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Naive Investor Hypothesis Application in Jordan

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Abstract
When it comes to the manipulation of earnings the use of accounting accruals is preferred because it maximizes incentives. A study sample consisting of 44 industrial companies, listed in Amman Stock Exchange during the period (2004-2011), examining the five models of the study's hypotheses is done using Regression analysis to present the relationship between accruals, risks and stock prices. The incremental information content for the variables was obtained using (Adjusted-R^2) and found the following results: Future profitability in Jordanian companies can't be predicted by stock market prices, and; accruals have incremental information content when predicting future profitability relative to stock market prices and profitability. Lastly, naive investor hypothesis is tested and the findings indicate that there is a relationship between bankruptcy and systematic risks in one side and accruals in the other.
Keywords: Accruals, Abnormal Accruals, naive investor hypothesis, Financial Risks, Stock prices.

Introduction

During the last century, within the last decade, the subject of accruals explanatory power in accounting literature saw it grow in popularity. Different accruals hypotheses were investigated both theoretically and empirically in numerous studies.

The reason why accruals are considered the preferred instrument, when it comes to manipulation is because of their relative low cost and also because of their unobservable nature. An example of this is increasing earnings in the current period thought overstating revenues. That will then lead to a decrease in earnings during the future period, and that results through the understating of revenues. Furthermore, through the extension of the useful life of an asset in order to decrease depreciation expense, thus leading to the increase of earnings, will most certainly lead to a decrease in earnings sometime in the future.

Researchers have pointed out for the longest time that managers, have more authority over existing accruals than they do when it comes to long-term growth. Several research studies that were conducted used an assortment of accrual prediction models for various objectives. Through investigation, the most well-known method can be broken down into simpler ones. These simpler ones concentrate on the measurement of total accruals. It also concentrates on the more sophisticated ones. The sophisticated measurements require the breaking down of accruals into abnormal and normal accruals

Reported earnings may be misrepresented to investors by company managers. This may be done because the managers want the company's financial position to look much better than it is. This is done through the control of the abnormal portion of accruals. While that information may be kept in mind it does not mean that, rational investors would correctly expect this manipulation by the managers; (rational investor hypothesis).

Inexperienced investors might misinterpret the earnings that have been reported as high considering them favorable. They would associate these earnings as an indication about the company's health, undervaluing the risk of the company. If that is done that means that, there is a negative relationship between company risks and the discretionary (abnormal) accruals (naive investor hypothesis).

This research investigate whether the Jordanian market naively or rationally explain irrelevant risk information included in accruals. In order to differentiate between the two hypotheses (Naïve and Rational), the relationship that is found between company risk and accruals need to be examined. It then requires the evaluation of the specification and power of abnormal accrual model, in a sample Jordanian listed companies that are considered of non-financial firms.

When it comes to the remained of the study it is organized as follows:

1) The researcher first begins with identifying the research problem.
2) It is then followed by examining the literature review.
3) Then the study methodology is presented.
4) Lastly but most importantly the study of the empirical results and conclusions are thoroughly reported.

Research Problem

In order to examine the relationship that is found between accruals on one side of the spectrum and between profitability and risk on the other end of the spectrum the below research problems must be investigated:

1. Do accruals have fundamental information that is relative to stock market prices and profitability when it

comes to forecasting future profitability?
2. Do accruals have any association with systematic risks level?
3. Do accruals have any association with insolvency risks level?

Previous Studies

The topic of accruals is not new and has been discussed in the academic literature of the field for a long period of time.

In the emerging market, Algharaballi, and Albuloushi, (2008) looked at four models. These models that were developed in prior research were done to see if there were any abnormal accruals in Kuwaiti listed firms. The models that were used are the following: the Jones model, modified Jones model, extended Jones cash flow model, and working capital accruals model. The results that were found in previous studies were consistent to the results found in this specific study. The outcome of this study made it very clear that all four models were very well specified when it came to their application of them to random samples for the firms that were listed in Kuwait Stock Exchange. All models show almost the same power capability when expense manipulation was undertaken. When it came to the Jones model, it should be noted that it displayed the highest power when it came to detecting the income increasing accruals through the manipulation of revenue.

