An examination of stock categories; growth stocks and value stocks in Tehran Stock Exchange approved companies

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Abstract:

Selecting stocks and creating suitable and profitable portfolio is considered as a multi-dimensional, multi-phase challenge in Iran's current investment market. There are many differences between Growth stocks and Value stocks in sense of the effect of human factors such as risk, revenue, high and low market activity, time horizon, and company sizes on investment market. Investors are always concerned about making decisions in order to select the stocks and create a high revenue portfolio. This study examines the subject of categorizing stocks into growth and value stocks in Tehran Stocks Exchange on period 2006 to 2010. Required data were collected from fiscal tables provided by the companies accepted in Tehran Stocks Exchange market. Obtained results show that statistically significant difference in size, revenue, and risk of investment can be observed between Growth stocks and Value stocks when the measure of book value to market value for shareholders' equity is used for categorizing companies to growth or value. While when using "price to Earnings ratio" as the basis for this categorization, the difference is observed during fewer number of years (maximum 2 years), which indicates higher efficiency of this measure relative to equity book value to market value measure for stating the differences of these two portfolios regarding size, revenue and risk of investment.

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1. Introduction

Capital and investment are the requisites of transition from underdeveloped economy into developed economy. Hence, the required condition of economical success is to provide and equip investment resources, and to allocate these resources adequately to most efficient sectors. On the other hand, it can be said through a personal viewpoint that all individuals in a normal society are looking for better welfare. It is natural therefore, for investors to seek their investment opportunities in order to obtain most revenues (Hejazi and Fatemi, 2008). As such, the resources have to exist to provide capital for investments. The best capital resource is the savings of society's members. Therefore robust mechanisms should be used in order to guide these savings towards productive activities and provide financial needs of various sectors of economy. Therefore, the investment market and specifically stock exchange market is the best place which allows for using savings in productive sectors. In capital offer viewpoint, investors actually do investment based on various measures and reasons. Risk and revenue are considered as two important factors in investment decision making process. Investors expect more reward against the risk they take in risky stocks in which they invest. Therefore, high risk securities should have high revenues in order to compensate for additional risk they impose (Foroughi et al., 2010). One usual method to categorize shares according to risk is to do this task is to use "Growth Stocks" and "Value Stocks" (Petkova and Zhang, 2005). All the performance differences between growth and value stocks, is based on this fact that growth stocks are more risk-taking. Expensive stocks are associated with higher risk relative to cheap stocks. If a portfolio includes a large number of expensive stocks, it will have very different revenues from one year to another. Hence, more revenue is expected from these stocks and unfortunately the market often gets surprised in this case and in return, the market expects lower revenue from cheap stocks, their revenues in time periods are more stable, and market faces intense shocks in fewer occasions. It is expected that most risky stocks provide the lowest revenue in the future and the stocks with lowest risk result in higher revenues (Fama Eugene and Kenneth French, 1992). In today's world, obtaining financial knowledge, cost decrease, selecting best and most profitable stocks, and optimal use of capital in stock investment are indispensable parts of measures and activities of investors. The existing differences between growth and value stocks, and the factors effecting on them has indicated the investors to consider modern financial knowledge, acquisition of this knowledge, and paying more attention to market conditions and time periods when doing investments. Growth stocks and

value stocks have different risks and revenues due to company size, time periods (short time, average, and long time), high and low market activity. As above factors indicate, research in this field is required and necessary for Iranian investment market to arise active and booming. Therefore this study concentrates on comparison of growth and value stocks in sense of revenue, company size, and highlighting the differences between them considering above factors for investors.

