



The relationship of accruals and assets growth with return and risk level of companies listed in Tehran Stock Exchange

Hoda Hemati¹, Zohreh Hajih² and Hassan Durandish³

1PhD in Accounting, Assistant Professor and Faculty of Department of Accounting, Islamic Azad University, Roudhen, Iran

2 PhD in Accounting, Assistant professor, Islamic Azad University East Tehran Branch, Tehran, Iran

3M.A Student of Accounting, Department of Accounting, Electronic Branch, Islamic Azad University, Tehran, Iran

E-mail: hdoorandish@yahoo.com (corresponding author)

ABSTRACT

This paper addressed finance and behavioral finance theories including capital assets pricing and arbitrage theory. In addition, the relationship of the growth of assets and accruals with the financial performance of the firms listed in the Tehran Stock exchange over 2008-2013 was explored. The results showed that the growth of assets and abnormal returns has a relatively strong relationship with abnormally fluctuated shares. It was also found that returns on accruals are more strongly influenced by the group with highly abnormal fluctuations than by group with low abnormal fluctuations. In addition, results are similar when the size is controlled. These findings suggest that the negative correlation found between accruals and abnormal returns are mostly attributable to shares that have unusually high fluctuations.

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1. Introduction

The observed promiscuities in the pricing of assets, such as the known effects of accruals (Sloan, 1996) and assets growth (Cooper et al., 2008) have been considerably neglected and they can unexpectedly be present for many years. The effects of accruals and assets growth are being extensively explored as both of them were found to have a negative association with future returns and are widely used by active managers. In fact, managers tend to use accruals and assets growth as strategies to guide and manage earnings so that they can address in short-term some of the problems faced by their companies and create arbitrage opportunities. However, the costs incurred by arbitrage for the company in the stock market create some restrictions in the long term and do not allow managers to achieve their goals in the long term. In this study, unsystematic fluctuations are addressed by Fama and French model to measure the arbitrage risk.

The discovery of the impact of unusual fluctuations on extracting unusual returns stops investors from making a profit through any mispricing. This study in particular investigates whether accruals rate and assets growth apply to high abnormal fluctuations or not. In other words, it seeks to find out if accruals rate and assets growth exists in stocks with higher or lower abnormal fluctuations or not and if any or both of these promiscuities have a stronger predictive power in stocks with abnormal stocks. This casts doubt about whether a part of the usefulness of such promiscuities in predicting returns can be attributed to the costly effects of arbitrage that are measured by unusual fluctuations or not.

Arbitrage is an investment strategy that provides risk-free profits without any costs. The primary theoretical debates that were raised in support of efficient markets were based on the belief in speculation and balance the market in the form of arbitrage. Arbitrators play a central role in the standard finance. They are considered as investors who have perfectly rational expectations about the securities market. Arbitrators trade securities to the extent that the price of securities becomes equal to that of their alternative portfolios to ensure if there is a full replacement for securities (a portfolio of other securities that provide similar returns).

Today, the securities market is considered as one of the most important investment mechanisms in countries that are rapidly expanding. As such, it can be suggested that the more the economic and financial system in a country is directed towards efficient and optimal use of resources, securities markets assume a more important role. After nearly four decades, academic economists are still working hard to address the efficiency of financial markets (Emmons, Schmid, 2002). When Samuelson (1965) offered evidence that if rational investors in a competitive market want a fixed rate of return, the stock price should follow a random walk and Fama (1965) stated that the stock price is close in practice to the random walk, the role of stocks in the efficient markets hypothesis was revived. Consequently, Michael Jensen in 1978 was able to write: "Efficient markets hypothesis is the best realized truth in the social sciences" (Shleifer, Summers, 1990).

However, after the publication of the results of Schiller's (1981) and Leroy's and Porter's (1981) market volatility

tests, both found that fluctuations in the market are too high to be justified only in terms of dividends. Therefore, the results of these studies did not confirm the efficient markets hypothesis (Shleifer, Summers, 1990).

