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Explanation of Value Premium on the Dhaka Stock Exchange: Risk and Firm Size

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ABSTRACT

This paper provides explanation of value premium on the Dhaka Stock Exchange from 2000–2009 and a search process involving both price to earnings (P/E) and price to book value (P/B) ratios. The purpose of this paper is to examine the impact of 'risk' and 'firm size' on value premium on the Dhaka Stock Exchange. Based on P/E ratio, the risk for value portfolio is positively correlated with mean annual value premium. On the other hand, the risk for growth portfolios is negatively correlated with mean annual value premium. However, based on P/B ratio, the relationship between risk and value premium is not significant.

The study found that, relatively higher positive and negative returns of small value and small growth stocks respectively have effect on the value premium for both the multiples and relatively higher negative returns of large growth stocks have also the effect on the value premium for P/B multiple. Comparatively small value stocks perform better in the Dhaka Stock Exchange during the study period

Keywords: *value stocks, growth stocks, value premium, risk, firm size, price/earnings ratio, price/book value ratio*

1. INTRODUCTION

Value and growth investing are widely considered as two contrasting strategies for investment in the capital market. Considerable attention has been devoted to explaining value premium which is the differences in returns performance between such value and growth stocks.

The value investor is looking for a company with sound fundamentals that may trade below its "intrinsic value" for some reasons. For value investors, simple market factors that can cause fluctuations in stock prices are not of great concern. They believe that temporary fluctuations will not affect long-term profitability when owning value stock. The value stocks are characterised by low multiples and high payout ratios and strong yields.

Growth investors normally buy stocks of companies that are capable of increasing sales, earnings, and other important business metrics by a minimum amount each year. The stocks that are bought by growth investors often appear expensive at first glance but such stocks must be looked at from a future perspective. Growth stocks are characterised by high multiples, low payout ratios and low yields.

2. BACKGROUND OF THE STUDY

The difference between the performance of value and growth stocks presents an interesting puzzle for researchers in finance. Most studies showed that value stocks outperform growth stocks. This is the so-called value premium. This "value premium" was first

identified by Graham and Dodd (1934) and its interpretation has inspired heated debate. Much academic work has been done to prove the existence of value premium. The centre of debate, however, lies on the reason for its existence. While the existence of the value premium has been generally accepted, its explanation has stirred a lot of controversy. So far, three broad categories of explanations are found. However, there is little evidence to help decide which of these explanations is correct.

The first explanation is that the value premium is a rational phenomenon, which is priced in equilibrium, and is compensation for risk. (Fama and French 1992, 1993, 1996 and 1998; Ball 1978; Berk 1995; Lettau and Ludvigson 2001; Campbell and Vuolteenaho 2004; Petkova and Zhang 2005; and Yogo 2006).

The second explanation for the higher returns from a value strategy is the behavioural or irrational view. Contrarian strategies produce higher returns because they exploit the tendency of some investors to overreact to good or bad news. Overreaction means that prices adjust by more than is justified by fundamentals. Unpopular value stocks that have done badly are oversold, become under-priced, and are corrected at some point in the future when a switch in investor sentiment raises the prices of these stocks. This view can be associated with the already extensive literature dealing with different aspects of irrational investor behaviour (see Lakonishok et al. 1994; La Porta et al. 1997; Barberis et al., 1998; Daniel et al.

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2002; Rosenthal and Young 1990; Fraser and McKaig 1998; Kothari 2000; Lee and Swaminathan 1999; Griffin and Lemon 2001; and Hirshleifer 2001).

The third explanation for the value premium lies not in rational or irrational investor behaviour, but in random occurrences, which are unlikely to occur again in the future (see Lo and MacKinlay 1988, and Breen and Sloan et al. 1995). In this situation the value premium is no more than a vagary of chance, being neither reward-for-risk nor the basis of any long-term profitable trading strategy. The present study has examined the value premium from the standpoint of 'risk', and 'firm size' as risk based and mispricing argument respectively.