2. Theoretical basis and research history

2.1 Growth and Value stocks

Investment is an important factor of development in present century. Hence, selecting the best type of investment is of high importance both personally and socially (Hejazi and Fatemi, 2008). A usual categorization in field of stocks risk acceptance is based on growth and value stocks (Pontiff et al, 1997). The growth stock is the one which its price is higher than market average relative to cash flows, profit, dividends, and nominal value. Growth stocks are provided by companies which are not yet mature and abstain from paying dividends as far as they can. These companies generally have adequate investment opportunities. The main reason for investors to invest in growth stocks is to invest on future growth of the company. Growth investors seek to invest on the stocks of companies which had experienced faster than average growth in last time periods, and therefore have a high growth potential. Growth is measured here by factors such as benefit increase or sales amounts of the company (Fama Eugene and Kenneth French, 2007). The value stocks, are those with lower than market average prices relative to cash flows, dividends, and nominal values (Fama and French, 1998). Investors consider the value of the company on the date in order to decide investing in value stocks, and don't expect significant growth or major change in company profitability. For this reason, this type of investors enjoys higher confidence margins than growth stocks investors. Value stocks belong to companies which have desirable position in sense of revenues but the stock market has temporarily assigned lower than average prices to their stocks. Therefore investors expect the market to discover this error and the stock price to increase (Pontiff et al, 1997). Value stocks are a type of stock which has lower revenue, dividends, nominal value or other basic indices in comparison to similar companies in the industry, and consequently the stock price is evaluated cheaper by the market according to measures like price to earnings ratio and nominal value to market price ratio (Shiller, 2000). Growth and value stocks are two ends of the profit making spectrum. Growth stocks are in the lower end and value stocks are at the higher end. In this way, the growth stocks always moves towards high dividends and fast growth in company evolution process while dividends of value companies will decrease, they grow with slower

pace, and move towards low profitability (Gulen et al, 2008).

2.2 Research history

Shahbande (2006) has compared the companies having growth stocks and those having value stocks in Tehran Stock Exchange between 2001 and 2005 in his research. The results showed that a significant relationship existed between company size and growth or value stocks in those years. Raei and Shwakhi (2006) have addressed the performance of investment strategies in Tehran Stock Exchange. Their research results showed that growth companies have higher profitability than value companies. Tehranni and Khojaste (2008) concentrated on the relationship between investment efficiency and future revenue of growth and value investments in Tehran equity market. The results indicate that there is a positive relationship between efficiency of a company and the investment return measure and dividends. Ghalibafasl et al., 2008 has addressed the comparison of efficiency between growth stocks and value stocks in Tehran Stock Exchange. Foroughi et al. (2010) has compared growth stocks and value stocks in Tehran Stock Exchange market. Results of the study showed that markets ability to predict systematic risk through value stocks is not specifically higher relative to growth stocks. Nikoomaram and Eshaghi (2010) have addressed the relationship between effects of intellectual capital on performance of growth and value member companies of Tehran Stock Exchange market. The results of this study shows that a positive significant relationship is there between intellectual capital and dividends efficiency of growth companies and intellectual capital and dividend efficiency of value companies. Tehrani and Khanahmadi (2010) have examined investment strategy on the basis of value-growth transition in Tehran equity market. The study results have shown that level of operational capital to dividends efficiency ratio is directly related to efficiency of created portfolio based on investment strategy. Moshki and Dehdar (2011) have investigated the cash and capital revenue of growth and value stocks in Tehran Stock Exchange. The results of that study showed that growth stocks have higher cash revenue and capital revenue in comparison to value stocks. Ahadianpour (2011) has examined the relationship between performance evaluation indices and equity values in growth and value companies. The research results show that 66% purged economic added value in growth companies, and 38% purged added value in value companies can describe the equity value changes the best. Campbellet al (2004) in their research under title "Bad beta, Good beta" have examined the relationship between growth and value stocks and state that if the adequate financial resources are available, growth stocks have the adequate investment opportunities and can be desirably profitable in future. Faugère et al (2005) have addressed the subject of identifying growth and value stocks in firm's stock portfolio. The

results of their research have shown that the ratio of price to Book (P/B)and price to Earnings (P/E) for growth stocks are two times higher than value stocks. Bansal et al (2005) in their research titled dividends assumptions have compared growth and value stocks, and the relationship between their efficiency components with systematic risk. They concluded that cash flows of value stocks are more sensitive in long term in contrast to growth stock cash flows. Petkova et al (2005) have studied the relationship between time variations of risk and premium value of growth stocks and value stocks. Their research results showed that time variations of risk cannot explain premium value, and beta for value stocks and growth stocks are positively and negatively correlated to market expected risk, respectively. Xing & Zhang (2006) have done a comprehensive study on periodic motives of basic factors in economics for growth and value stocks. They showed that basic factors in value companies are much more influenced by economic shocks than growth companies; and there are significant differences between growth and value stocks in this field. Fama and French (2007) in their study titled the revenue structure of growth and value stocks, have examined the constituent factors of stocks revenue in two portfolio of growth and value stocks. They found out that value stocks have more ability to explain the risk premium of the market in comparison to growth stocks. Fama and French (2007) in another research titled migration have used the data related to years 1927 to 2006 and categorized the stocks into growth and value stocks. They found that main factor of variations in stocks, which causes stocks to migrate from one type to another, is premium size. Gulen et al (2008) study titled growth stocks versus value stocks, time variations of expected payoff of the stocks, showed that expected payoff from value stocks portfolio minus expected payoff from growth stocks indicates the variations of discordant periods. Arnott et al (2009) have examined the relationship between existing differences of growth and value stocks with stock cycle of growth-value. They found that if there limits to data access in an inefficient market, growth stocks would have higher additional revenue, but in contrast, value stocks have higher added revenue when market data are widely accessible. Blazenko and Yufen (2010) created two portfolios of growth and value stocks for years between 1976 and 2000 as a research study. Their study results showed that increasing revenue along with increasing profitability for value stocks is higher than growth stocks. As described above, all stated documents indicated the importance of modern financial knowledge, finding patterns and models to recognize the relationships between financial variables and selecting stocks and creating portfolios. It is evident that knowing the differences between growth and value stocks in sense of company size, premium risk and earnings of the stocks, a more profitable portfolio can be created. Therefore, for the first time in this study, we address the categorization of stocks into growth and value stocks in Tehran Stock Exchange market.