The present study is significant in the sense that it provides supports for the past studies that have shown abnormal fluctuations negatively influence the effective arbitrage. The discovery of the impact of unusual fluctuations on extracting unusual returns stops investors from making a profit through any mispricing. This study in particular investigates whether accruals rate and assets growth apply to high abnormal fluctuations or not. In other words, it seeks to find out if accruals rate and assets growth exists in stocks with higher or lower abnormal fluctuations or not and if any or both of these promiscuities have a stronger predictive power in stocks with abnormal stocks. This casts doubt about whether a part of the usefulness of such promiscuities in predicting returns can be attributed to the costly effects of arbitrage that are measured by unusual fluctuations or not.

It is surprising that the observed promiscuities in the pricing of assets, such as the known effects of accruals (Sloan, 1996) and assets growth (Cooper et al., 2008) have been considerably neglected as such promiscuities, in spite of the studies that try to describe them can be present for many years. Accordingly, this study tries to attribute abnormal returns that are partly related to accruals and assets growth to arbitrage risks due to the lack of close substitutes.

Literature review

A. Studies conducted abroad

Li and Sullivan (2010) conducted a study titled "Restrictions on arbitrage and promiscuity in the growth of assets and accruals" and examined the relationship of assets growth and accruals with return and unsystematic risk. In this study, the effects of accruals and assets growth were considered in particular as it has been known that both of them have a negative correlation with future returns and are widely used by active managers. Fama-French (1992) model was used to measure unsystematic risk. The results suggest that promiscuities in assets growth of assets and accruals are, in fact, stronger among stocks with higher unsystematic fluctuations.

Cooper, Gulen, and Schill (2010) studied growth of assets and stock returns in a cross-section fashion. They assessed the relationship between assets growth and corporate return using cross-sectional regressions. Their results indicated that assets growth is a variable that can strongly predict stock returns. The sample under study included all non-financial companies active in the New York Stock Exchange (NYSE), National Association of Securities Dealers Automated Quotations (NASDAQ), and the America Mercantile Exchange (AMEX) from 1968 to 2003.

Mashruwala, Rajgopal, and Shevlin (2006) conducted a study under "Why promiscuity in accruals is not an arbitrage?, The role of specific risk and transaction costs". They showed that promiscuities in accruals expressed by Sloan (1996) are present in firms with a high unsystematic risk. They also concluded that promiscuity also exists in accruals of firms with low turnover and price. Finally, it was found that the cost of promiscuities in accruals is higher than their benefits. The study was conducted in the time

period from 1976 to 2000 period on a sample of firms active in the AMEX.

Ang, Hodrick, Xing, and Zhang (2004) conducted a study on "Cross-sectional fluctuations and expected returns". The authors investigated cumulative risk of fluctuations in pricing using cross-sectional stock returns in the time period from 1963 to 2003. Theoretically, they found that stocks with high sensitivity to innovation in investment have lower returns. Their findings based on Fama-French model indicated that stocks with especially high fluctuations have approximately lower returns and this cannot be explained by the theory of cumulative risk of volatility. It was also shown that the ratio of book value to market value, momentum, and liquidity are not able to explain the low rate of return on high-risk stocks or low rate of returns on stocks with special volatility.

Hou, Hirshleifer, and Hong Teoh (2007) conducted a study entitled "Accrual abnormality: Risk or mispricing?" The main objective of the study was to investigate the relationship between stock returns and accruals. The authors used Fama-French Model to estimate unsystematic returns (i.e. three and four-factorial Fama-French residual terms were used to measure the unsystematic returns). They concluded that accruals are able to predict returns. The study was conducted over 1967 to 2005 and the research sample consisted of the firms listed companies on NYSE, NASDAQ, and AMEX.