3. REVIEW OF LITERATURE

A large body of academic research has confirmed the existence of a value premium. While the findings have been mounting, interpretations as to why value stocks outperform growth stocks remain controversial.

Lakonishok, Shleifer and Vishny (1994) have argued, if value stocks are fundamentally risky, value premium should be high (low) when investor sentiment becomes more bullish (bearish). Loughran's (1997) evidence that there is no value premium among large stocks seems to be particular to the post-1963 period. During the 1926 to 1963 period, the value premium is nearly identical for small and big U.S. stocks.

Bauman et al. (1998) they found that differences in performance between large value stocks and large growth stocks were greater than between small value stocks and small growth stocks. Doukas, Kim and Pantzalis (2004) found support for their risk factor explanation as the source of value premium.

Petkova and Zhang (2005) showed that the economic fundamentals of value firms respond negatively to economic shocks while this is not true for growth stocks. Kwag and Lee (2006) found that a value portfolio consistently outperforms a growth portfolio throughout the business cycle and that the benefits of value investing are even greater during periods of contraction than during periods of expansion.

Xing and Zhang (2006) found that the fundamentals of value firms decline sharply in recessions. While growth firms also experience a decline in fundamentals, the decline experienced is not as deep as that of value firms.

Phalippou (2008) showed that most of the value premium comes from stocks with low levels of institutional ownership, which account for only 7 percent of stock market capitalisation. This finding suggests that the value premium is created by the tendency of some investors to misprice certain stocks that are also costly to arbitrage.

Athanassakos (2009) provides further evidence on the value premium using Canadian data for the period 1985–2005 and a search process involving both price-to-earnings (P/E) and price-to-book value (P/B) ratios. The study documented a consistently strong value premium over the sample period, which persisted in both bull and bear markets, as well as in recessions and recoveries.

Many empirical studies have been done on value and growth investing. However, most of these studies concentrated on the US stock markets; a few of them focused on non-U.S. markets. No study has yet been conducted on the explanation of value premium in the Dhaka Stock Exchange. This provides the reason for conducting a study on proposed topic by using data of the DSE from 2000 to 2009.

4. RATIONALE OF THE STUDY

The value/growth literature provides extensive evidence on the superior performance of value stocks over growth stocks and ubiquitous equity value premium. The superior performance of value stocks in the US stock market is well documented (Fama and French 1992; Lakonishok, Shleifer and Vishny, 1994; Haugen 1995; De Bondt and Thaler 1985; Fama, 1998; and Davis et al. 2000).

However, a few of studies focused on non-U.S. markets. Value and growth stocks may indeed perform differently in non-U.S. markets because of differences in the ways investors behave in those markets. "Bauman and Johnson (1996) reported that both the quality and the availability of investment research information varies considerably from one country to another". Moreover, no research has yet been carried out on explanation of value premium in the Dhaka

Stock Exchange: Thus it is important to conduct a study on DSE, an emerging stock market of South East Asia.

5. OBJECTIVES OF THE STUDY

The main objective of this study is to evaluate the performance of value and growth investing

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strategies and give explanation of the value premium. The situation or the underlying reasons are far less settled when it comes to providing an explanation for the value premium. The study focuses on 'risk' and 'firm size' as risk based argument and mispricing argument respectively to explain value premium on the Dhaka Stock Exchange from the period of 2000 to 2009.

6. METHODOLOGY AND DATA DESCRIPTION

6.1 Secondary Data

Since the data required from the Dhaka Stock Exchange before 2000 is not published in DSE website and is not available in any other easily accessible way, the study is limited to data which are already available in soft copy, compiled and printed. The data for all stocks listed on DSE have been collected from four sources. One is DSE website. The second is the publications of central library of the Dhaka Stock Exchange such as Various Issues of Monthly Review, fortnightly capital market, and Annual Report of the Dhaka Stock Exchange during the study period. The third is the website of Securities and Exchange Commission of Bangladesh. The fourth is the publications of SEC such as Quarterly Review and Annual Report.

