

Size, Value and Credit Risk Premium on Banking Stock Return: An Empirical Study of South Asian Banks.

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ABSTRACT

The study investigates the impact of size premium, value premium and credit risk premium on stock return of banking sector of these three emerging countries Pakistan, India and Bangladesh. The data period of the study is from January 2004 to December 2015. Numbers of researchers check the effect of size and value on non-financial firms by using CAPM and Fama and French three-factor model (1993). This study has employed on CAPM, Fama and French three-factor model and four-factor model on the basis of credit risk premium in financial sector. The explanatory power of multi factor model on Fama and French methodology is greater than the traditional CAPM. The result indicates that size, book to market ratio and credit risk premia are able to explain the fluctuations in stock return. The impact of credit risk premium is observed in addition to market, size and value premium. Credit risk premium would be a fourth additional factor in Fama and French three-factor model. Information about market, size value and credit risk premium helps investors in efficient portfolio diversifications, to decide better investing decision and earn more return on their stocks.

Key words: CAPM, Fama and French three factor model, Size premium, Value premium, Credit Risk premium

Chapter 01

Introduction

Financial firms like Banks are not operating in the same environment as non-financial firms are doing their operations. One of the significant differences is that, financial firms also run in financial panics and crises. Therefore, financial panics and crises have high marginal utility for the common investor. The expected profit for the bank stocks ought to be particularly sensitive to changes in the anticipated financial disaster recovery rates of bank's shareholders, which can be identifiable with the size of bank, government guarantees and certification, and some other different attributes (Gandhi and Lusting 2015). If the bank is considered to fail or having too low return, the average stock return of the large banks is still higher than that of smaller banks having the same number of portfolio assets. It is because the larger banks have some guarantees and risk management that government absorbs some portion of bank risk. This study Attempts to investigate the pricing in the stock market of bank stock return depends on some qualities like size of bank, credit risk and some other attributes. Therefore small financial firms like banks have higher return on their stocks as compared to large financial firm because of high risk.

This study investigates the asset pricing implications of bank stocks return in selected Asian countries that are Pakistan, India and Bangladesh. The study concentrates on historical bank stock return in south Asian stock market. This study explores the effect of size and value in bank stock return of south Asian stock market as well as the effect of new additional factor that is credit risk premium. Banz (1981), Basu (1983) and Faff (2001) explain the impact of size on stock return with empirical evidences and indicated a significant negative relationship. Fama and French (1992, 1993, 1996 and 1999) check the impact of both size and value on stocks return. According to these studies firms having high book to market ratio have significant high performance than those banks having low book to market ratio. This study is an extension of

Fama and French three-factor model to check the existence of credit risk premium effect in stock return.

The study focuses to check the size and value premium impact in normal returns for created markets. The fundamental commitments are confirmation on behalf of size-sorted portfolio. Earlier studies have been carried out on international return focus on large and high stocks. This study focuses on each and every single size sorted portfolio group as well as high and low stocks. Further more the study stands to look at how well each stock catch normal return for portfolios framed for size and value. The study investigate local version of the models in which the rational returns of stock and the returns to be clarified are from different regions. Banks having small market capitalization get positive high returns where as large banks have low returns as compared to small banks (Gandhi and Lusting 2015). It is because small banks have high risk as compared to large banks. When there are the chances of financial crises then the gap of expected earning on the stock between small cap banks and large cap bank also increases. It is due to the risk management like government guarantees and put options, which basically allow stockholders of large banks that can only be exercised after large failures in a wide stocks index. These factors basically reduce the negative risk of large cap banks stock returns but the factor exists in small cap banks.

This study also explores the effect credit risk premium on financial stock in the selected stocks markets. As like from previous studies value premium and size premium has been tested in numerous markets of the world. However credit risk premium is a new factor come in a view that may have a significant effect on average stock return. Basically credit risk is described as the possibility that a bank borrower or counterparty will disregard to meet its obligations according to agreed term. The basic objective of credit risk management is to enhance a bank's threat adjusted rate of return by keeping up credit risk inside commendable parameters. Banks essentially deal with the credit risk nature in the entire portfolio and in addition the hazard in

specific credits or exchanges. Fama and Macbeth (1973) described the relationship between credit risk and stock returns by cross-sectional regressions of monthly individual stock returns. This study also explores the effect of credit risk premium by extending Fama and French (1993) three-factor methodology. Credit risk significantly affects banks profit and administrative capital. On a basic level, the motivation behind credit risk management is for adjusting banks expected future loss on their loan advances portfolios and to generate efficient return. In this regard Merton (1974) stated a model for assessment of credit risk and return called Merton model. Earlier studies documented mixed confirmation with respect to credit risk and return in different stock markets. This study uncovers the effects of credit risk premium in emerging markets that is Pakistan, India and Bangladesh.

1.1 Theoretical background

1.1.1 Modern portfolio theory (MPT)

Modern portfolio theory put forth by Markowitz (1952) in portfolio selection is about minimizing risk and maximizing return on investment. The main theme of the theory is to diversify the risk and get more return on selected portfolio. Diversification is to select the group of securities for investment that have lower risk. Efficient portfolio gives high return at a given level of risk or lower risk at high level of return. MPT also called management portfolio theory measures the advantages of diversification called “not putting all your eggs in one basket”. The extension of this theory by Treynor and William Sharp (1961, 1964) lead the foundation of capital asset pricing model (CAPM).

1.1.2 Capital asset pricing model (CAPM)

The capital asset pricing model for single period suggests a simple linear relationship between the market risk and the expected return of a security. This theory is provided by CAPM

presented by Treynor (1961), Sharp (1964) and Lintner (1965). This theory expresses the relationship between stock return and risk. According to CAPM a single factor market premium ($R_m - R_f$) affect the portfolio return. Investors can diversify its risk but cannot totally avoid the risk related to their investment because systematic risk (market risk) is common for the whole market.

This single factor is criticised by too many researchers and states that CAPM can't better explain the relationship of risk and return.

1.1.3 Arbitrage Pricing Theory (APT)

The Arbitrage Pricing Theory of Ross (1976) states that there are number of factors on which stock return depends. Theoretically this anomaly challenges the capital asset pricing model (CAPM). The empirical studies indicate that there is not a single factor affecting the return of securities. The results of direct tests have been unsatisfying, current evidences from studies explores the presence of additional factors, which are applicable for asset pricing of the securities. According to the evidence presented in Banz (1981) study indicates that the capital asset pricing model is miss specified. Further more this argument has been tested by too many researchers and found the presence of additional factors but this does not allocate the problem of portfolio efficiency. The APT theory has been empirically tested in numerous markets of the world but this does not identified the factors associated to the stock returns variations. For this purpose various studies have been adopted in all part of the world in order to manipulate these factors.

The capital asset pricing model (CAPM) is the dominant asset pricing model but however some other multi-factor asset pricing models have additionally been examined in literature.

1.1.4 Fama and French three factor model

The contributions of Fama and French (1992, 1993, 1996, 1998) proposed significant substitute model for asset pricing based on Arbitrage Pricing Theory framework. That is Fama and French three-factor model. This model suggests that stock return is defined by market premium, size premium and value premium. For the first time Fama and French (1992) found that E/P, Size, leverage and book to market ratio of stocks have significant high explanatory power in explaining the variations of stocks returns. They explained that pricing of the stocks is determined through these factors.

This FF model has been tested in several markets of the world but very little work has been done in South Asia. Therefore this study includes the stock markets from south Asia. The countries include Bangladesh, India and Pakistan. All these country have a major strategic importance as like Pakistan is linked with emerging markets that is India, China and Middle East. Henceforth India and Bangladesh have also strategic importance in this regard like trading links with Asia and European countries. For this purpose it is very important to check these widely accepted factor affecting approach in these equity markets.