Lam and Wei (2008) performed as research on "Limits of arbitrage and promiscuity in assets growth". They studied the role of arbitrage restrictions in creating a negative correlation between anomalous investment (promiscuities in the growth of assets) and the stock returns. The research hypothesis stated that if the negative relationship between investment and returns results from investors' reactions, this negative relationship will be stronger especially when there are several restrictions on the way to arbitrage. This hypothesis was confirmed in the research conducted by Lam and Wei (2008) over the time period of 1970 to 2007.

Core, Guay, and Verdi (2007) conducted a study entitled "Is the quality of accruals a risk factor?" in the NYSE. They used monthly data from April 1971 to 2002. Their study was based on a study conducted by Lafond, Olson and Peru (2005). Core and his colleagues pointed out that Flous studied the relationship between excess returns and factors affecting it without considering the quality of accruals as a price risk.

B. Studies conducted in Iran

There is no study concerning the relationship between unsystematic risk and corporate fundamental variables in the Tehran Stock Exchange. Following are some of the studies carried out on arbitrage or accruals.

In a study entitled "Application of the arbitrage pricing theory using macroeconomic variables in the Tehran Stock Exchange, Sajjadi, Farazmand, and Badpa investigated the application of the arbitrage pricing theory and the impact of unforeseen changes in economic variables such as inflation rate, money supply, exchange rates, oil prices, periodical structures of interest rates and industrial production on the expected return per share in the Tehran Stock Exchange. The quarterly data from 1997 to 2007 (44 seasons) were analyzed using seemingly unrelated nonlinear

regression analyses. The results showed that the risk premium for unexpected changes in variables such as money supply, exchange rates, periodical structures of interest rates, and industrial production is significant at the error level of 5%. Besides, it was found that the constraints of arbitrage pricing are applied to the promiscuous linear model. As such, the arbitrage pricing theory is considered as a rational model to explain the expected return per share and the macroeconomic variables are significant and are considered as sources of systematic risk in the Tehran Stock Exchange.

Mashayekhi, Fadaei Nezhad, and Kalate Rahmani (2010) conducted a study on capital spending, accruals, and stock returns and investigated accruals promiscuity (the impact of accruals on stock returns), capital spending promiscuity (the impact of capital spending on stock returns), and improving stock returns by simultaneously using both promiscuities in the Iranian capital market. To this end, portfolios formed on capital spending and accruals were tested using three different scales of returns in a sample of 480 firms listed in the Tehran Stock Exchange. The results indicated that after controlling Fama-French three risk factors, investors can make higher returns by simultaneous use of both promiscuities rather than making use of just a single promiscuity.

Haghighat and Iranshahi (2010) investigated investors' reactions to investment aspects of accruals aiming to investigate investors' reactions to those accruals that result in promiscuous accruals in the market among a sample of firms listed in the Tehran Stock Exchange over 1999-2007. The results showed that there are promiscuous accruals in the Iranian market that depend on investment information contained in accruals. It was also noted that investors in the Tehran Stock Exchange overreact to accruals.

Kurdistani and Shahsavand (2013) compared the excess returns of portfolios formed based on traditional and proportional (percentage) accruals. Instead of co-scaling accruals with average sum of assets, they were co-scaled using the absolute value of earnings (operating and net earnings). The resulting index was called proportional accruals. The results suggested that proportional accruals are considerably different from traditional accruals and they create major changes in the data classification. The portfolio formation through this strategy can result in gaining the excess return compared with traditional accruals. The excess returns of portfolios formed based on these two accruals were compared using the data from 158 firms listed in the Tehran Stock Exchange over 2001-2010. The findings indicated that portfolios formed based on low proportional accruals bring about higher returns.

Mashayekhi, Eftekhari, and Parvaei (2012) conducted a study on "Assets growth criteria in predicting future stock returns in the Tehran Stock Exchange: A factor analysis approach. They investigated the relationship between the assets growth and future stock returns from 2007 to 2011. As there are various indicators to measure the assets growth, a new indicator was developed using the factor analysis and was used in addition to main indicators of the assets growth. In addition, Fama-French model was used to investigate the relationship between the assets growth and future stock returns. a correlational research design was used and the data were analyzed using panel data multivariate regression analysis. The results showed a negative correlation between

the assets growth and future stock returns. It was also found that Liandres et al.'s assets growth model has a stronger prediction power than other indicators. In addition, the evidence indicates that the indicator estimated through the factor analysis does not have stronger prediction power than other assets growth indicators.