6.2 Sample Selection

The Dhaka Stock Exchange is small with number of securities varying from 241 in 2000 to 415 in 2009. Due to time constraints, it is not possible to use the entire population for this study. The method of selecting value and growth stocks is done by systematic sampling. The total observations are 678 individual listed stocks that are taken from the population of 3390 individual stocks of the Dhaka Stock Exchange. The total observations consist of 308 individual stocks that are equally divided into two categories for value and growth stocks based on P/E ratio and similarly 370 individual stocks that are also equally divided into two categories for value and growth stocks based on P/B ratio. However, stocks of life insurance companies and mutual funds have been excluded in the sampling of this study. For the price/earnings ratio and price/book value ratio, only positive ratios have been used to classify stocks. The stocks with negative ratios (negative P/E ratios and negative P/B ratios) are excluded because the negative ratios cannot be interpreted in terms of expected growth rates (Lakonishok et al. 1994). The stocks, which are very irregular in terms of trading, calling AGM and publishing financial data, are also excluded because these stocks failed to provide up to date data

on a regular basis or provided partial data. The Companies which have merged, filed for bankruptcy, or have been delisted from exchange are usually excluded from the sample. The number of delisted firms over the period 2000 -2009 is small resulting in small loss of information.

6.3 Portfolio Formation

The construction of portfolios is as per FF approach. The value and growth stocks portfolios have been sorted based on some important financial ratios such as Price-to- Earnings ratio (P/E ratio) and Price-to- Book value ratio (P/B ratio). The study has used historical data to calculate these ratios for all individual stocks listed on the DSE. In order to form value and growth stocks portfolio, the stocks have been divided into two deciles, i.e. 10 % groups classified depending on the level of their ratios. The lowest decile, is the group comprising stocks with low P/E and P/B ratios is selected as value stocks. On the other hand, the highest decile, is the group comprising stocks with high P/E and P/B ratios is selected as growth stocks.

Most of the Bangladeshi company's 'year end' is December and therefore, decile portfolios are formed in January of each year based on prior 'year end' data of DSE from 2000 to 2009 when the majority of the new information becomes available to the public. Stocks in each portfolio are equally weighted and this kind of portfolio construction has been done for each year similarly during the sample period.

6.4 Returns

To calculate returns for value and growth portfolios, total annual return for each stock is calculated by dividing the capital gain/loss with the initial purchase price and then adding the dividend paid during the sample period. The returns of each stock of the portfolio are summed and then divided by the number of stocks in each portfolio in order to get the mean annual portfolio return.

6.5 Risk

The risk-return relation is one of the foundational tenants of finance theory and it is an important determinant of investment decisions. In the study the standard deviation of returns has been used as a measure of risk rather than other measures of risk such as beta. Beta has lost some of its supremacy. In a recent study Fama and French have given some insights into the so-called "death of beta". "Fama and French (1992) reported that β has no power when used alone to explain average returns". "Estrada (2000)

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reported that in emerging markets, systematic risk measured by beta is not significantly related to stock returns. The lack of explanatory power of systematic risk can be explained in several ways. One is that emerging markets are not fully integrated to the world market, in which case beta is not an appropriate measure of risk". Recent evidence shows that unsystematic risk is also priced. "Jiang and Lee (2004) reported that idiosyncratic volatility directly affects stock prices beyond its effect on the present value of expected future cash flows and/or changes in expected returns". Thus, standard deviation is an appropriate measure of risk which reflects both systematic and unsystematic risk.

Moreover, it captures the total variability in the asset or portfolio's return, whatever may be the source(s) of that variability.

6.6 Firm Size

The stock which market capitalisation is lower than the average market capitalisation of respective portfolio where it belongs is treated as small capitalisation stock. Similarly the stock which market capitalisation is higher than the average market capitalisation of respective portfolio where it belongs is treated as large capitalisation stock.

7. RESULTS AND DISCUSSION

7.1 Value Premium and Risks: Regression Results

Evidence of superior performance of value stocks over growth stocks has seldom been disputed. The central argument in the debate is whether the relative riskiness of value stocks over growth stocks is sufficient in explaining the excess returns. The regression analysis of value premium and risk has been done to see whether the risk is a source of value premium or not.