The study examines the impact of size, value and credit risk anomalies on stock return in selected South Asian countries. The size premium is the historical tendency for the stocks of companies having small market capitalizations will better perform than the stocks of firms having large market capitalizations (Banz 1981). Stock having small market capitalization will get high stock returns; the fact of this high performance is because of the compensation of an additional risk factor. This additional risk factor is included in Fama and French threefactor model. Size premium is that small companies or firms (having small market capitalization) go to better perform than larger companies or firms (Basu 1983). A firm's economic growth is eventually the driving force behind its stock's performance, and small firms have much longer runways for growth than that of larger firms.

The biggest commercial bank stocks positioned by aggregate size of the balance sheet, have significantly low risk-adjusted stock returns than that of small- and medium-sized bank stocks, despite the fact that larger banks are altogether significantly more levered (Gandhi and Lustig 2015). This study uncovers a size factor in term of bank stock return. Banks are not quiet the same as non-financial firm in too much conducts. One of the big differences is that banks also run in banking crises, not only by depositor but also by creditors (Gorton and Metrick 2012). It is due to the reason of financial crises which are highly negligible utility states for the common investor as the expected stock return on bank stocks should be particularly sensitive to changes in the projected financial disaster recovery rates of bank shareholders related to bank size, the regulatory administration, government guarantees and certificates, and certain other attributes.

The study also explores the effect of Value premium on stock return. Value premium is defined as book to market ratio of the firm. The book-to-market ratio derives undervalued or overvalued stocks by comparing or taking the ratio of book value of equity to its market value. The Book-to-Market ratio effect is more likely the most governed and widely used impacts in financial markets. Eugene Fama and K. G. French recognized the value premium for the first time in 1992; creating a measure well named as HML for checking variation in the stock based on value. They state that volatility of stocks is increased by HML. High and low value stock have different returns.

The study also confirms the effect of credit risk premium on stock return. Merton (1974) first introduced credit risk premium as a market anomaly and stated a model called Merton model for assessment of credit risk and return. In banking or financial sector loan is the bigger factor of credit risk. In any case, different sources of credit risk involves in many activities of the banks. Banks and financial firms faces credit risk in most of money related transaction like

advances, interbank loan, forwards, future, swaps foreign and exchange financing etc. Thus these credit risk have a major affect on stock return of these firms.

The credit risk premium effect is uncovered in the study. Firms having low credit risk will generate high return than those firms having high credit risk Fama and Macbeth (1973). This is wondering because investors seem to pay a premium for bearing credit risk. The credit risk effect displays itself due to the poor performance of low-rated stocks. Avramov, Chorda, Philipov and Jostova (2009) also proposed that the profits of firms having high credit risk are low and restricted but where as the profit low risky firms are not more affected.

According to the Fama and French (1998) and Griffin (2002) size and book to market factors affects are specific to countries and applying these international factors on individual equity markets can have different results. In this regard our study is conducted to check the validity of these factors in south Asian equity markets. Thus the study is conducted to examine the effect of Arbitrage Pricing Theory by using Fama and French three-factor model as well as by establishing a multi factor model for additional credit risk premium.

1.2 Problem statement

Multifactor model can better explain the variation in stock return and to find a better asset pricing model is a good subject of interest. Along with size and value other factor can also be used to judge the variations in stock return. Mispricing of the securities in the market calls for a better asset-pricing model. The factors are also sector and country specific according to many researchers so it could be also tested in financial sectors (Fama and French 2012).

Thus it is necessary to examine these factors factor in South Asian equity market on the approach of Fama and French three-factor model. As well as by adding an additional factor credit risk premium by adopting multi factor model approach.

1.3 Research Questions

The study try to answers the following research questions.

1. Does size premium explains equity return of banks in emerging Asian markets?
2. What is the effect of value premium on equity return of bank?
3. Whether credit risk premium can be fourth additional factor in Fama and French three-factor model for financial companies?

1.4 Objectives of the study

Following are the main objectives of the study.

- To examine the relationships of size anomaly and bank equity return in Pakistan, India and Bangladesh.
- To explore the validity of Fama and French three factor model in banking stock return of Pakistan, India and Bangladesh.
- To investigates the effect of credit risk premium in financial sector of Pakistan, India and Bangladesh.
- To propose an asset pricing model that captures asset pricing of banking.

1.5 Significance of the study

Investment in equity and diversification of portfolio needs to have the knowledge about the market. A financial knowledge about market, size and value and some other factor may help investors to prevent from market imperfection. There are a lot of studies on these factors in advance market but very little work has been done in South Asia equity markets. Furthermore investors also take interest in investing stocks of financial sectors therefore these factors can

be interrogated on financial stocks of south Asia market. As because of foreign direct investment, the investors take interest to invest in these emerging markets.

The main focus of the study is to check the existence of additional factor in Fama and French three-factor model in these regions. To explain whether credit risk premium is a systematic risk or not, whether it is priced or not. Investor must take concern to look into it while selecting portfolio. The study explains the role of credit risk premium in bank stock return of south Asian equity market because it is considered as good source of investment and portfolio diversification.

This study contribute a better explanatory power for firm size, credit risk and value premium explaining the fluctuation in equity return. It will be meaningful for pricing decisions and determination of fair value of assets. It will facilitate investors in efficient resource allocation and decisions regarding investments and financing. In short this has more significance for valuation of financial instruments.

1.6 Organization of the study

The study is organized to the following sections.

Introduction of the study is included in Chapter 1. Literature review base on empirical findings are described in Chapter 2. Methodology used in the study is comprised in chapter 3. Results analysis and discussions are summarized in Chapter 4. Where Chapter 5 include conclusion, recommendation and directions for future research.

Chapter 02

Review of Literature

2.1 Size premium

The size premium is the historical tendency for the stocks of companies having small market capitalizations will better perform than the stocks of firms having large market capitalizations Banz (1981). This factor is included in Fama-French three-factor model, which has been tested across the globe in various studies. Size anomaly refers that firm having low market capitalization will better perform than those having large market capitalization Basu (1983). For a firm economic growth its stock performance is very necessary. Stock performance is a driving force for the firm economic growth, and thus small cap firms have abundant long opportunities for growth than large firms. Thus the study contributes the effect of size premium on Banks stocks in South Asia. The study uncovers a specific bank size factor and book-to-market ratio, which may help us understand and interpret these anomalies.

Size effect is considered by a large number of literatures in Finance. As like Banz (1981), Basu (1983), Fama and French (1993) and so many more discuss this effect and also give evidences. Banz (1981) manipulate the size effect in U.S equity market for the first time. He explored size of firm by its market capitalization explained by empirical evidences, the negative relationship between stock return and firm size.

Fama and French (1993) took the study on stocks and bonds combine by analyzing a timeseries regression approach and interpret the same result. Fama and French (1993) for this purpose built a three-factor model for asset pricing for stocks. This model includes additional factors that are size and book to market ratio related to risk factors. The model of Fama and French that is FF three-factor model is the extension of the capital asset pricing model

CAPM. The model is valid for explaining the variation in pricing of the securities and interpret that size and value have a significant impact on stock return. Small size of firms has higher stock return than large size firms.

Halliwel, Heaney and Sawicki (1999) check the validity of Fama and French (1993) three factor on Australian equity market. The study reports that the effect of size and value are existed in small sized firm and high book to market ratio stock but not on large size firms. However the study also explained that Fama and French three factor model has more explanatory power than capital asset pricing model. The study concludes that the effect is existed in low sized but not in high sized firms as well as in high book to market stock than low book to market stocks. Moreover, the study of Halliwel et al. (1999) does not provide any evidence for the trends from low to high book-to-market ratio stocks and for decline in size stock variation. But where as Connor and Sehgal (2001) taken the study on Indian stock and provide evidences that Fama and French three factor model has more explanatory power than CAPM which is based on single factor. Their study concluded that size, book to market ratio and market premium has a significant result in Indian stock market.

