific geographic scale (Hafez niya 2002,120). Statistical community refers to whole group of people, events or things which researchers want to investigate them. A list of all statistical community members that sample group is selected among them (Sekaran, 2003, 294).

Statistical community is all accepted companies in Tehran Stock Exchange in period 6-year, from beginning of 2010 until end of 2014 which have following characteristics:

- In terms of increasing comparability, end of their fiscal year is 19 March of each year.
- They have membership in Tehran Stock Exchange since 2010 (according to the research temporal territory).
- They are active in Stock Exchange during 2010 until 2014.
- They do not change their activities or fiscal year changing during these years.

RESEARCH BACKGROUND

Research background is as follows in terms of temporal, spatial and subjective.

Subjective background:

This study investigates the relationship between volatility-taking of comprehensive income and net income with market risk and stock price in accepted companies in Tehran Stock Exchange.

Spatial background:

Spatial background of this study includes active companies’ community in Tehran Stock Exchange during mentioned time period.

Temporal background:

This study includes period 6-year from beginning of 2010 to 2014.

DESCRIPTIVE STATISTICS AND ITS ANALYSIS

Generally, the methods by which we can collect data and process and summarize them are descriptive statistics. This kind of statistics merely describes community or sample and its goal is to calculate the parameters of research community or sample.

<table>
<thead>
<tr>
<th>variable</th>
<th>Difference rate</th>
<th>Sig. level</th>
<th>Test statistics</th>
<th>Fixed/ unfixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>With difference</td>
<td>0.00000</td>
<td>-121.84</td>
<td>fixed I(0)</td>
</tr>
<tr>
<td>P</td>
<td>Final stock price</td>
<td>With difference</td>
<td>0.0000</td>
<td>-110.65</td>
</tr>
<tr>
<td>DE</td>
<td>Liability ratio to the owners</td>
<td>Without difference</td>
<td>0.0157</td>
<td>-2.1511</td>
</tr>
</tbody>
</table>

Above table includes central indices situation and dispersion in different variables. Criteria such as mean, median, minimum, maximum, standard deviation, skewedness, and kurtosis… are represented for research variables. According to the different measurements scale of research variables, comparison of above indices is not valid among research data and only it reports related criteria for each variable.

FIXITY OF VARIABLE

Fixity of variable is represented in this research in the form of following table.

Tab.2. Investigation of research variable fixity by using fixity test of Levin, Lin & Chu

<table>
<thead>
<tr>
<th>variable</th>
<th>Difference rate</th>
<th>Sig. level</th>
<th>Test statistics</th>
<th>Fixed/ unfixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR</td>
<td>Market risk</td>
<td></td>
<td>-121.84</td>
<td>fixed I(0)</td>
</tr>
<tr>
<td>P</td>
<td>Final stock price</td>
<td></td>
<td>-110.65</td>
<td>fixed I(0)</td>
</tr>
<tr>
<td>DE</td>
<td>Liability ratio to the owners</td>
<td></td>
<td>-2.1511</td>
<td>fixed I(0)</td>
</tr>
</tbody>
</table>
Data of above table show that all studied variables are fixed in respect to the fixity text of Levin, Lin & Chu without fixed difference.

**RESEARCH HYPOTHESIS TEST**

**First sub-hypothesis test:**

There is significant difference between volatility- taking of comprehensive income and net income with market risk.

First model fitting (the relationship between volatility-taking of comprehensive income and net income with market risk is different).

\[
MR_{j,t} = \beta_0 + \beta_1 \text{BVE}_{j,t} + \beta_2 \text{CF}_{j,t} + \beta_3 \text{NI}_{j,t} + \beta_4 (\text{CI}_{j,t} - \text{NI}_{j,t}) e_{j,t}
\]

The results of Limmer & Husman test

F test indicates that using panel data method is significant instead of consolidated method.

The results of test are represented in the following table.

Tab.3. The results of being significance the fixed effects versus pooled least squares method (F test of Limmer).

<table>
<thead>
<tr>
<th>F test statistics</th>
<th>Degree of freedom</th>
<th>Value of PV possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1997</td>
<td>(29 and 147)</td>
<td>0.0012</td>
</tr>
</tbody>
</table>

Therefore, in this part, first sub-hypothesis will be tested using panel data regression. Because obtained significance level of Limmer test is less than 0.05.

Tab.4. The results of being significance the fixed effects versus random effects (Husman test).

<table>
<thead>
<tr>
<th>F test statistics</th>
<th>Degree of freedom</th>
<th>Value PV possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.6041</td>
<td>3</td>
<td>0.0255</td>
</tr>
</tbody>
</table>

Husman test results and significance level of test show verification of fixed effects versus random effects.

Tab.5. The result of model estimation with fixed effects method of dependent variables: MR

<table>
<thead>
<tr>
<th>Result in model</th>
<th>Sig level</th>
<th>T statistic</th>
<th>Variables coefficients</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>effective</td>
<td>0.000</td>
<td>-2.1563</td>
<td>-0.0115</td>
<td>Liability ratio DE</td>
</tr>
</tbody>
</table>

Above model indicates the relationship between dependent and independent variables of market risk (MR) in the form of panel data with fixed effect. As in above model, R² shows, independent variables explain 0.93% of dependent variable changes. Also, Durbin-Watson statistics and significance level of model represent that goodness criteria of model are acceptable and the above model has appropriate fitting.