3. Method and research assumptions

As this study is based on real data, it is of semi-experimental type in field of augment research of accounting; and as the obtained results can be used by fiscal reports users, the research is also implemental. This research is of analytical descriptive as well, in which data collection is used to describe and analyze the relationships between variables. Correlation research is one subgroup of descriptive research, and this research is of correlation type as well. The library study method has been used for research subject literature studies. The data regarding dependent and independent variables is collected from given data in fiscal lists and descriptive notes from sample companies provided by information software of "Rahavard-e novin" and "aria sahm" by Tehran Stock Exchange, fiscal information DVDs from companies accepted in the bourse, and also research, development and Islamic administration information database for 5 year period of (2006-2010).

The statistical population for this study is all the member companies in Tehran Stock Exchange. This population is selected because fiscal data from accepted Tehran Stock Exchange companies are accessible and all those data are homogenous due to regulations as well. Therefore data analysis can be performed better. Having location and time ranges in mind, the statistical sample in this study is selected so that the companies do not belong to investing and brokerage group, and have three following characteristics:

1. Their stock has been traded at least once between 2006 and 2010.

2. Date of fiscal year end for them is Esfand 29th (last day of Persian year); and their fiscal year is not changed during research time range.

3. Are accepted in Tehran Stock Exchange from March 21, 2006 and are never omitted to the March 21, 2011.

Two-sample t test is used for testing research assumptions in this study. This test uses t statistics and p-value which is given by the table. If amount of p-value is less than α, the hypothesis H_0 (equivalent to having significant relationship) would be rejected. That means there is a significant difference between the average sizes of growth and value stocks; and if p-value is higher than α, the hypothesis H_0 (equivalent to not having significant difference) would be accepted. That means there is no significant difference between average growth and value stock sizes. This study is done through three steps. In step one, companies are categorized into growth and value categories according to ratio of equity book value to market value. Then they are compared based on payoff, size, and risk in order to determine the

differences of growth and value stocks considering size, risk, and payoff indices for the Tehran Stock Exchange companies. In step two, the companies are categorized into growth and value according to ratio of price to earnings for each share, and similar to step one, the difference between growth and value stocks would be examined considering size, risk and payoff indices. In third step, we examine that which of two measures – equity book value to market value or price to earnings – for each share is more suitable for categorizing stocks to growth and value ones.

Research method in step one

First, the ratio of equity P/B ratio for each company 11/29 each year[3] (from 2006 to 2010) is calculated and this number is used for categorizing stocks into growth or value stocks. So that the average equity book value to market value ratio over all years are calculated; and the stocks of the companies for which the book value to market value ratio for them was higher than the average were considered as growth company while the stocks of companies for which the book value to market value ratio was lower than the average were considered to be value companies.

Hypothesis one: There is a significant difference between sizes of growth and value stocks (based on book value to market value).

$$H_0: \quad \mu_{size(v)} = \mu_{size(g)}$$

$$H_1: \quad \mu_{size(v)} \neq \mu_{size(g)}$$

v: value stocks

g: growth stocks

size: company size

This hypothesis would be repeated for each year.

Hypothesis two: There is a significant difference between size of growth and value stocks (based on ratio of equity book value to market value).