Faff (2001) also taken this study on Australian stock market by using nine year data period (1991 to 1999) and tested the validity that Fama French three factor model explain the stock pricing. He found that Fama and French three-factor model could better explained the market pricing and have high explanatory power. Faff (2001) expressed with empirical evidence that there is a significant negative relationship between size and market return, which is against the study Halliwel et al. (1999). Drew and Veeraraghavan (2002) test the presence of FF three factor model approach for factors impact of size and value in Malaysian equity market. They work also work on nine-year period data from 1991 to 1999 and constructed six portfolios on

the basis of two size and three book to market stocks. They found strong evidences on the validity affect of size and value premiums on stocks return.

Keith (2002) conducted similar approach on Hong Kong equity market working on 13-year data for the period 1984 to 1997. The study finding result was similar to earlier studies result and expressed that FF model can explain the variation in the stocks return. The study explained that three factors size, book to market ratio and earning per share can explain the changes in stock for that particular time period. The study additionally check the approach with earning per share and expressed with empirical evidences that these factors are more applicable for explaining stock behaviors in Hong Kong stocks market.

Drew and Veera Raghavan (2003) took the study on south East Asian markets on CAPM approach with Fama and French three-factor model. The study reported that size and value effect is existed here for all stock. This study additionally elaborates the better compensation for risk, which brings variation to the stock and was not explained by capital asset pricing model.

Sehgal and Tripathi (2005) tested the effect of size factor on Indian equity market by using different variables that market cap, value of firm, net fixed assets, net working capital, total assets and total sales. The findings of the study determine that by using market-capitalization size premium is substantially high. However it is also positively significant with other nonmarket based size measures. Guan, Hansen, Leikam, and Shaw (2007) tested the effect in U.S and determined that some idiosyncratic variables are existed which tells the variation stocks on average cross sectional return. These accounting variables are Size, book to market and price earning, which is significant over the period and the result was not acceptable by CAPM approach. This indicates that these variables are correlated with the average stock return in U.S stocks.

Mirza, and Shahid (2008) find significant impact of size anomaly by working on 81 nonfinancial firms listed at Karachi stock exchange (KSE). O'Brien, Brailsford and Gaunt (2010) taken the study an Australian stock exchange (ASX) by using 24 year data of listed firms 300 firms. They divided the samples into three portfolio small, median and large on the basis of market capitalization and book to market ratio. They used GMM and multivariate regression for analysis and found that size has significant negative relationship with stock return where as book to market ratio has significant positive relationship with stock return. As in the study of New York documented size effect.

In common small cap NYSE companies have significantly larger risk adjusted returns than larger cap NYSE companies over a horizon of forty-year (Dijk 2011). This size effect documented is not linear in the market extent but is most evident for the smaller firms in the sample. The effect is additionally not more stable through different period.

According to the study of Hassan and Javed (2011) they found empirical evidences for size premium, which is significantly positively related to the average return of small cap firms. However their finding conclude that size premium has insignificant result of big cap portfolios stocks. The study of Amel-Zadeh (2011) shows a contradictory relationship between size premium and stock return. He conclude that there is a conditional relation among size and return which further indicates that firms stock return is conditional on past performance of the firm.

Khan, Hassan and Ali (2012) also took a cross sectional study check the size premium effect on Pakistani equity market. The data period used for the study was seven year (2001 to 2007) on the basis of market capitalization. The study findings were consistent to the major studies, indicates a significant positive relationship between size and stocks returns. Minovic and Zivkovic (2012) taken the same study on Belgrade Stock Exchange, Serbia to check the impact

of size and book to market ratio. They found that size impact is significant in Belgrade Stock Exchange, Serbia over the tested period.

Mazviona and Nyangara (2014) also checked the impact of size on Zimbabwe stock market and found that size effect exist in the stock and have a significant result over the study period.

Farhan and Sharif (2015) taken the study on non-financial KSE stocks and indicates that size has significant impact on stock return. They show the negative relationship between size and stock market return.

The study undertaken by Gandhi and Lusting (2015) reports that size anomaly in bank stock returns is not the same as the size impact been recorded for non-financials firms. The size premium is existed in banks stocks return, which can be extracted with an additional risk factors. The study also provides evidences that small large cap banks have low return as well as low risk. However small and median cap firm have better return than large banks due to bearing an additional risk premium.

2.2 Value premium

Second important component of the study is to explore the value premium effect on equity stock return in south Asian equity market. Value premium is defined as book to market ratio of the firm. The book-to-market ratio derives undervalued or overvalued stocks by comparing or taking the ratio of book value of equity to its market value. The Book-to-Market ratio effect is more likely the most governed and widely used impacts in financial markets. It is the inverse of P/B ratio compares book value of equity to market price of the equity. When the book to market ratio is higher its mean the targeted firm is cheap and performing not better than those having low book to market ratio.

Ben Graham popularized book-to-Market anomaly for the first time. Before this it was not considered as a market premium anomaly. But this BMR lost its importance when efficient

market theory and CAPM model were introduced broadly. However value premium come back its significant place by testing in more rational studies predicting significant impact on stock. Fama and French (1993) well explained value premium anomaly in FF three-factor model.

Fama and French use value premium in their three-factor model in 1993. Eugene Fama and K. G. French recognized the value premium for the first time in 1992; creating a measure well named as HML for checking variation in the stock based on value. They state that volatility of stocks is increased by HML. High and low value stock have different returns. In investigating value premium it refers that high growth stock will generate high-risk adjusted return. Fama and French (1993) three-factor model this value premium is correlated with SMB size and market Premium. Value premium is defined as high minus low book to market ratio, which explains the variations in growth and value stock. HML explores that firms with high book-to-market ratios (value stocks) better perform than firms having low ones (growth stocks).

Fama and French (1992) estimate that firms will be successful if they have high stock prices than its book value of balance sheet. In FF three factor model, HML will better explain the variation in the stocks based on book to market ratio correlated with additional size and risk factor. Further more Fama and French (1995) additionally explained the characteristics of firms with high book-to-market and those with low book-to-market equity. Their study discover that companies with high book to market ratio tend to be persistently distressed and those with low book to market ratio are associated with constant profitability. Some of the studies expresses that the high returns of high book to market stocks are ought to be taken as low profitable and high riskier stocks.

Similarly so many studies have been conducted to check the effect of value premium on stocks market. Different researchers use different stock to check the application of Fama and French three-factor model. Mirza and Shahid (2008) find significant impact of size and value anomaly in Karachi stock exchange (KSE). They use daily data of 81 non-financial listed firms by using

Fama and French three Factor approach. Their analysis shows the existence of both size and value premia and reported that FF model better explains the portfolio returns.

Hassan and Javed (2011) concluded in their study that that stocks having high book to market ratio out perform stocks with low book to market. The study also refers that Value premium is positively significant for all portfolios except those stocks having low book to market ratios. Furthermore, the study indicates strong evidences that book to market effect is increasing is constantly when going from lowest to highest portfolios based on book to market ratios. The study also explained the trends of SMB factor moving from large size to small size portfolio.

Fama and French (2012) inaugurated the study on 23 countries of four region examined (North America, Europe, Japan, and Asia Pacific) to check the effect of CAPM whether it explain the effect of size, book to market ratio and momentum with return in these region. They use 22 year monthly data and their empirical result indicates that the effect of size and book to market ratio is significant in all region but insignificant in Japan. The study strongly supports the relationship of size and value premium with stocks return.

Lischewski and Voronkova (2012) tested the existing evidence that shows that value premium, size premium and liquidity factors affect the emerging market and their study result support the existing evidences of Fama and French. Brails ford, Gaunt and O'Brien (2012) tested three-factor model in Australian market and find result in the favor of Fama and French and Opposed CAPM.

Furthermore Fama and French (2012) again taken this study on 18 emerging stock and found strong empirical evidences for the existence of value premiums effect in stocks return. Minovic and Zivkovic (2012) took the same study on Belgrade Stock Exchange, Serbia to check the impact of book to market ratio and size. They found that book to market ratio or value premium impact is significant in Belgrade Stock Exchange, Serbia over the tested period.