Ali et al. (2000) and Subramanyam (1996) and have both found that the abnormal (discretionary) accruals have better enhanced the ability to forecast future earnings. The aim of Ali et al (2000) is to better understand and research if the correlation that is found between accruals and future returns is because of investors that were naive. Through the use of regression models on 86 firms in the U.S. found that the ability of accruals to predict profitability was not higher for the big firms.

Cardoso, et. al, (2008) examined if the level of accruals is different for companies in which the corporate governance level is certified in comparison to companies that are not. They also examined companies where their stocks are negotiated that have high liquidity in comparison to those that have the low liquidity. The study examined Jones original model (1991) and a sample with 1,791 observations that were collected from 1997 until 2004. The empirical results from the research revealed that in fact that there was in fact no significant statistic difference in the level of accruals between the firms that are listed or are not listed in the corporate governance index.

When looking at the relationship that is found between companies and abnormal accruals, and the relationship that is also found between companies surrounding risks and abnormal accruals there are many articles that have examined this. Yasuda, et al. (2004) wanted to show what was the empirical relationship that is found between abnormal accruals and bank risk. He showed this using the Jones (1991) model that was conducted on 48 Japanese banks. The bank risk has a negative association with accruals, and this shows that the investors misinterpreted the earnings that were reported to be high as favorable information when it came to the banks financial health. Before Yasuda study Peltier-Rivest (1999) chose 127 firms that were very troubled and were located in the U.S. These firms reduced their dividends because of the operating risks and discovered that those particular firms used income-decreasing accounting policies.

In literature that is related to this field is the research that is being done in order to determine the risk behavior of companies. Anderson and Fraser (2000) have discovered that the firm risk increases in managerial ownership during the relative periods of deregulation, but on the other hand, it should be noted that firm risk is negatively related to the managerial ownership. Chen et al. (1998) also discovered that there is a negative relationship found between company risk and the managerial ownership. Demsetz and Strahan (1997) have also discovered that when it comes to larger firms that they are better diversified.

Accounting measures are used in several countries to regulate industries such as banking, insurance and utility. A large amount of evidence shows that banks that are close to capital adequacy requirements have a tendency to overstate their reserves or consider book gains seeing securities (see for example Collins et al. (1995) and Moyer (1990)). Jones (1991) showed that the firms in the industry looking for import relief had the tendency to recognize negative abnormal accruals in order to defer income in the year of application. Key (1997) studied accruals for the USA firms in the cable TV industry during the time when deregulation plans were up for debate in Congress. The evidence that was collected then showed a direct consistency with the earnings understatement.

Research Hypotheses

Five hypotheses will be tested to achieve the research objectives as follows[1]:-

H_{01}:- Stock market prices can't forecast firms' profitability.

H_{02}:- Current return on assets doesn't have incremental information when forecasting firms' future profitability relative to stock prices.

[1] (Accruals refer to abnormal accrual component in the rest of the study).

H_{03}:- Accruals don't have incremental information when forecasting firms' future profitability relative to current return on assets and stock market prices.
H_{04}:- There is no relationship between accruals and systematic risks.
H_{05}:- There is no relationship between accruals and insolvency risks.

Research Models and Variables

The following pooled regressions are used to study the information content for accruals, (Yasuda, et al. 2004):

Model (1):-

$$ROA_{it}= a_0+ a_1ST_{it-1}+ e_{it}$$

Where:

ROA_{it} = the ratio of net income to Assets at year t of the firm i which refer to future profitability.
ST_{it-1} = (market value of equity) and represents by multiplying the number of shares outstanding in year t-1 by the stock market price then dividing the total by lagged total assets.
a_0 and a_1 = Factors.
e_{it} = Error term.

Instead of the use of market value equity stock prices are used and this is because there are other variables that are used to measure at the firm level instead of per share from (Kallunki and Martikainen, 2003). So, the relationship between future profitability and the stock market prices is examined in this model in order to see the ability of stock market prices in forecasting future firms' profitability. This is done through the use of a simple regression and it shows the significance of ST_{it-1} and Adjusted-R^2. In order to examine the first hypothesis this model is used.

Model (2):-

$$ROA_{it}= \beta'_0+ \beta'_1ROA_{it-1}+ \beta'_2ST_{it-1}+ e_{it}$$

Where:

ROA_{it-1}= net income over average total Assets at year t-1 which refer to current Profitability.