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[3] Last day of Persian year = March 20

$$H_0 : \qquad \mu_{risk(v)} = \mu_{risk(g)}$$

$$H_1 : \qquad \mu_{risk(v)} \neq \mu_{risk(g)}$$

Risk: premium risk of the company

v: value stock

g: growth stock

This hypothesis would be repeated for each year.

Hypothesis three: There is a significant difference between payoff of growth and value stocks (based on ratio of equity book value to market value).

$$H_0 : \qquad \mu_{Ri(v)} = \mu_{Ri(g)}$$

$$H_1 : \qquad \mu_{Ri(v)} \neq \mu_{Ri(g)}$$

Ri: annual payoff

g: growth stock

v: value stock

This hypothesis would be repeated for each year.

Hypothesis Four: There is a significant difference between payoff of growth and value stocks (based on ratio of equity book value to market value) controlled for size and risk.

$$H_0 : \qquad \mu_{RAR(v)} = \mu_{RAR(g)}$$

$$H_1 : \qquad \mu_{RAR(v)} \neq \mu_{RAR(g)}$$

RAR: payoff controlled for risk

g: growth stock

v: value stock

The test of this hypothesis is different to three other hypotheses to some extent. This hypothesis is tested for period 2006 to 2010 overall. To test this hypothesis, first the companies are divided into two portfolios of large companies and small companies based on mean logarithm of size from 2006 to 2010. Then these companies which are divided into a larger and a smaller portfolios are divided again into two portfolios with of high risk and low risk companies based on standard deviation of their payoff from 2006 to 2010. Yet again, these companies which are divided into two small and large portfolios and two high and low standard deviation portfolios should be divided into two portfolios of growth and value stocks based on the ratio of equity book value and market value. Then the differences of payoff of growth aand value portfolios are examined for each branch separately.

Research method in step two

The research method in this step is similar to step one, but the ratio of price to earnings for each share instead of equity book value to market value ratio is used for categorizing company stocks into growth and value stocks.

Hypothesis five: There is a significant difference between size of growth and value stocks (based on price to earnings ratio for each share).

Hypothesis six: There is a significant difference between investment risk for growth and value stocks (based on ratio of price to earnings).

Hypothesis seven: There is significant difference between payoff of growth and value stocks (based on ratio of price to earnings).

Hypothesis eight: There is a significant difference between payoff of growth and value stocks controlled for size and risk (based on ratio of price to earnings).

Research method in step three

In this step we control everything for company size and risk and then determine which of two measures – equity book value to market value or price to earnings per share – makes more difference in sense of payoff between growth portfolio and value portfolio.

Hypothesis nine: ratio of equity book value to market value is stronger than ratio of price to earnings per share in explaining the difference of growth and value stocks payoff.

Descriptive statistics is used for testing this hypothesis. It means that average of payoff

difference in case of categorizing based on ratio of equity book value to market value (hypothesis four) and the average payoff difference in case of categorizing based on ratio of price to earnings per share (hypothesis eight) are compared to each other.

3.1 Research variables

- **Ratio of price to earnings per share**

Some ratios evaluate the company from the viewpoint of shareholders. Ratio of price to earnings per share (P/E) is one of these ratios. It is calculated by dividing current price of the each share to earnings from each share. Higher amount for this ratio is desirable because it indicates that company has a good future ahead in general shareholders perspective (Zanjirdar et al., 2010)

$$price\ to\ earnings\ per\ share = \frac{current\ share\ price\ in\ market}{earnings\ of\ each\ share}$$

- **Ratio of equity book value to market value**

to calculate the ratio of equity book value to market value, the total sum of equity which is registered in balance sheet is divided to total market value of the stock. It is calculated as following (zanjirdar et al., 2010):

$$\frac{total\ equity\ in\ balance\ sheet}{market\ price\ per\ share\ X\ number\ of\ issued\ shares}$$

- **Company size**

Company size is a structural and internal factor of a company which affects revenue and profitability of it. The following formula is used for calculating this variable (zanjirdar et al., 2010)

Market price of stock X number of issued shares

- **Risk**

The standard deviation of stock payoffs has been used as the measure of risk in this study. Standard deviation is calculated by the following method (Eslamibidgoli and Bigdelo, 2006):

1. Average of payoff rate is calculated using the following formula:

$$\overline{R} = \frac{1}{n} \sum_{t=1}^{n} R_t$$

2. The payoff standard deviation for each year is calculated relative to average payoff rate; result is squared then:

$$(R - \overline{R})^2$$

3. Sum of deviations calculated in previous step (2) is determined and then, it is divided to the number of periods (observations) to obtain the variance.