Portfolio Sorted by P/E Ratio:

The estimation results of regression of mean annual value premium based on P/E ratio ($VP_{P/E}$) on risk of value stocks portfolio based on P/E ratio ($STDRVSP_{P/E}$) and risk of growth stocks portfolio based on P/E ratio ($STDRGSP_{P/E}$) are shown in equation (1). The coefficient of risk is 0.63 for value stocks portfolio and the coefficient is statistically significant at the 1 percent level (2-tailed). The coefficient of risk is -0.29 for growth stocks portfolio and the coefficient is statistically significant at the 5 percent level (2-tailed).

$$VP_{P/E}(t) = 1.97 + 0.63(STDRVSP_{P/E})(t) - 0.29(STDRGSP_{P/E})(t) \quad (1)$$

$$t\text{-value} \quad (0.173) \quad (3.808)^{**} \quad (-2.259)^*$$

$$\bar{R}^2 = 0.58; F(2, 7) = 7.26^*; DW = 1.53; N = 10$$

The coefficients of the equation indicate that if risk of value portfolio increases by 1 percent then annual value premium increases by 0.63 percent point in value premium based on P/E ratio. On the other hand, if risk of growth portfolio increases by 1 percent then annual value premium decreases by 0.29 percent point. The results also indicate that the risk for value portfolio is positively correlated with mean annual value premium. On the other hand, the risk for growth portfolios is negatively correlated with mean annual value premium. The adjusted R-square is 0.58 which indicates that 58 percent of variation in value premium based on P/E ratio is accounted for by risk for value and growth portfolios. The value of F-statistics shows that the relationship between risk and value premium is significant at the 5 percent level for P/E sorted portfolio.

Portfolio Sorted by P/B Ratio:

The estimation results of regression of mean annual value premium based on P/B ratio ($VP_{P/B}$) on risk of value stocks portfolio based on P/B ratio ($STDRVSP_{P/B}$) and risk of growth stocks portfolio based on P/B ratio ($STDRGSP_{P/B}$) are shown in equation (2).

$$VP_{P/B}(t) = 2.66 + 0.28(STDRVSP_{P/B})(t) - 0.005(STDRGSP_{P/B})(t) \quad (2)$$

$$t\text{-value} \quad (0.038) \quad (0.454) \quad (-0.009)$$

$$\bar{R}^2 = 0.00; F(2, 7) = 0.10; DW = 1.72; N = 10$$

The coefficients of the risk for value and growth portfolios are 0.28 and -0.005 respectively. Both the coefficients are statistically insignificant. The regression model fails to explain the variation in value premium by the risk. Thus, risk is not a source of value premium for P/B sorted portfolios.

7.2 Value Premium and Firm Size: Regression Results

Banz (1981) was perhaps the first to provide evidence of firm size effect in stock returns and concluded that on average smaller firms outperformed

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larger firms, and the CAPM was misspecified which estimated low betas for the smaller firms.

Loughran's (1997) showed that during the 1926 to 1963 period, the value premium is nearly identical for small and big U.S. stocks. Naturally, the question is whether or not firm size is a proxy for missing risk factors. In this section, the relationship between firm size and value premium has been examined through regression analysis. The purpose of this analysis is to provide a simple picture of how value premium varies with firm size.

Portfolio Sorted by P/E Ratio:

The estimation results of regression of mean annual value premium based on P/E ratio ($VP_{P/E}$) on return for small value stocks based on P/E ratio ($RSVS_{P/E}$), return for large value stocks based on P/E ratio ($RLVS_{P/E}$), return for small growth stocks based on P/E ratio ($RSGS_{P/E}$) and return for large growth stocks based on P/E ratio ($RLGS_{P/E}$) are shown in equation (3).