Mirza, Sara and Abbas (2013) taken the study on multi factor model to examine the return in variation compared to CAPM model. From their statistical findings they evaluate that CAPM is unable to explain the changes in stock return. However the study interprets that three factor model, size and book to market ratio can better explain the variation in the stocks return.

Chaibi, Alioui and Xiao (2014) had conducted study on the Russell 3000 market index between 2010 and 2012, which indicates that highly valued firms have better significant performance than low valued firms. However many of these studies were on non-financial stock but our paper is the first to explain the effect in financial sector. Baek and Bilson (2015) applied the approach of Fama and French three factor model to financial and non financial listed firms in U.S stocks market. The study statistical findings refers that value and size effect is significant in in both financial and non-financial firms. The study mentioned that size and value are the common risk factor that can explain the variation in the average returns of the stocks.

Sadeghi (2016) has presented an empirical analysis on Tehran Stock Exchange (TSE) listed firms over the period 2001-2008 to determine whether there is any difference between stock returns of two value and growth portfolios. They sorted the portfolio by P/E and Price to Book Value, in terms of the ratios of market sensitivity to index (β), firm size and market liquidity. The study has implemented that results have indicated mix effects of market sensitivity, firm size and market liquidity in various periods. However the results of this study are somehow in contrast with other findings, which indicated the superiority of value stock against growth stock. In other words, the results of this survey did not find any evidence to claim that the value stocks listed on TSE would outperform growth ones. Moreover, while there were no differences between the variances of two growth and value portfolios in terms of liquidity, the effects of β and market size were somehow mixed.

2.3 Credit Risk Premium

The third principal constituent of the study is credit risk premium. The average risk-adjusted returns on bank stocks portfolio based on size or market capitalization. Credit risk is fundamentally described as the ability of a bank borrower that will not repay the loan amount to the bank according to prescribed terms. When borrower cannot meet its obligation to the banks on agreed terms then risk is there for the bank. For this purpose banks need to concern on credit risk management in order to minimize its danger or loss associated to risk. Merton (1974) first introduced credit risk premium as a market anomaly and stated a model called Merton model for assessment of credit risk and return. In banking or financial sector loan is the bigger factor of credit risk. In any case, different sources of credit risk involves in many activities of the banks. Banks and financial firms faces credit risk in most of money related transaction like advances, interbank loan, forwards, future, swaps foreign and exchange financing etc. Thus these credit risk have a major affect on stock return of these firms.

Earlier studies recorded mixed confirmation with respect to capital and earning management by means of the loan loss provision. Moyer (1990) find confirmation of a credit loan loss provision affect. The study indicates that credit loan loss provision has a negative effect on return and earnings of the firm. Beatty, Chamberlain and Magliolo (1995) found confirmation of a negative relationship between credit loan loss provision and capital proportions that are predictable through utilization of loan loss provision to minimize expected cost. Besides, this Collins, Shackelford and Wahlen (1995) discover the existence of relationship between credit loan loss provision and earning. He further suggested that smooth profit could be indicated by mean of loan loss provision. Beatty et al. (1995) don't find evidences of income smoothing through loan loss provision.

Past papers have likewise analyzed director's utilization for loan loss provision towards signal information approaching variations in future income. As like Beaver, Eger, Ryan and Wolfson

(1989) recommend that financial investors and specialists take an indication of growth from loan loss provision variations. According to the Consistency of this signalling theory, Wahlen (1994) reports a significant positively relation between loan loss provision simultaneous stock returns, income changes and future losses. According to the study of Beaver and Engel (1996) they loan loss provision has negative relationship with market stock and hence it is reliable for signalling information to the market.

Liu and Ryan (1995) taken the study to check whether stock market is affected by loan loss provision and found that it is not more than a positive signal to the market and hence a positive effect on stock market. Beaver and Engel (1996) further reported in his study also that a significant negative relationship exist between stock returns of banks and discretionary loan loss provisions. However, Dichev (1998) indicated in their study that firm having high credit risk has lower earning on their stock.

According to the study of Griffin and Lemmon (2002) firms which have high credit risk or have high provisions will have low book to market ratio and hence predicted that the stocks will be miss priced. Vassalou and Xing (2004) show that size premium and value premium are concentrated in high default risk firms, thus adding credibility to the assumption that risk factor is closely related to return for size and value sorted portfolios. Avramov, Chordia, Philipov and Jostova (2007) proposed that return of firms stock are limited that have high credit risk but not for those which have high credit quality. Campbell, Hilscher, and Szilagyi (2008) also documented that firms having high credit risk or default probability will have low stocks future return, thus creating disbelief on a market premium for credit risk. So there are too many evidences, which suggests that mispricing of stocks is caused by credit risk effect.

Friewald, Wagner, and Zechner (2014) found strong support of credit risk premium an equity return. The empirical evidences of the study shows that equity return decreases when moving from high to low portfolio sorted on credit risk premium. He further explained that this curve

and effect cannot be explained by distress risk book to value size or liquidity measures. Afik and Benninga (2014) applied the same concept on U.S bonds and find with statistical evidences that credit risk premium has an impact on bond return.

2.4 Relationship between Size and Value Premium

The relation between value size and return is explained by too much literature. As Dennis, Perfect, Snow, and Wiles (1995) also interpret in their study average return portfolio increases when book to market ratio increase for size sorted portfolio. As well as average stock return decrease as size increases for value-sorted portfolios. According to this study investors choose small size cap firm's stock and high book to market ratio will generate better return on their portfolios. Fama and French (1996) explained that risk is involved to explain the effect of size and value premium on stock return. Similarly size and value premium have a significant effect on market stock return with an additional existence of risk factor.

Keith (2002) conducted a study to check the joint effect of three variables on Hong Kong stock exchange. So working on 13-year monthly data (1984-1997). They found that these three accounting variables, book-to-market or value premium, size or market capitalization, and P/E ratios could better explain cross-sectional fluctuations in stocks returns. The study further suggests that these anomalies can better explain the behaviors of asset pricing of stock in Hong Kong stock exchange. Griffin and Lemmon (2002) proposed that value premium and size premium effect in equity stocks are determined by risk. Size and value have a significant impact on market return of stocks.

Mirza and Shahid (2008) find significant impact of size and value anomaly in Karachi stock exchange (KSE). They use five years daily data of 81 non-financial listed firms by using Fama and French three Factor approach. They found that Fama and French three-factor model is valid

to explain the impact of size and book to market premium in these stocks. According to this study value premium is found significant for all stocks. Where as size premium is found significant for small stock but have no effect for big stocks.

Simlai (2009) perform a study to check the effect of risk factors on variations of portfolio stocks return based on size premium and value premium two simple accounting ratios. They concluded that risk factors exposure is explaining better the time series variations in the portfolios sorted by size and book-to-market sorted.

Hassan and Javed (2011) investigated the asset pricing techniques in Pakistani equity market by using nine years data (June 1998 to June 2007) for monthly stock prices. The study discovered the combine effect of size and value premium by working on FF three factor model approach. The study refers that Value premium is positively significant for all portfolios except those stocks having low book to market ratios. Furthermore, the study indicates strong evidences that book to market effect are increasing is constantly when going from lowest to highest portfolios based on book to market. The study further execute that Size premium has positive significant relationship to small portfolio returns but it has insignificant relation for portfolios of big stocks.

2.5 Research Hypotheses

On the basis of above theoretical framework of the study, several hypotheses can be developed.

Hypothesis 1: *There exist a relationship between Market premium and equity return.*

Hypothesis 2: *There exist a relationship between Size premium and equity return.*

Hypothesis 3: *There exist a relationship between value premium and equity return.*

Hypothesis 4: *There exists a relationship between credit risk premium and equity return.*

Chapter 03

Data Description and Methodology

3.1 Data description

The study explains the relationship of stock returns and multiple factors that is market, size, value and credit risk premia. The study used 12-year data of 90 banks from three south Asian countries Pakistan India and Bangladesh. The data starts from January 2004 to December 2015. The study approach is basically the approach of Fama and French three-factor model. The study applies multi factor model by adding an additional factor, that is credit risk premium to Fama and French three-factor model. The study uses the procedure described in Fama and French (1993) to construct representing risk factors and excess returns.