$$\text{var} = \delta^2 = \frac{1}{n} \sum_{t=1}^{n} (R_t - \overline{R})^2$$

4. Standard deviation is the square root of variance (step 3):

$$\delta = \sqrt{\delta^2}$$

- **Stock payoff**

Stock payoff is the ratio of total revenue (loss) due to investment for a specified time period to the total capital which was invested at the beginning of the time period. Investment on stocks depends on the factors of payoff level and comparison to other assets. The following formula is used to calculate this variable (Babaian, 1380):

$$\frac{\text{cash profit} + \text{gift shares benefits} + \text{priority benefits} + \text{price difference of first and last periods of stocks}}{\text{stock price in first period}}$$

4. Research findings

Hypothesis one: There is a significant difference between size of growth and value stocks (based on ratio of equity book value to market value).

Looking at Table 1, the difference between size of growth and value stocks in years 2006, 2007, 2008, 2009, and 2010 is significant which is equivalent to acceptance of first hypothesis in these years. That means significant difference in sizes of two portfolios would be observed if the ratio of equity book value to market value is used for categorizing company stocks to growth and value.

Table 1: Hypothesis one, test results

Year	portfolio	Average	Std. Dev.	Mean Difference	Difference Std. Dev.	test statistics	P-Value	Result
2006	value	27.02	1.32	1.27	0.203	3.27	0.0001	Accept
	growth	25.75	1.34					
2007	value	26.7	1.24	0.665	0.202	3.286	0.001	Accept
	growth	26.03	1.41					
2008	value	26.49	1.24	0.581	0.206	2.825	0.005	Accept
	growth	25.91	1.44					
2009	value	26.67	1.26	0.515	0.2	2.572	0.011	Accept
	growth	26.16	1.36					
2010	value	26.92	1.4	0.523	0.214	2.445	0.015	Accept
	growth	26.4	1.41					

A significant difference was observed between company size for growth and value stocks for each year from 2006 to 2010. That means the company size factor is suitable for recognizing growth and value stocks if the measure of equity book value to market value is used. It can be concluded that size of companies in Tehran Stock Exchange is an adequate factor which an investor can use in order to categorize and buy growth and value stocks. Jenson (1997) and Kim (1990) found as well, that the effect of size on stock revenue is essential and important. They showed that this factor is of more importance at some systematic risk levels.

Hypothesis two: there is a significant difference between investment risk of growth and value stocks (based on ratio of equity book value to market value).

As Table 2 suggests, the difference between average payoffs of growth and value stocks is significant in years of 2006, 2007, 2009, and 2010 which means second hypothesis is accepted for those years. In other words, a significant difference would be observed in stock revenues of two portfolios would be observed if the ratio of equity book value to market value is used as the measure to categorize companies into growth and value. However, the average value stock payoff was higher than average growth stock payoff during all years.

Table 2: Hypothesis two test results

year	portfolio	Average	Std. Dev.	Mean Difference	Difference Std. Dev.	test statistics	P-Value	Result
2006	value	54.79	99.66	46.79	11.401	4.104	0.0001	Accept
	growth	8	35.31					
2007	value	36.55	76.52	33.098	9.3	3.559	0.001	Accept
	growth	3.46	39.8					
2008	value	13.81	95.23	15.029	10.933	1.375	0.171	Reject
	growth	1.22-	34.79					
2009	value	79.02	138.43	44.592	15.992	2.801	0.006	Accept
	growth	34.43	51.37					
2010	value	69.61	87	41.995	10.321	4.069	0.0001	Accept
	growth	27.61	39.9					

During each year from 2006 to 2010, a significant difference between growth and value stocks payoff was observed except for 2008. Considering second hypothesis, the absolute value of difference between growth and value stocks payoff was 181.504 if they were categorized based

on ratio of equity book value to market value. Accordingly, it can be said that an investor in the mode of active market can obtain higher revenue purchasing value stocks in comparison to growth stocks, provided the categorization between two types of stocks takes place based on ratio of equity book value to market value. The results from this hypothesis are in concordance with Blazenko and Yufen(2010) and Fama and French (2007).

Hypothesis three: There is a significant difference between growth and value stocks payoff (based on ratio of equity book value to market value).