In this model, the investigation will examine the incremental information of current Return on Assets (profitability) to relative stock prices when it comes to forecasting future profitability. This process will be carried out through the execution of a multiple regression and will show the significance of independent variables and Adjusted-R^2 factors, and then compares Adjusted-R^2 factors differences between models (1) and (2). That is the model that will be used to investigate the second hypothesis.

Model (3):-

$$ROA_{it}= \gamma'_0+ \gamma'_1ROA_{it-1}+ \gamma'_2ST_{it-1}+ \gamma'_3\ ACC_{it-1}+ e_{it}$$

Total accruals (TA) are computed by subtracting operating cash flow (OCF) from the net income (NI): -

$$TA= NI-OCF \quad \ldots\ldots 2.1$$

To control the changes in the economic circumstances of the firm the following regression model will be used (Jones, 1991):

$$Accruals_{it}/A_{it-1}= b_1\ [1/\ A_{it-1}] + b_2\ [\Delta\ REV_{it}/\ A_{it-1}] + b_3\ [PPE_{it}/\ A_{it-1}] + \check{e}_{it} \quad \ldots\ldots 2.2$$

Where:

$\Delta\ REV_{it}$= change in revenues;
PPE_{it} = Fixed assets (property, plant and equipement);
A_{it-1} = total assets;
$\check{e}_{it}$ = error term[1];
i = firm
t = 1,…, t_i, year index.

Change in revenues, plant and equipment along with gross property are all part of the equation and are added in the exception model in order to control the changes in the normal accruals that are caused by the changing conditions.

The total accruals include the changes in the working capital accounts (current assets minus current liabilities), and all of that depends on any changes in revenues.

Gross property along with plant and equipment are part of the control for the portion of total accruals that are related to the depreciation expense. This is versus the change in depreciation expense that is part of the total accruals measure. The residual of this equation is estimated the abnormal accruals in year t-1 (Jones, 1991).

To test the third hypothesis using this model, the information content of accruals relative to market stock prices and ROA are being used when it comes to forecasting future profitability. This is done through the execution of multiple regressions and this indicate the significance of independent variables and Adjusted-R^2 factors, and it then compares the Adjusted-R^2 factors between models (3) and (2).

[1] An estimation of the abnormal accruals.

Model (4):-

$$BETA_{it} = v_0 + v_1\ ACC_{it-1} + v_2 ASSET_{it-1} + e_{it}$$

Where:

$Beta_{it}$= refers to systematic risk.

The market model is used to derive systematic risk using of the monthly data, for the study period as follows:-

$$R_{it} = \beta_{0i} + \beta_{1i}\ R_{mt} + e_{it}$$

Where:-

R_{mt}= Market index return

R_{it}= Market Return for the firm.

β_i= Stock beta for firm i.

This model is used to examine "Naive Investor Hypothesis" (Yasuda, et al 2004).[1]

To control the main factors that may affect Beta The natural log of the book value of total assets are added. This is needed because larger firms have more flexibility when it comes to dealing with any type of unexpected liquidity shortfalls and have better access to investment capital markets. This is also because larger firm also have the ability to diversify risk (Demsetz & Strahan, 1997). So for this reason, the level of firm risk has negative relationship with firm size.

Model (5)

$$Z_{it} = \beta_0 + \beta_1 ACC_{it-1} + q_2 ASSET_{it-1} + e_{it}$$

Where:

"Z-score" (Z_{it}): insolvency risk measure.

The following equation is used to calculate Z-score (Boyd et al 1993):-

$$Z = (\pi / TA + E/A) / S_r$$

Where π is net income, E is net assets (equity), TA is total assets, and S_r is return on equity standard deviation.

The "Z-score", which is the insolvency risk, are the statistics that indicate the probability of a firm going bankrupt. This model examines the relationship between level of insolvency risk level and abnormal accruals, and used to test the last hypothesis.

Population and Sample

The population to examine this is made up of the Jordanian Industrial listed companies in the Amman Stock Exchange (first and second markets), during the study period. 44 companies will represent the study sample because there is an availability of data.

Descriptive Statistics

Table (1) identifies the descriptive measures for the main variables.