Dependent variable of liability ratio to the owners with significant level of less than 0.05 and negative coefficient of 0.015 has had negative and significant effect on the above regression equation, so that impact of liability ratio to the owners on dependent variable of market risk has been negative and significant and with each unit of changing in DE variable, MR variable will be decreased.

Operational cash flow ratio variable to the current liabilities in the above model is significant and has negative impact on the dependent variable of MR so that with each unit of increase in CF variable, dependent variable will be decreased by 6.91.

Variable of Comprehensive income volatility-taking and net income in an above model is significant. So with significant coefficient of (σ_CI – σ_MR), we can find the difference in the relationship of comprehensive income volatility-taking and net income on market risk. The research hypothesis is accepted based on the difference in the relationship between comprehensive income volatility-taking and net income on market risk.

**Second sub-hypothesis:**

There is significant relationship between volatility-taking of comprehensive income and stock price in capital market.

Second model fitting (the relationship between volatility-taking of comprehensive income and stock price).

\[
P_{j,t} = \beta_0 + \beta_1 \text{BVE}_{j,t} + \beta_2 \text{AE}_{j,t} + \beta_3 (\text{DE} \times \text{AE})_{j,t} + \beta_4 (\text{CF} \times \text{AE})_{j,t} + \beta_5 (\sigma_{CI} - \sigma_{DE}) e_{j,t}
\]

The result of limmer and Husman F test
F test indicates that using panel data is significant instead of consolidated data. The results of these tests are presented in the table below.

Tab.6. The result of being significance the fixed effects versus pooled least squares method (limmer F test)

<table>
<thead>
<tr>
<th>F test statistics</th>
<th>Degree of freedom</th>
<th>Value of PV possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4805</td>
<td>(29 and 86)</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Since obtained significant level from limmer test is less than 0.05 .

Tab.7. The results of being significance the fixed effects versus random effects (Husman test)

<table>
<thead>
<tr>
<th>F test statistics</th>
<th>Degree of freedom</th>
<th>Value of PV possibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0439</td>
<td>3</td>
<td>0.0095</td>
</tr>
</tbody>
</table>

Husman test results and significance level of test show verification of fixed effects versus random effects.

Tab.8. The result of model estimation with fixed effects method of dependent variables: P

<table>
<thead>
<tr>
<th>variables</th>
<th>Variables coefficients</th>
<th>T statistics</th>
<th>Sig. level</th>
<th>Result in model</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-1.62305</td>
<td>-2.2254</td>
<td>0.02</td>
<td>ineffective</td>
</tr>
<tr>
<td>BVE</td>
<td>0.7278</td>
<td>5.1668</td>
<td>0.00</td>
<td>effective</td>
</tr>
<tr>
<td>AE</td>
<td>1.8577</td>
<td>0.9156</td>
<td>0.36</td>
<td>ineffective</td>
</tr>
<tr>
<td>(DE*AE)</td>
<td>0.1600</td>
<td>2.6040</td>
<td>0.01</td>
<td>ineffective</td>
</tr>
<tr>
<td>( ( \alpha_{\text{CF}} \times \text{AE} ) )</td>
<td>3.9904</td>
<td>0.39877</td>
<td>0.69</td>
<td>ineffective</td>
</tr>
<tr>
<td>Intersection</td>
<td>1.4562</td>
<td>2.4562</td>
<td>0.02</td>
<td>ineffective</td>
</tr>
<tr>
<td>Durbin-Watson</td>
<td>2.22</td>
<td>Errors in model are not correlation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Determination coefficient (R²)</td>
<td>0.99</td>
<td>99% of P changes is stated by significant dependent variables</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

R² criterion in the above model indicates that 99% of P dependent variable changes are explained by independent variables. In fact, explanatory of the model is 0.99 also, Durbin-Watson statistics which is placed among 1.5 to 2.5, indicates there is no auto correlation in the model, in this model is 2.22 which confirm that there is no auto-correlation in the model.

Significance level of BE variable is 0.05 in the above model that represents this variable is significant. Also, positive coefficient of this variable confirms positive effectiveness of this variable on dependent variable. Therefore, totally per each unit of increase in the variable, book value of equity, final stock price variable will be increased by 0.7.

Abnormal income variable for each stock is not significant due to significance level of higher than 0.05 in the above model.

Interaction between abnormal income per stock and CF is not significant in the above model due to significance level of higher than 0.05.

Interaction between abnormal income per stock and liability ratio to the owners is significant in the above model and it has positive and significant relationship on P dependent variable. Therefore, the research hypothesis is accepted based on the significant relationship between comprehensive income volatility- taking and stock price in this study.

**CONCLUSION**

The difference of comprehensive income volatility- taking and net income in the above model is significant. Therefore, by having significant (G2t – G2f) coefficient, we can find that there is a difference in the relationship of comprehensive income volatility- taking and net income on market risk. The hypothesis of this study is accepted based on the difference in the relation of comprehensive income volatility- taking and net income on market risk.

Interaction between comprehensive income and abnormal income per stock in the above model is significant and it has positive and significant relationship on P dependent variable.so the hypothesis of this study is accepted based on the significant relationship between comprehensive income volatility- taking and stock price in this study.

**REFERENCES**


[4] Haghghat, H,Motamed,,M (2011) ,the investigation of the relation between volatility- taking and predictability of