Fisher's f test is used to test above hypothesis here. This test is done using F statistics and P-value obtained from the table. Hypothesis H_0 (equivalent to not having significant difference) would be rejected If the p-value is lower than α. That means a significant difference exists between investment risk over growth and value stocks. On the other hand, hypothesis H_0 (equivalent to not having significant difference) would be accepted if p-value is higher than α. That means there is a significant difference between investment risk over growth and value stocks.

As can be observed in Table 3, the difference of investment risk over growth and value stocks during years 2006, 2007, 2009 and 2011 are significant, which is equivalent to acceptance for third hypothesis. In other words, a significant difference would be observed in investment risk of two portfolios if the measure of equity book value to market value is used to categorize company stocks into growth and value stocks and create portfolios based on that. However, the investment risk over growth stocks was higher than that of value stocks during all these years.

Table 3: Hypothesis three test results

year	portfolio	Std. Dev.	F test statistics	P-Value	Result
2006	growth	99.66	10.46	0.001	Accept
	value	35.31			
2007	growth	76.52	5.85	0.017	Accept
	value	39.8			
2008	growth	95.23	0.63	0.427	Reject
	value	34.79			
2009	growth	138.43	6.42	0.012	Accept
	value	51.37			
2010	growth	87	12.44	0.001	Accept
	value	39.9			

Considering the test results for third hypothesis, a significant difference in investment risk exists over growth and value stocks if the measure of equity book value to market value is used to categorize the companies' stocks into growth and value portfolios. Therefore, investor can take less risk by purchasing value stocks. Results of this hypothesis are in accordance with Fama and French (2007) study.

Hypothesis four: There is a significant difference between growth and value stocks payoff, controlled for size and risk (based on ratio of equity book value to market value). To test this hypothesis, the companies were divided into two small and large groups using the company sizes and comparing them to average size. Again, each group was divided into two groups of risky and non-risky groups based on investment risk factor for each company. Growth and

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value stocks are determined for each group using the ratio of equity book value to market value as the categorization basis. The t-test was used to actually test the hypothesis.

As Table 4 suggests, the differences of growth and value stocks payoff is not significant in all the portfolios except "large non-risky portfolio". As such, the significant difference of company revenues would be trivial if their size and risk factors are similar.

Therefore, it can be concluded that difference of investment payoff over growth and value stocks in Tehran Stock Exchange would be originating from size and risk factors of the companies.

Table 4: Fourth hypothesis test results

sect.	Group	portfolio	average	Std. Dev.	average diff.	diff. std. dev.	test statistics	P-Value	result
small	Risky	value	17.21	8.02	0.383	3.166	0.121	0.904	Reject
		growth	16.83	10.47					
	non-risky	value	38.93	26.85	0.985	7.165	0.137	0.891	Reject
		growth	37.94	20.66					
Large	Risky	value	19.81	10.83	1.888	3.549	0.532-	0.598	Reject
		growth	17.92	12.17					
	non-risky	value	43.32	34.25	15.323	7.419	2.065	0.046	Accept
		growth	28	13.38					

The results of fourth hypothesis suggest that difference in payoffs of investment in growth and value stocks in Tehran Stock Exchange originates from size and risk factors of the companies; since the significant differences observed in second hypothesis for their payoffs is eliminated here when the companies are controlled for size and risk. These results are in accordance with Pol Zarwoin (1990) study.

Hypothesis Five: There is a significant difference between growth and value stocks based on

ratio of price to earnings).

Data in Table 5 suggest that the difference in average growth and value stock sizes are only significant in years 2007 and 2011. This is equivalent to acceptance of fifth hypothesis in those years. Therefore, significant difference would not be observed in most of the times when the ratio of price to earnings per share is used as the basis of categorization of companies into growth and value portfolios. No significant difference in sizes of these portfolio is observed in most of the cases.

Table 5: Fifth hypothesis test results

year	portfolio	Average	Std. Dev.	difference average	difference std. dev.	test statistics	P-Value	Result
2006	value	26.24	1.37	-.0281	0.224	-1.256	0.211	Reject
	growth	26.52	1.56					
2007	value	26.16	1.35	-0.424	0.206	-2.053	0.042	Accept
	growth	26.58	1.36					
2008	value	26.05	1.41	-0.302	0.209	-1.447	0.15	Reject
	growth	26.36	1.33					
2009	value	26.35	1.39	-0.127	0.204	-0.625	0.533	Reject
	growth	26.48	1.28					
2010	value	26.47	1.39	-0.369	0.216	-1.707	0.09	Accept
	growth	26.84	1.44					

Among years 2006 to 2010, significant difference between company size with growth and value stocks were only observed on 2006 and 2010. That means using the ratio of Price to earnings per share as the categorization measure, the company size factor would not be an

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adequate basis to recognize growth stocks from value stocks; that is in comparison to case which we used ratio of equity book value to market value as basis for categorization.