The sample of financial firms has been selected for the study. The reason to select financial firm is because most of the studies undertaken up to now are on non-financial firms. The study collected the data of firms that are publically listed on Karachi Stock Exchange (KSE), Bombay Stock Exchange (BSE) and Dhaka Stock Exchange (DSE). The study does not select non-financial firms because of the difference in accounting years.

Monthly stock prices data is collected from all three concerned stock exchanges. For Pakistan the prices is collected from business recorder website. For India the data is collected from BSE where as for Bangladesh the data is taken from Dhaka Stock Exchanges. Three month T-bill rate is used as a proxy for risk free rate, which is downloaded from International Financial Statistics (IFS) websites for Pakistan and Bangladesh. For India Treasury corporate bond yield rate is used as a proxy for risk free rate. Market capitalization is calculated by multiplying market price with number of outstanding shares, which are taken from balance sheets and bank specific websites. Market index for Bangladesh is taken from Dhaka Stock Exchange while for Pakistan and India is downloaded from yahoo finance.

3.2 Variable Description

The study examines the impact of size, book to market ratio, and credit risk premium on banking stocks return. Size is the market capitalization of the firm, which indicates the market value of the whole firm. Book to market ratio is calculated by dividing book value of equity on its market value. It indicates whether the security is undervalued or overvalued. Market capitalization and Book to market ratio defined by most of financial analysts are given as.

$$\text{Market capitalization} = \text{MPS} \times \text{Number of outstanding shares} \quad (1)$$

Where MPS is market price of the shares.

$$\text{Book to market ratio} = \frac{\text{Book value of equity}}{\text{Market value of equity}} \quad (2)$$

Credit risk premium is measured through loan loss provision used by Ahmed, Takeda & Thomas (1999); Laeven and Majnoni (2003). The data of loan loss provisions is taken from the balance sheets of banks and money control website.

Market premium is calculated as index minus risk free rate ($R_m - R_f$).

3.3 Portfolio construction

- i. Size sorted portfolio is constructed by market capitalization of firm. For this purpose market capitalization of 90 banks are calculated.
- ii. The sample of size is divided into two equal parts. Banks having higher capitalization than median are arranged as B (Big) while firms having small market capitalization than median is named as S (Small).
- iii. For value (book to market ratio), the sample is divided over the median on the basis of high and low book to market ratio. In this way 45 high BTM stocks are named as H (High) while the rest 45 are named as L (Low).

- iv. For credit risk premium the sample is divided over the median on the basis of loan loss provision. 45 banks having high LLP are named as HLLP where other having low loan loss provision are named as LLLP.
- v. In this way portfolio are created for the year. The mechanism is repeated over the period from 2004 to 2015.

3.4 Variable construction

The average return of all arranged portfolio S, B, H, L, HLLP, and LLLP and then averages are used to construct the variable that size premium, value premium, and credit risk premium.

The method of construction is below

$$\text{Size premium} = \text{SMB} = \text{Small} - \text{Big}$$

$$\text{Value premium} = \text{HML} = \text{High} - \text{Low}$$

$$\text{Credit risk premium} = \text{HLLP} - \text{LLLPL}$$

$$\text{Market Premium} = (R_{mt} - R_{ft})$$

And

$$R_{mt} = \ln (I_t/I_{t-1})$$

Where R_{mt} is the market return for time t (month), R_{ft} is the risk free rate (T bill rate), I_t and I_{t-1} is the market index for time " t " and " $t-1$ " previous.

3.5 Model Specification

The study measures the behavior of market return due to some premia. As Sharpe (1964) Lintner (1965) focused on one factor model that is CAPM. Fama and French (1993) used three-

factor approach to measure stock return variations. FF model have three-premia that is market, size and value premium. Furthermore the study adds an additional factor to FF three factor model approach and run a multi factor model for four variables. The new variable is credit risk premium measured loan loss provision.

$$R_t - R_{ft} = \alpha + \beta_1 (\text{market premium}) + \text{error term}$$

$$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + e_t \dots\dots\dots (3)$$

$$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + e_t \dots\dots\dots (3.1)$$

$$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \beta_4 \text{HPMLP}_t + e_t \dots\dots\dots (3.2)$$

In the above model the first equation (3) indicates CAPM model, which has been discussed in the literature. Equation (3.1) is Fama and French three-factor model in which size and value is added to the market premium. The last (3.2) is multi factor model in which additionally credit risk premium is added to FF three factor model.

Where,

- R_{ft} = Risk free rate (T-bill rate)
- R_t = Return of portfolio predicted for period “t”.
- α = The management impact (Alpha)
- e_t = Error term
- MKT_t = market premium
- SMB_t = Size Premium= Small - Big
- HML_t = Value Premium = High minus Low
- HPMLP = Credit Risk Premium = High provisions – Low provisions

Chapter 04

Result and Discussions

4.1 Results

4.1.1 Descriptive Statistics

Before applying regression test the study examine the behaviour of data to check its accuracy. Descriptive statistics shows the general behaviour of data including dependent variable as well as all independent variables. The mean value shows the average of data where as standard deviation shows how it deviates from mean. The descriptive statistic table along with mean and standard deviation it also contains the minimum values, maximum values, skewness and kurtosis. Minimum and maximum value is the high and low difference in the data. Skewness shows that how the data look from its point. It is the measure of symmetry, data distribution from left to right. Kurtosis show the tail of the data either it is lightly or highly tailed from the centre. Results of descriptive statistic are given below in Tables.

Table 4.1 Descriptive statistics for Size, value and credit risk sorted portfolio (Pakistan)

	<u>P</u>	<u>S</u>	<u>B</u>	<u>H</u>	<u>L</u>	<u>HLLP</u>	<u>LLLP</u>
Mean	0.0093	0.0147	0.0040	0.0112	0.0077	0.0125	0.0091
Median	0.0088	0.0102	0.0088	0.0124	0.0097	0.0170	0.0082
Maximum	0.2786	0.3807	0.2889	0.3033	0.2572	0.3377	0.7039
Minimum	-0.5083	-0.4911	-1.2345	-0.6089	-0.3877	-0.8645	-0.3419
Std. Dev.	0.0911	0.1353	0.1380	0.1049	0.0841	0.1239	0.1073
Skewness	-1.2125	3.0761	-5.3884	-1.3809	-0.7985	-3.3503	1.8390
<u>Kurtosis</u>	<u>9.6264</u>	<u>28.8727</u>	<u>47.6244</u>	<u>10.5885</u>	<u>6.5606</u>	<u>23.4362</u>	<u>15.3934</u>

Table 4.1 shows the statistical characteristics of portfolio sorted on size, value and credit risk premium for Pakistan. Size is comprised in small (S) and big (B) portfolio. Result shows that S portfolio is a high return and low risk portfolio as compare to B stock portfolio. Similarly H portfolio has high return than L portfolio sorted on high and low book to market ratio. The mean value and standard deviation of S is 0.0147 and 0.1353 and for B is 0.0040 and 0.1380.

Maximum value of B is 0.2889 and S is 1.0738 that indicates the average monthly return and risk. The value of minimum for B is -1.2345 and for S it is -0.4911. For value premium (book-to-market ratio), the mean return of H and L are 0.0112 and 0.0077. The value of standard deviation for H and L are 0.1049 and 0.0841 indicating risk of portfolios. The maximum and minimum value of H and L are 0.3033 and 0.2572, and -0.6089 and -0.3877. This indicates the maximum high return in month as well minimum loss in the month. For credit risk premium the average return of HLLP and LLLP portfolios are 0.0125 and 0.0091. The value of standard deviation or risk for HLLP and LLLP portfolios are 0.1242 and 0.1071. The maximum return over the month and minimum return in the month for HLLP and LLLP portfolios are 0.3377 and 0.7039, and -0.8645 and -0.3419.