Table (1)
Descriptive Statistics

Variable	Mean	Median	Standard Deviation	Minimum	Percentile 1	Percentile 99	Maximum
Net Income	2,596,342	464,399	12,128,955	-68,848,324	-6,250,893	51,672,978	161,192,023
ACC	-0.026	-0.002	0.130	-0.722	-0.456	0.313	0.725
ST	0.976	0.723	1.184	367,544	546,128	4.967	17.34
Beta	0.518	0.391	0.868	-8.38	-1.421	3.122	5.91
Z-Score	22.23	16.28	33.09	-2.01	-0.567	143.11	406

The maximum values are near the percentile (99) and the minimum values when it comes to the variables are near the percentile (1). That indicates that the variables data is normally distributed, and the interchange between median and mean this then leads to the same conclusion on this subject matter.

When the abnormal accruals have a negative average, that indicates that the total accrual are in the negative when it comes the majority of the sample. This result due to the average net income is less than the average operating cash flow. That indicates that it is normal due to the fact that there are much more expenses like amortization and depreciation have been subtracted from the income.

[1] (Yasuda, et al 2004) used in Japanese market the same model to study the relationship between risks and profitability.

Table (2)
Correlation matrix: Pearson (Spearman)

Variable	Factor	ROA_{it-1}	ROA_{it-2}	ACC	ST
ROA_{it}	Pearson Spearman	0.321*** (0.651)***	0.121** (0.471)***	0.083 (0.181)***	0.029 (0.374)***
ROA_{it-1}	Pearson Spearman		0.182*** (0.583)***	0.029 (0.154)***	-0.054 (0.369)***
ROA_{it-2}	Pearson Spearman			0.023 (0.117)*	-0.153*** (0.291)***
ACC	Pearson Spearman				0.220*** (0.281)***

Table (2) shows the correlation matrix factors. It shows that the strongest relationship is found between the current and the previous return on Assets (ROA). It then shows the relationship between the future and the current ROA, and then between the future and the past ROA.

The results of these correlations are normal and do in fact agree with the previous studies of those of Kallunki and Martikainen (2003) and Jones (1991). This shows that there are very strong relationships amongst the company's profitability as the years have passed.

Multicollinearity Problem

Variance Inflation Factor (VIF) is used in table (3) to investigate multicollinearity problem which affects the model power. It also affects its ability to explain the results. If that factor is less than (3) as in our study that means that in fact there isn't multicollinearity problem (Fox, 1991).

Table (3) VIF Factors

Model	Variance Inflation Factors *
1	1
2	1
3	1.03
4	1.02
5	1
* These values are the highest values in the models.	

Autocorrelation problem

Durbin-Watson factors are used to investigate the autocorrelation that is found among regression model residuals. If the Durbin-Watson factors are found to be between (1) and (3) as in our study then there isn't any autocorrelation problem in the study vaiables (Alsaeed, 2005).

Table (4) Durbin-Watson Factors

Regression Model	Durbin-Watson Factors
1	1.9
2	2.1
3	2.2
4	1.9
5	1.5

Hypotheses Testing

In table (5) the results of first three models results.

Table (5) Models Factors

Model #	Constant	ST	ROA_{it-1}	ROA_{it-1}	F-statistic	Adj R^2
1	-1.88 (-1.601)	3.65 (0.48)			(0.21)	*-0.004*
2	-1.78 (-1.38)	6.712 (0.832)	0.234 (6.17)***		(19.45)***	*0.093*
3	-1.64 (-1.24)	1.23 (0.87)	0.211 (5.843)***	1.04 (1.19)	(12.243)***	*0.095*

* The Factor is significant at the 0. 1 level.
** The Factor is significant at the 0.05 level.
*** The Factor is significant at the 0.01 level.

Model number 1:- $ROA_{it}= \beta_0+ \beta_1 ST_{it-1}+ e_{1it}$
The stock price coefficient does not have any significance and Adj R^2 equals about (0%), when the regression model was running, for the entire study period. This shows that the null hypothesis has to be accepted so that the stock prices do not have the ability to predict the future profitability. That then leads to the conclusion that the future profitability of Jordanian companies increases cannot by explained by stock prices increases.