Hypothesis six: There is a significant difference between investment risk of

growth and value stocks (based on ratio of price to earnings per share).

Table 6 shows that average difference of growth and value stocks payoff during 2006, 2007, 2008, 2009, and 2010 are not significant which is equivalent to rejection of sixth hypothesis for all these years. Therefore, significant difference of payoff would not be observed between two portfolios in most of the cases if the ratio of price to earnings per share is used as the basis for categorizing company stocks into growth and value portfolios.

Table 6: Sixth hypothesis test results

Year	portfolio	Avg.	Std. Dev.	diff. Average	Diff. Std. Dev.	test statistics	P-Value	Result
2006	Value	40.85	47.6	18.911	11.864	-1.594	0.114	Reject
	growth	21.94	99.19					
2007	value	20.65	69.43	1.287	9.64	-0.133	0.894	Reject
	growth	19.36	56.31					
2008	value	8.55	41.35	4.512	10.988	-0.411	0.682	Reject
	growth	4.04	93.13					
2009	value	69.02	60.84	24.304	16.307	-1.49	0.139	Reject
	growth	44.72	137.79					
2010	value	54.94	60.51	12.656	10.768	-1.175	0.242	reject
	growth	42.28	79.44					

As these results suggest, when the ratio of price to earnings per share is used as the basis for

categorization of company stocks into growth and value portfolios, the absolute value of stocks payoff differences for growth and value stocks, was 61.67 on the side of value stocks. In other words, value stocks have earned more revenue in comparison to growth stocks, when the ratio of price to earnings per share is used as the measure of company stocks categorization into growth and value portfolios. Results of this hypothesis are in accordance with Jacobs and Loie (1989) study.

Hypothesis seven: There is significant difference between payoff of growth and value stocks (based on ratio of price to earnings).

According to Table 7, the difference of average investment risk over growth and value stocks are only significant on 2006 and 2009. This means that the seventh hypothesis can be accepted only for those years. Therefore, no significant difference of risk factor is observed between two portfolios if the ratio of price to earnings per share is used as the measure to categorize company stocks into growth and value portfolios.

Table 7: Seventh hypothesis test results

Year	Portfolio	Std. Dev.	Test statistic F	P-Value	Result
2006	Growth	99.19	3.29	0.071	Accept
	value	47.6			
2007	growth	56.31	0.27	0.606	Reject
	value	69.43			
2008	growth	93.13	0.05	0.826	Reject
	value	41.35			
2009	growth	137.79	3.2	0.075	Accept
	value	60.84			
2010	growth	79.44	0.71	0.4	Reject
	value	60.51			

As suggested by Table 7 no significant difference would be observed in risk of two portfolios for the cases in which the ratio of price to earnings per share is used as the basis for categorizing company stocks into growth and value stock. These results are in accordance with Fama and French (2007).

Hypothesis eight: There is a significant difference between payoff of growth and value stocks controlled for size and risk (based on ratio of price to earnings).

Considering the results shown in Table 8, the difference of average payoff between growth and value stocks is significant only in large risky company portfolio. That is, the significant difference is still pronounced after similar companies are considered in sense of size and risk factors. Therefore, the ratio of price to earnings per share is a weaker measure of categorizing

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companies into growth and value portfolios than the ratio of equity book value to market value if applied in order to maximize investment revenue.

Table 8: Eighth hypothesis test results

sect.	group	portfolio	average	Std. Dev.	diff. average	diff. std. dev.	test statistics	P-Value	results
small	non-risky	Value	17.02	10.71	0.169	2.999	0.056	0.955	reject
		growth	16.85	8.22					
	risky	value	39.05	19.71	1.468	7.05	-0.208	0.836	reject
		growth	37.58	26.24					
large	non-risky	value	18.28	12.07	-0.653	3.425	-0.191	0.85	reject
		growth	18.94	10.6					
	risky	value	43.22	15.43	13.56	7.951	-1.705	0.098	accept
		growth	29.66	35.09					

According to this hypothesis, still no significant difference was observed in most cases, when similar companies in sense of size and risk are considered together, and then divided into growth and value stock companies. The results obtained for this hypothesis are in contradiction to Pole Zarwoin (1990) study results.