Skewness and kurtosis are also listed in the table 4.1 that describes the data distribution. If the data is normally distributed then skewness must be zero but for the real world data the perfect zero skewness is unlikely to a certain extent. If it is positive that shows the data is skewed positively and skewed at right means the longer is the right tail than the left and if skewness is showing negative values it means that data is skewed negatively and left tail is longer than right. In the table 4.1 the results of skewness are negative for all portfolios except S and LLLP. The skewness values for S, B, H, L, HLLP, and LLLP are 3.0761, -5.3884, 1.3809, -0.7985, -3.3503 and 1.8390 respectively. This shows negatively skewed distribution of data while positive for S and LLLP. Thus here is a marginal skewness in the data. The values of kurtosis show the comparative pointedness or smoothness of distribution of data contrast to the data's normal distribution. The value of kurtosis is of approximately 3 and indicates the normal distribution of the data from the point. Greater than 3 Kurtosis means that data distribution is relatively pointed and show the peak and flatness of the data. Results of Kurtosis values for S, B, H, L, HLLP, and LLLP are 28.8727, 47.6244, 10.5885, 6.5606, 23.4362 and 15.3934

respectively. This demonstrates that points for normal distribution is relative for S, B and L and is on the peak.

Table 4.1.1 Descriptive statistics for Size, value and credit risk sorted portfolio (India)

	P	S	B	H	L	HLLP	LLLP
Mean	0.0195	0.0241	0.0148	0.0239	0.0149	0.0226	0.0161
Median	0.0148	0.0186	0.0157	0.0178	0.0154	0.0184	0.0103
Maximum	0.4022	0.4523	0.3522	0.4090	0.3955	0.3657	0.4388
Minimum	-0.172	-0.166	-0.198	-0.163	-0.189	-0.225	-0.155
Std. Dev.	0.0971	0.0976	0.1035	0.0979	0.1034	0.1061	0.0974
Skewness	0.6438	0.8775	0.3396	0.6571	0.5233	0.2800	0.8891
Kurtosis	<u>4.1452</u>	<u>5.1630</u>	<u>3.2902</u>	<u>4.1630</u>	<u>3.8746</u>	<u>3.3162</u>	<u>5.3138</u>

Table 4.1.1 indicates the statistical characteristics and behaviours of portfolio sorted on size, value premium and credit risk premium for India. Size is comprised in small S and big B portfolio. Result shows that S portfolio is a high return and low risk portfolio as compare to B stock portfolio. Similarly H portfolio has high return than L portfolio sorted on high and low book to market ratio. The mean value and standard deviation of S is 0.0241 and 0.0976 and for B is 0.0148 and 0.1035. This shows that average monthly return for S and B are 0.0241 and 0.0148. Where as the risk for S and B portfolio is 0.976 and 0.1035. Maximum value is high return in the month and value of minimum is the minimum return or loss for portfolio. The maximum value for S is 0.4523 and B is 0.3522. As like the minimum value or return for S is -0.1663 and for B it is -0.1975. For value premium (book-to-market ratio), the average return for H and L portfolios are 0.0239 and 0.0149. The value of standard deviation or risk for H and L are 0.979 and 0.1034. The maximum and minimum value of H and L are 0.4090 and 0.3955, and -0.1628 and -0.1891. The result indicates that S portfolio (small) have a high return than big as well as H portfolio also perform better than L portfolio.

For credit risk premium (high and low loan loss provision) the mean or average return for HLLP and LLLP are 0.0226 and 0.0161. The value of standard deviation or risk for HLLP and LLLP are 0.1061 and 0.0974. The maximum return and minimum return of HLLP and LLLP are 0.3657 and 0.4388, and -0.2250 and -0.1553.

Skewness and kurtosis are also listed in Table 4.1.1 that describes the data distribution. The results of skewness are positive for all portfolios and hence all are positively skewed. The skewness values for S, B, H, L, HLLP and LLLP are 0.6438, 0.8775, 0.3396, 0.6571, 0.5233, 0.2800 0.8891 respectively. This shows positively skewed distribution of data and thus a marginal skewness in the data persists. The values of kurtosis show the comparative pointedness or smoothness of distribution of data contrast to the data normal distribution. Results of Kurtosis values for S, B, H, L, HLLP and LLLP are 5.1630, 3.2902, 4.1630, 3.8746, 3.3162 and 5.3138 respectively. This demonstrates that points for normal distribution and smoothness in the data. This states that points for normal distribution is relative for a little peak for S and LLLP while the rest show flatness.

Table 4.1.2 Descriptive statistics for Size, value and credit risk sorted portfolio

(Bangladesh)

	P	S	B	H	L	HLLP	LLL
Mean	0.0141	0.0199	0.0106	0.0179	0.0116	0.0183	0.0126
Median	0.0125	0.0256	0.0178	0.0199	0.0208	0.0214	0.0052
Maximum	0.4022	0.4523	0.3522	0.4090	0.3955	0.3657	0.4388
Minimum	-0.2844	-0.2850	-0.2838	-0.2903	-0.2785	-0.2846	-0.2842
Std. Dev.	0.1013	0.1027	0.1064	0.1016	0.1080	0.1111	0.1019
Skewness	0.3144	0.5730	-0.0143	0.3538	0.1863	-0.0184	0.5469
Kurtosis	<u>4.4935</u>	<u>5.4248</u>	<u>3.5943</u>	<u>4.7018</u>	<u>4.0102</u>	<u>3.4634</u>	<u>5.7147</u>

Table 4.1.2 indicates the statistical characteristics and behaviours of portfolio sorted on size, value and credit risk premium for Bangladesh. Size is comprised in small S and big B portfolio. Result shows that S portfolio is a high return and low risk portfolio as compare to B stock portfolio. Similarly H portfolio has high return than L portfolio sorted on high and low book to

market ratio. The mean or average return over the month for S is 0.0199 B is 0.0106. Risk of the portfolio or standard deviation of S is 0.1027 and for B is 0.1064. This indicates that S portfolio has a higher return than B. Maximum return of S is 0.4523 and B is 0.3522. As like the value of minimum is the minimum return, which for S is -0.2850 and for B it is -0.2838. For value premium (book-to-market ratio), the mean or average return of H and L are 0.00179 and 0.0116 which indicates a higher return for H stocks. The value of standard deviation for H and L are 0.1016 and 0.1080 that shows the risk of the portfolios. The maximum returns of H and L over the month are 0.4190 and 0.3980. The minimum returns or loss in the month for H and L -0.2903 and -0.2785. The result indicates that S portfolio (small) have a high return than big as well as H portfolio also perform better than L portfolio.

For credit risk premium (high and low loan loss provision) the mean or average return of HLLP and LLLP are 0.0183 and 0.0126. The value of standard deviation or risk for HLLP and LLLP portfolio are 0.1111 and 0.1019. The mean value indicates that HLLP portfolio has a greater return than LLLP but as well a high risk. Where as LLLP portfolio has low return and low risk. The maximum and minimum monthly return of HLLP is 0.3557 and -0.2846.

While the maximum and minimum monthly return of LLLP are 0.3988 and -0.2842.

Skewness and kurtosis are also listed in the table 4.1.2 that describes the data distribution. The results of skewness are positive for all portfolios except B and HLLP portfolio. The skewness values for S, B, H, L, HLLP and LLLP are 0.573, -0.0143, 0.3538, 0.1863, -0.0184 and 0.5469 respectively. This shows positively skewed distribution of data for S, H, L and LLLP while for B and HLLP it is negatively skewed and thus a marginal skewness in the data persists. The vales of kurtosis for S, B, H, L, HLLP and LLLP are 5.4248, 3.5943, 4.7018, 4.0102, 3.4634 and 5.7147 respectively. This demonstrates that points for normal distribution and smoothness in the data.