Dastgir and Sharzadi (2013) investigated the relationship between the disclosure quality and accruals quality in explaining the portfolios' excess return variations. According to authors, stock returns have received great attention from financial and academic journals and the accounting literature. The focus of the recent studies in the capital market has been on factors reducing the investment risk and their impact on stock returns. One of these factors is the disclosure quality and accruals quality in explaining the portfolios' excess return variations. Accordingly, the evidence from the firms listed in the Tehran Stock Exchange over 2003-2012 using the regression analysis indicated that there is no significant relationship between the disclosure quality and accruals quality and they are not complement to each other in explaining the portfolios' excess return variations.

Sahmani Asl and Mostafavi (2012) investigated the accrual relationship of corporate and industry cash flows and accruals with stock returns on a sample of 545 firm-years from the firms listed in the Tehran Stock Exchange over 2003-2008. The results indicated that both accruals and cash flows at the industry level are significantly correlated. However, such relation does not start and end earlier than the relationship of cash flows and accruals with stock returns and this rejects the profit timing hypothesis. In addition, there is no significant relationship between cash flows and accruals at the industry level and industry-level accruals are more related than corporate accruals in terms of value. However, there is no need to disintegrate the corporate profit into its components as they not provide a stronger explanatory power beyond the industry profit.

Research questions

The following questions were addressed in this study:

- Is there any significant relationship between accruals and abnormal stock returns?
- Is there any significant relationship between accruals and unsystematic risk?
- Is there any significant relationship between assets growth and abnormal stock returns?
- Is there any significant relationship between assets growth and unsystematic fluctuations?

Research hypotheses

First group: Accruals

- There is a significant relationship between accruals and abnormal stock returns.
- There is a significant relationship between accruals and unsystematic risk.

Second group: Assets growth

- There is a significant relationship between assets growth and abnormal stock returns?
- There is a significant relationship between assets growth and unsystematic fluctuations?

Research Methodology

As the results of the study have significant implications for organizations' managers, the present study is considered as an applied research in terms of its objectives. An applied research is a research that uses theories, regularities,

principles, and techniques formulated in basic theoretical studies for solving real and practical problems (Khaki, 2008, p. 142). Since the findings of this study can be applied in practice it is regarded as an applied research. Besides, the present study is a descriptive-correlational research since it explored how free floats are correlated with dependent variables such as returns, volatility, and liquidity. The data used in this study were actual data collected through observation. Accordingly, this study is a panel data research since in addition to time it also accounts for cross-sections. Regarding the method of data collection, the present study is a documentary research as the materials and information related to the literature were collected from books, papers, and journals and the actual data were information available from the website of the Tehran Stock Exchange. This study is a correlational research and was conducted over 2008-2013. Besides, the location of the study is the Tehran Stock Exchange. To answer the research questions and test the research hypotheses, panel data were analyzed using econometric models by Eviews7 Software.

Research model and variables

The following two models were implemented to investigate the relationship between accruals and abnormal returns (First hypothesis):

$$r_{t+1} = \alpha_{0,t} + \alpha_{1,t}ACCRU_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

The following model was also implemented to investigate the relationship between accruals and unsystematic risk (Second hypothesis):

$$IVOL_{t+1} = \alpha_{0,t} + \alpha_{1,t}ACCRU_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

In addition, the following two models were run to investigate the relationship of abnormal returns and unsystematic risk with the assets growth (Third and fourth hypotheses):

$$r_{t+1} = \alpha_{0,t} + \alpha_{1,t}ASSETG_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

$$IVOL_{t+1} = \alpha_{0,t} + \alpha_{1,t}ASSETG_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