Model number 2:- $ROA_{it}= \beta'_0+ \beta'_1 ROA_{it-1}+ \beta'_2 ST_{it-1}+ e_{2it}$
Through the addition of current profitability to this model, so that the value of its incremental information content can be studied in relation to how relative it is to stock prices when it comes to forecasting future profitability. On this basis, it can be expected with the use of the literature review as a base, that the current profitability predicts future profitability.

In order to test this hypothesis, Adj-R^2 for model (2) and model (1) must be compared, as seen in table (5), the Adj-R^2 increase and that means that the current profitability has incremental information that is relative to the stock prices, when it comes to forecasting future profitability. The outcomes of Vuong (1989), *Z* -statistic test, show that the distinction in the two adjusted R^2 is significant at the 0.01 with a *Z* -statistic of 2.91.

Model number 3:- $ROA_{it}= a_0+ \gamma'_1 ROA_{it-1}+ a_2 ST_{it-1}+ a_3 ACC_{it-1}+ e_{3it}$
through the addition of lag abnormal accruals; we can then study its effect on future profitability. As seen in table (5), Adj-R^2 increases in model and that the accruals factor is very important. This indicated that the accruals have incremental information content to the current profitability and stock prices, when it comes to forecasting future profitability. The outcomes of Vuong (1989), *Z* -statistic test, show that the distinction in the two adjusted R^2 is significant at the 0.01 with a *Z* -statistic of 2.12.

These results show that the abnormal accruals tools do help in forecasting future profitability. That means that Jordanian companies' managers use accruals to control the future profitability.

Table (6)
Relationship between Accruals and Risks

Model #	Constant	ACC_{it-1}	$ASSET_{it-1}$	F-statistic	Adj R^2
4 (Systematic risk)	-0.39 (-0.88)	0.64 (1.79)*	0.18 (1.69)*	(3.21)***	*0.017*
5 (Insolvency risk)	5.29 (0.31)	28.51 (1.83)*	2.61 (0.99)	(2.14)	*0.015*

* The Factor is significant at the 0. 1 level.
** The Factor is significant at the 0.05 level.
*** The Factor is significant at the 0.01 level.

Model number (4): $Beta_{it}= a_0+ a_1 ACC_{it-1}+v_2 ASSET_{it-1}+ e_{4it}$
The model shows that the relationship found between the company's systematic risk (beta) and the managers' tools that are used to manipulate earnings through the use of accruals have been examined.

Table (6) shows that the accruals coefficient is statistically significant and that the Adj-R^2 factor equal (1.7%), and that indicated that the accruals have the ability to forecast the systematic risk of a company. This indicates that the null hypothesis can be rejected, meaning that there is a relationship between systematic risk and accruals.

Model number (5): $Z_{it}= b_0+ b_1 ACC_{it-1}+b_2 ASSET_{it-1}+ e_{5it}$
In this model the relationship between insolvency or bankruptcy risks and accruals is investigated.

As displayed in table (6), the accruals coefficients are very significant and Adj-R^2 factor is equal to 1.5% in the all year regression. This then means that investors misinterpret the high reported earnings as being good indicators about company health which consistent with the naive hypothesis

The result of model (4) and of this result both agree with (Yasuda, et al. 2004), and that means that Jordanian investors are in fact not rational and do not have the ability to assess the financial risks.

Research Results

1. In Jordanian companies stock prices cannot forecast the future profitability. This is because there is a weak relationship between stock prices and the firm profitability.
2. Current return on assets (profitability) has incremental information that is relative to stock prices when it comes to forecasting future profitability. These results reinforce that the best indicator for future profitability is in fact the lagged one, and this also agrees with the previous studies and with literature review conducted on this matter.
3. Accruals do in fact have incremental information content when it comes to stock prices and current profitability for forecasting future profitability.

The findings show that in Jordan, the Jordanian companies actively use accruals, in order to achieve a target level when it comes to earnings.

4. Systematic risks and abnormal accruals are associated with one another. That then means that Jordanian investors are then mislead by the companies high earnings numbers.
5. It is found that there is a relationship between accruals and insolvency risks level. In Jordan, the Jordanian investors will not be able to correctly predict the "window dressing" done by company managers. This shows direct impact on the market valuation of firms' risks using abnormal accruals levels (naive investor hypothesis).

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