Table 4.1.3(a) Descriptive Statistics multi factor model (Pakistan)

Variables	Credit Market		Size	Value Risk
	Premium	Premium	Premium	Premium
Mean	0.0162	0.0171	0.0069	0.0036
Median	0.0188	0.0010	0.0081	0.0136
Maximum	0.2287	2.3083	0.2070	0.1514
Minimum	-0.4605	-0.3050	-0.3353	-1.5684
Std. Dev.	0.0738	0.2033	0.0574	0.1452
Skewness	-1.8831	10.0259	-1.6685	-8.9614
Kurtosis	14.5701	113.7109	13.0618	96.6319

Table 4.1.3 (a) evaluates the statistical characteristics of variables constructed for Pakistan portfolio stocks that include market premium, size premium, value premiums and credit risk premium. 0.0162 is the mean value of market premium and its standard deviation is 0.0738. Mean value of size is 0.0171 and standard deviation is 0.2033. Book-to-market ratio (value premium) has mean value of 0.0069 and its standard deviation is 0.0574, mean value and standard deviation of credit risk premium (loan loss provision) is 0.0036 and 0.1452. Similarly results show that all the variables that are market premium, value premium, size premium and credit risk premium are positive. Maximum values for market premium, size premium, book to market ratio and credit risk premium are 0.2287, 2.3083, 0.2070 and 0.1514 showing that this is the maximum market, size and value premium demanded by investors for taking risk. Where as minimum premiums required by the investor are -0.4605, -0.3050, -0.3353 and -1.5684. Skewness is negative for all except size premium. The values are for market premium is -1.883, Value premium 0.0265 and credit risk premium is -8.9614, which shows deviation from normal data distribution and positive for size premium only 10.0259. Kurtosis values for market, size, B/M and credit risk premia are 14.5701, 113.7109, 13.0618, and 96.6319. These values explain that the

distribution of data is peaked to high for size premium and credit risk premium while market and value premium are on tail.

Table 4.1.3 (a) also indicates that the average market premium, size premium and value premium all are positive. Market premium and size premium are found more volatile as compared to value premium and credit risk premium. It is important to mention that market premium and size factor are on higher side as compare to market and value effects may be because of exceptional performance of equity market of Pakistan form the tested period

2004-2016.

Table 4.1.3 (b) Descriptive Statistics multi factor model (India)

	Market	Size	Value	Credit Risk
Variables	Premium	Premium	Premium	Premium
Mean	0.0214	0.0159	0.0126	0.0082
Median	0.0161	0.0049	0.0138	0.0044
Maximum	0.2791	0.2143	0.2396	0.2332
Minimum	-0.1523	-0.1134	-0.2007	-0.2149
Std. Dev.	0.0638	0.0508	0.0514	0.0600
Skewness	0.6988	1.0213	-0.2895	0.5167
Kurtosis	5.2370	5.0681	7.3149	6.2100

Table 4.1.3 (b) evaluates the statistical characteristics of variables constructed for India stocks portfolio that include market premium, size premium, value premiums and credit risk premium. 0.0214 is the mean vale of market premium and its standard deviation is 0.0638. Mean value of size is 0.0159 and standard deviation is 0.0508. Book-to-market ratio (value premium) has mean value of 0.0126 and its standard deviation is .0514, mean value and standard deviation of credit risk premium (loan loss provision) is 0.0082 and 0.0600. Similarly result show that the all the variables that are market premium, value premium, size premium and credit risk premium are positive. Maximum values for market premium, size premium, book to market ratio and credit risk premium are 0.2791, 0.2143, 0.2396 and 0.2332 showing that this is the maximum market,

size and value premium demand by investors for taking risk. Where as minimum premiums require by the investor are -0.1523, -0.1134, -0.2007 and 0.2149. The values of skewness are, market premium 0.6988, size premium 1.0213, value premium -0.2895 and credit risk premium is 0.5167, which shows deviation form normal data distribution and positive to negative. Kurtosis values for market, size, B/M and credit risk premia are 5.2370, 5.0681, 7.3149 and 6.2100. These values explain that the distribution of data is peaked a little bit for value premium and credit risk premium.

Table 4.1.3 (b) also indicates that the average market premium, size premium and value premium all are positive. Market premium is found more volatile as compared to size, value premium and credit risk premium. It is important to mention that market premium is on higher side as compare to market and other variables effects may be exceptional performance of equity market India form the tested period 2004-2016.

Table 4.1.3 (c) Descriptive Statistics multi factor model Bangladesh

Variables	Market Premium	Size Premium	Value Premium	Credit Risk Premium
Mean	0.0080	0.0189	0.0139	0.0054
Median	0.0043	0.0097	0.0136	0.0078
Maximum	0.2458	0.2143	0.2396	0.2332
Minimum	-0.2791	-0.1063	-0.2007	-0.2149
Std. Dev.	0.0672	0.0508	0.0527	0.0636
Skewness	-0.1219	1.0091	0.0322	-0.2868
Kurtosis	6.2542	5.4854	7.2973	6.1093

From Table 4.1.3 (c) we can evaluate the statistical characteristics of variables constructed for Bangladesh stocks portfolio that include market premium, size premium, value premiums and credit risk premium. 0.0080 is the mean vale of market premium and its standard deviation is 0.0672. Mean value of size is 0.0189 and standard deviation is 0.0508. Book-to-market ratio

(value premium) has mean value of 0.0139 and its standard deviation is 0.0527. Mean value and standard deviation of credit risk premium (loan loss provision) is 0.0054 and 0.0636. Similarly result show that all the variables that are market premium, value premium, size premium and credit risk premium are positive. Maximum values for market premium, size premium, book to market ratio and credit risk premium are 0.245, 0.2143, 0.2396 and 0.2332 showing that this is the maximum market, size and value premium demand by investors for taking risk. Where as minimum premiums require by the investor are -0.2791, 0.1063, -2007 and -0.2149. The values of skewness for variables are, market premium -0.1219, size premium 1.0091, value premium 0.0322 and credit risk premium is -0.2868, which shows deviation from normal data distribution positive to negative. Kurtosis values for market, size, B/M and credit risk premia are 6.2542, 5.4854, 7.2973 and 6.1093. These values explain that the distribution of data is peaked a little bit for market premium and value premium.

Table 4.1.3 (c) also indicates that the average market premium, size premium and value premium all are positive. Size premium is found more volatile as compared to market, value premium and credit risk premium. It is important to mention that size premium is on higher side as compare to market and other variables effects may be exceptional performance of equity market Bangladesh from the tested period 2004-2016.

4.1.2 FF and Multi factor Regression

On the approach of Fama and French we use a four-factor model to explain the effect of size premium (market capitalization) value premium (book to market ratio) and credit risk premium (loan loss provision). In the result β (beta) coefficient is the slope of line and its t-value and significance value show the magnitude of line where it is laid on axis. P value and t-value explain the effect of individual variable. R square indicated how much independent variable explain the change in dependent variable. The adjusted R square shows the adjustment or

modification of other predictors in the model. F significance shows the fitness of overall hypothesis and takes the account for null hypothesis. If F sig value is greater than .05 than model is fit to explain the relationships among variables.

Table 4.2 (a) explain the effect of size, value and credit risk premium on Karachi stock exchange equity return. Size is given as small (S) and big (B), value is taken as high (H) and low (L) where as credit risk is taken as High loan loss provision (HLLP) and low loan loss provision (LLLPL).