In the above models that are run using the panel data, the following variables are estimated:

1. Accruals (ACCR): This variable is measured in two ways:

– **Accr1:** Accruals = change in working capital = accounts receivable + inventories – accounts payable - tax payable + other assets

– **Accr2:** Current accruals = Net profit before unexpected items - (change in current assets) – (change in current liabilities)

2. Assets growth (ASSET): This variable is calculated through the following methods:

– **ASSET1:** The difference between the (total assets of the current year) and (the total assets of the last year) is divided by (total assets of the last year).

– **Asset2:** The sum of (the inventory of the current year minus (inventory of the previous year)) and (properties, machineries, and equipment of the current year) minus (properties, machineries, and equipment of the last year) divided by (total assets of the last year).

3. Firm size (SIZE): Firm size is the same of the natural logarithm of the market value of the firm.

4. Book value (BM): It is Logarithm of 1 plus the ratio of book value to market value of equities.

5. Stock returns (R): it is the returns on stocks.

The simplest way to estimate stock returns is the value added method shown as follows:

$$R = \frac{(P_{t+1} - P_t) + DPS_t}{P_t}$$

Where, R_t is return on common stocks in period t , P_t shows the price of common stocks at period t , P_{t+1} stands for the price of common stocks at period $t+1$, and DPS_t is the dividends at period t .

Finally, return on common stocks for a firm is estimated as follows:

$$R_t = \frac{(1 + \alpha)Pt + 1 DPSt - P - C}{Pt}$$

Where, α is the increased percentage in funds (from the reserves, earned cash, or receivables) and C is earned cash as the funds increase.

6. Unsystematic risk (IVOL):

– All of the above variables are annual variables whose data were collected for 208 firms from 2008 to 2013 (6 years).

– Unsystematic risk is the product of a series of monthly time-series regressions. This means that for all 208 firms under study, the regression models is run using monthly data from 2008 to 2013 as follows:

$$R_{i,t} - R_{f,t} = a_i + b_i (R_{M,t} - R_{f,t}) + s_i SMB_t + h_i HML_t + \varepsilon_{i,t}$$

Then, the standard deviation of the regression residual term is calculated annually (12 standard deviations for each year) to calculate unsystematic risk annually for each firm. Since the assets growth assets and accruals are calculated in two ways, all models used in this study (in which these two variables exist as explanatory variables) are run in two ways. In addition, by grouping the firms under study based on systematic risk (IVOL) into above and under the mean, the following models are run to determine the relationship of unsystematic risk with assets growth and accruals in the two groups:

The relationship between assets growth and unsystematic risk is estimated as follows:

$$IVOL_{H,t+1} = \alpha_{0,t} + \alpha_{1,t}ASSETG_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

$$IVOL_{L,t+1} = \alpha_{0,t} + \alpha_{1,t}ASSETG_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

Besides, the relationship between assets growth and unsystematic risk is estimated as follows:

$$IVOL_{H,t+1} = \alpha_{0,t} + \alpha_{1,t}ACCRU_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

$$IVOL_{L,t+1} = \alpha_{0,t} + \alpha_{1,t}ACCRU_t + \alpha_{2,t}Size_t + \alpha_{3,t}BM_t + \varepsilon_{i,t+1}$$

In fact, by implementing the above models, the relationship of accruals and unsystematic risk with assets growth in both groups is measured.