Hypothesis nine: ratio of equity book value to market value is stronger than ratio of price to earnings per share in explaining the difference of growth and value stocks payoff.

We compare the growth and value stocks payoff for the categorization case based on ratio of equity book value to market value and the case based on ratio of price to earnings per share in order to test this hypothesis. The comparison was done for small and large company groups as well as risky and non-risky groups. As Table 9 suggests, considering absolute value of payoff, payoff difference of growth and value stocks is 14.803 for case with categorization based on

ratio of equity book value to market value, while the same difference for the case with categorization based on ratio of price to earnings per share is 13.512 which is lower than the former case.

Table 9: Descriptive statistics for ninth hypothesis

growth / value categorization based on		equity book value to market value		price to earnings per share	
Sect	group	difference average	difference std. dev.	difference average	difference std. dev.
Small	non-risky	0.383	3.166	0.169	2.999
	risky	0.985	7.165	1.468	7.05
Large	non-risky	1.888	3.549	-0.653	3.425
	risky	15.323	7.419	13.56	7.951

Above results for ninth hypothesis suggest that, in case we consider absolute value of revenue, the difference of growth and value payoff is 14.803 when using equity book value to market value as categorization basis. This figure is higher than the same difference in case of categorization based on ratio of price to earnings per share which is 13.512. Therefore, the measure based on ratio of equity book value to market value has interpreted the payoff difference in two portfolios better than the other measure.

5. Conclusion and discussions

Investment is of such importance in economic growth and development that it has been considered as a strong lever to achieve development goals. But we need to keep in mind that to the extent which paying attention to this subject can cause economy growth and boom, ignoring it can cause economic stagnation. Therefore, economic growth and elevation of public welfare is not possible without attention to investment and related effective factors in economical environment (Abzari et al., 2008). Most of investors in various fields seek to maximize profit against the specific risk or to minimize risk for a specific payoff. Stock

investment is not an exception anyway (Fama and French, 2007). Selecting the most suitable stocks or portfolio creation among the myriads of available stocks is used to be a very important concern for investors. Risk and revenue are two important factors in process of investment decision making. Investors expect to take more rewards in return to the risk they are taking on Stocks. Therefore, risky stocks need to have higher payoff to compensate for the risk they impose on investors. A usual type of categorization in sense of risk acceptance of the stocks is to categorize them on the basis of growth and value stocks (Foroughi et al., 2010). Today, the concept of growth and value stocks in various investment markets all over the world is examined and applied as one of important investment strategies. This study is concentrated on comparison between growth and value stocks and their payoff, company size, and risks. We try to determine the differences between these two considering companies' size, risk, and revenue indices for investors. Hence, the comparison has been conducted in this study between two types of companies namely, having growth or value stocks (using the ratio of price to earnings per share and the ratio of equity book value to market value) considering three factors of size, risk, and revenue. The research results show that when the companies are categorized into growth and value companies based on ratio of equity book value to market value, larger differences can be observed in size, risk, and payoff of growth and value stocks in comparison to the case in which the companies are categorized based on ratio of price to earnings per share. The company size factor on the other hand, is more suitable for recognition of growth stocks from value stocks. Also the absolute value of difference between payoff of growth and value stocks when using ratio of equity book value to market value as the basis of categorization is 181.504 to the side of value stocks. While the absolute difference of payoff between growth and value stocks using ratio of price to earnings per share as the basis of categorization is only 61.67 to the side of value stocks. As such, we could say that investor can gain more revenue by purchasing value stocks than to purchase growth stocks, provided that categorization of growth and value stocks take place according to ratio of equity book value to market value. Meanwhile the research results, whether the ratio of equity book value to market book value or the ratio of price to earnings per share is used for categorization, indicate that growth stocks are more risky than value stocks. Results obtained in this study are in accordance to Fama and French (1998) and Pontiff vaskal (1997) studies.

Considering the research results, few subjects are suggested to be studied in future research works and make sure of our findings here. This study done, various questions can be proposed regarding growth and value stocks subject. These questions can be formed as questions or hypotheses to provide future researches with a base point as well. Some of those are:

- o Comparison between growths and value stock companies regarding systematic risk.

- o Using different time periods to perform the test.

- o Using other financial ratios to recognize growth and value stocks.

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