$$VP_{P/E}(t) = -2.63 + 1.02(RSVS_{P/E}(t)) + 0.02(RLVS_{P/E}(t)) - 0.74(RSGS_{P/E}(t)) - 0.19(RLGS_{P/E}(t)) \quad (3)$$

$$t\text{-value} \quad (-0.880) \quad (7.972)^{**} \quad (0.512) \quad (-8.156)^{**} \quad (-4.085)^{**}$$

$$\bar{R}^2 = 0.97; F(4, 5) = 80.21^{**}; DW = 1.75; N = 10$$

The coefficients of return for small value stocks, return for large value stocks, return for small growth stocks, and return for large growth stocks based on P/E ratio are 1.02, 0.02, -0.74, -0.19 respectively. All the coefficients are statistically significant at the 1 percent level (2-tailed)

¹ Small caps refer to small value and small growth stocks. On the other hand, large caps refer to large value and large growth stocks the coefficient of large value stocks return. The results indicate that if return for small value stocks and return for large value stocks increase by 1 percent each then the annual value premium increases by 1.02 percent points and 0.02 percent point respectively based on P/E ratio.

On the other hand, if the returns for small growth stocks and returns for large growth stocks decrease by 1 percent each then the annual value

premium increases by 0.74 percent point and 0.19 percent point respectively based on P/E ratio.

It has been found that small value stocks return and small growth stocks return largely influence the annual value premium. But the small value stocks return exerts positive effect and small growth stocks return have negative effect. Thus annual value premium is the function of large positive returns of small value stocks and large negative returns of small growth stocks. F- statistic is significant at the 1 percent level. Therefore, the model has significant explanatory power for the value premium and the firm size based on P/E ratio.

Portfolio Sorted by P/B Ratio:

The estimation results of regression of mean annual value premium based on P/B ratio ($VP_{P/B}$) on return for small value stocks based on P/B ratio ($RSVS_{P/B}$), return for small growth stocks based on P/B ratio ($RSGS_{P/B}$) and return for large growth stocks based on P/B ratio ($RLGS_{P/B}$) are shown in equation (4).

$$VP_{P/B}(t) = 1.24 + 0.99(RSVS_{P/B}(t)) - 0.38(RSGS_{P/B}(t)) - 0.65(RLGS_{P/B}(t)) \quad (4)$$

$$t\text{-value} \quad (2.190) \quad (67.930)^{**} \quad (-14.091)^{**} \quad (-30.195)^{**}$$

$$\bar{R}^2 = 1; F(3, 6) = 7394.13^{**}; DW = 2.63; N = 10$$

² Based on P/B ratio, there is only a single large value stock. A single data does not bear any statistical significance. Therefore, RLVS did not regress. The coefficients of return for small value stocks, return for small growth stocks, and return for large growth stocks based on P/B ratio are 0.99, -0.38, -0.65 respectively.

All the coefficients are statistically significant at the 1 percent level (2-tailed). The results indicate that if small value stocks return increase by 1 percent then the mean annual value premium increases by 0.99 percent point. On the other hand, if the small growth stocks return and large growth stocks return decrease by 1 percent each then the mean annual value premium increases by 0.38 percent point and 0.65 percent point respectively. Thus, both the small caps and the large caps influence the annual value premium.

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However, the return of small value stocks has positive effect while that of large growth stocks have negative effect. The F-statistic is significant at the 1 percent level. Thus, the model has satisfactory explanatory power for the variance in value premium resulting from the firm size based on P/B ratio.

8. CONCLUSIONS

Based on P/E ratio, the risk for value portfolio is positively correlated with mean annual value premium. On the other hand, the risk for growth portfolios is negatively correlated with mean annual value premium. However, based on P/B ratio, the relationship between risk and value premium is not significant. Thus risk is source (not source) of value premium when searching process is P/E ratio (P/B ratio).

Relatively higher positive and negative returns of small value and small growth stocks respectively have strong impact on the value premium for both the multiples and relatively higher negative returns of large growth stocks have also the similar impact on the value premium for P/B multiple. Comparatively small value stocks produce higher returns than those of small growth, large value and large growth stocks in the Dhaka Stock Exchange during the study period.

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