Results

Since the probability value for both ACC1 and ACC2 is < 0.05 , so the estimated coefficients for these two variables in relation to the dependent variable (stock returns) are statistically significant and the first hypothesis is confirmed. The results of testing the second hypothesis suggests given the probability values for accruals (ACC) in

the two above models, the obtained coefficients for the explanatory variable in the first method (ACC1) is not statistically significant (at significance level of 95%) but it is statistically significant in the second method. In addition, the results of testing the third hypothesis indicate that assets growth (in both cases) has a significant relationship with

stock returns. The results of the two models for the fourth hypothesis indicate that assets growth in the first method (Ass1) has no significant relationship with unsystematic risk, but in the second method (ASS2) there is a significant relationship between the two variables. Table 1 shows a summary of the results of the study:

Table 1: Summary results of the implementation of models to test main research hypothesis

Dependent variable	Independent variable	Prob.	Relationship
Return (RET)	ACC1	< 0.05	Significant
	ACC2	< 0.05	Significant
	ASS1	< 0.05	Significant
	ASS2	< 0.05	Significant
Unsystematic risk (IVOL)	ACC1	> 0.05	Not significant
	ACC2	< 0.05	Significant
	ASS1	< 0.05	Significant
	ASS2	> 0.05	Not significant

Table 2 shows the results of dividing the firms into two groups of growth firms and accrual firms and testing hypotheses related to the firms above and under the mean. As can be seen, unsystematic risk has a significant relationship with accruals for firms that are above the mean in the first case (ACC1) but there is no significant relationship between the two variables in the second case (ACC2). In addition, unsystematic risk has a significant

relationship with assets growth in the first case (ACC1) but it has no significant relationship with ASS2 at the confidence level of 95%.

As the results indicate, unsystematic risk and accruals for firms under the mean are significantly related in one case but not in the other. In addition, unsystematic risk is not significantly correlated with assets growth for the firms under the mean in both cases of ASS estimate.

Table 2: Results of the implementation of the models for firms above and under the mean

Companies	Dependent variable	Independent variable	Prob.	Relationship
Above the mean	Unsystematic risk (Ivol)	ACC1	< 0.05	Significant
		ACC2	> 0.05	Not Significant
		ASS1	< 0.05	Significant
		ASS2	> 0.05	Not Significant
Under the mean	Unsystematic risk (Ivol)	ACC1	> 0.05	Not Significant
		ACC2	< 0.05	Significant
		ASS1	> 0.05	Not Significant
		ASS2	> 0.05	Not Significant

Discussion

The results presented in the above table are consistent with a study by Li and Sullivan (2010) as it was found that the two promiscuities (assets growth and accruals) are not significantly related to unsystematic risk in the lower mean firms but this relationship was confirmed for firms above the mean. Therefore, the relationship between assets growth and abnormal returns shown in Table 2 is applied widely to stocks with relatively high fluctuations. This shows that investors who seek abnormal returns in firms with higher assets growth should therefore bear higher arbitrage costs. Therefore, they may face highly uncertain outcomes. Thus, unusual fluctuations play an important role in increasing arbitrage costs for investors who are seeking to arbitrage the assets growth and assets growth promiscuity may actually arise from unsystematic risk due to the lack of close substitutes.

Second, Table 4 shows that earnings from accruals are more strongly influenced by high unusual fluctuations than by low unusual fluctuations. The results are not similar when the firm size is not controlled. These findings suggest that

the negative correlation between accruals and abnormal returns observed are mostly attributable to stocks with unusually high volatility.

The results of this study show that all hypotheses in this study are confirmed and those investors who seek abnormal returns in firms with higher assets growth should therefore bear higher arbitrage costs. Therefore, they may face highly uncertain outcomes. Thus, unusual fluctuations play an important role in increasing arbitrage costs for investors who are seeking to arbitrage the assets growth and assets growth promiscuity may actually arise from unsystematic risk due to the lack of close substitutes. Besides, earnings from accruals are more strongly influenced by high unusual fluctuations than by low unusual fluctuations. The results are not similar when the firm size is not controlled. These findings suggest that the negative correlation between accruals and abnormal returns observed are mostly attributable to stocks with unusually high volatility.

Based on the findings and limitations of the present study, the following suggestions are offered:

- Accruals and their relationship with risk and return are measured using other accounting approaches.

- Assets growth and relationship with risk and return are measured using other accounting approaches.
- This study can be replicated on grater populations at extended time periods.

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