Table 4.2 (a) FF approach multi factor model of size, value and credit risk premium (Pakistan)

$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t$									
$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \beta_4 \text{HPMLP}_t$									
	P	P	P	S	S	S	B	B	B
Coefficients	-0.009	-0.009	-0.009	-0.003	-0.009	-0.009	-0.016	-0.009	-0.009
T Stat	-1.882	-1.877	-1.841	-0.326	-1.877	-1.841	-1.545	-1.877	-1.841
P-value	0.062	0.063	0.068	0.745	0.063	0.068	0.125	0.063	0.068
β_1 (MKT)	0.924	0.842	0.812	0.958	0.842	0.812	0.890	0.842	0.812
T Stat	14.000	12.170	10.814	7.465	12.170	10.814	6.652	12.170	10.814
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
β_2 (SMB)		0.036	0.112		0.536	0.612		-0.464	-0.388
T Stat		1.273	1.405		18.866	7.692		-16.319	-4.883
P-value		0.205	0.162		0.000	0.000		0.000	0.000
β_3 (HML)		0.338	0.321		0.338	0.321		0.338	0.321
T Stat		3.207	3.013		3.207	3.013		3.207	3.013
P-value		0.002	0.003		0.002	0.003		0.002	0.003
β_4 HPMLP			0.116			0.116			0.116
T Stat			1.017			1.017			1.017
P-value			0.311			0.311			0.311
Adj. R²	0.577	0.601	0.601	0.277	0.820	0.820	0.232	0.824	0.824
F-stat	195.989	72.842	54.903	217.655	217.655	163.539	44.255	223.936	168.251
F sig	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

In table 4.2 (a) P is the average portfolio and when it is regressed with market premium on CAPM approach the result indicates that market premium is significant and coefficient is positive. The t-value is 14.00 and thus it indicates that market premium is able to explain the variation in the stocks of KSE. The adjusted R square is 0.57 which means that 57.7% of the variation in the dependent variable is due to the independent variable. Secondly when added some more additional variables on FF model approach that is size and value the result indicates that market as well as value is positive and significant the Adj. R square value increased from 0.577 to 0.601. This indicates that 60.1 % variation in P is explained by independent variable. Further more when add an additional variable to FF model that is loan loss provision (credit risk) the result demonstrates that Adjusted R square 0.601 remain the same the market and value found positively significant. Thus from four factor model we also regret that 60% of the variation in P is due to independent variables and credit risk is not priced.

When small portfolio S is regressed with market the analysis indicated that market is positively significant having a t value of 7.46. The Adjusted R square is 0.27 which shows that changes in dependent variable are 27% explained by independent variable. Secondly when the regression with three factor model is tested, the results is significant and positive result for all three factors. T value is 12.17, 18.86 and 3.21 for market, size and value premium respectively. The Adjusted R square increased from 0.277 to 0.820. This means that 82% of the variation in Small cap portfolio return is due to market, Size and value premia. Further more when additional variable is added and four factor model is applied the result indicates that market, size and value are positive and significant. The additional variable is insignificant for S and Adjusted R square remains the same as 0.820. The model explains 82% of variation is due to independent variable.

In the same way B big portfolio stocks is regressed with market and the result indicates that market is positive and significant having a t value of 6.56. The adjusted R square is 0.23 and F

probability is also significant. This shows that model is valid and 23% variation in dependent variable is explained by market premium. Similarly we add size and value premium and found from three-factor analysis, that Size is negative and significant having a t value of -16.31. This indicates that size has a negatively relationship with return and increase in SMB will cause decrease in stocks return. HML is found positive and significant. The adjusted R square for the model is increased from 0.23 to 0.82. This mean 82 % of the variation is explained by these three factors. Further more when fourth factor is additionally added to FF model , the result indicates that three factors are significant where as HPMLP is found insignificant and there is no effect of loan loss provision on big stocks. The adjusted R square is 0.82 mean 82% changes are explained by independent variables.

Table 4.2 (b) FF approach multi factor model of size, value and credit risk premium Pakistan (High and Low portfolio)

	H	H	H	L	L	L
Coefficients	-0.0106	-0.0092	-0.0090	-0.0084	-0.0092	-0.0090
T Stat	-1.7878	-1.9120	-1.8768	-1.7054	-1.9120	-1.8768
P-value	0.0759	0.0579	0.0626	0.0903	0.0579	0.0626
β1 (MKT)	1.0401	0.8445	0.8161	0.8035	0.8445	0.8161
T Stat	13.257	12.277	10.925	12.291	12.277	10.925
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
β2 (SMB)		0.0324	0.1045		0.0324	0.1045
T Stat		1.1474	1.3212		1.1474	1.3212
P-value		0.2532	0.1886		0.2532	0.1886
β3 (HML)		0.8174	0.8016		-0.1826	-0.1984
T Stat		7.8099	7.5660		-1.7443	-1.8732
P-value		0.0000	0.0000		0.0833	0.0631
β4 HPMLP			0.1104			0.1104
T Stat			0.9756			0.9756
P-value			0.3309			0.3309

Adj. R²	0.5500	0.7030	0.7029	0.5120	0.5362	0.5361
F-stat	175.75	113.84	85.59	151.06	56.11	42.31
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

In table 4.2 (b) the regression of H and L sorted portfolio is explained. H portfolio sorted on high book to market ratio is regressed with market premium on CAPM approach. The result shows that market premium is positive and significant having a t value of 13.26. The adjusted R square is 0.55 which means that 55% of the variations in the stock returns is explained by market premium. Secondly Fama and French three factor was applied the results indicates that market and HML is positive and significant. T value of HML is 7.81, which can explain the changes in return. This shows that increase in HML will lead to high return for the stock.

Further more when fourth variable that is HPMLP is added the result shows that SMB and HPMLP factor are insignificant for the stock sorted on the basis of high book to market ratio. Market premium and HML is positive significant. The t value of HML is 7.9 where as adjusted R square is 70.29. This mean that 70% of the variation is explained by the independent variable. L portfolio is regressed with market on CAPM based approach. The result indicates that that market premium is positive and significant having a t value of 12.29. The adjusted R square is 0.51 which means that 51% of the variations in the stock returns is explained by market premium. Secondly Fama and French three factor model is applied the result shows that market and SMB is positive and significant. T value of market and SMB is 12.28 and 1.14 respectively, which can explain the changes in return of L portfolio are explained by these factors. HML is found insignificant negative for the stock of L portfolio. The adjusted R square is increased from 0.51 to 0.53. This shows that 53% of the changes in L portfolio is caused by independent variables. Furthermore when an additional factor is added the result shows that there is no effect of loan loss provision on L sorted portfolio. F is significant where as adjusted R square remains the same 0.536, which means that 53% of the variation is due to independent variables.

Table 4.2 (c) FF approach multi factor model of size value and credit risk premium Pakistan (HLLP and LLLP portfolio)

	HLLP	HLLP	HLLP	LLL	LLL	LLL
Coefficients	-0.0137	-0.0092	-0.0083	-0.0038	-0.0077	-0.0083
T Stat	-1.6833	-1.7320	-1.7028	-0.4992	-1.5143	-1.7028
P-value	0.0945	0.0855	0.0908	0.6184	0.1322	0.0908
β_1 (MKT)	1.0358	0.9597	0.0911	0.7890	0.7026	0.8092
t Stat	9.619	12.684	1.138	7.889	9.673	10.696
P-value	0.0000	0.0000	0.2570	0.0000	0.0000	0.0000
β_2 (SMB)		-0.2907	0.0911		0.3618	0.0911
T Stat		-9.3541	1.1381		12.1287	1.1381
P-value		0.0000	0.2570		0.0000	0.2570
β_3 (HML)		0.4052	0.3210		0.2614	0.3210
T Stat		3.5192	2.9918		2.3652	2.9918
P-value		0.0006	0.0033		0.0194	0.0033
β_4 HPMLP			0.5852			-0.4148
T Stat			5.1049			-3.6186
P-value			0.0000			0.0004
Adj. R²	0.3902	0.7416	0.7808	0.2998	0.6830	0.7082
F-stat	92.52	137.78	128.35	62.24	103.71	87.77
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4.2 (c) explains the regression analysis of HLLP and LLLP sorted portfolio. HLLP portfolio sorted by high loan loss provisions is firstly regressed with market premium. The result shows that market premium is positive and significant having a t value of 9.61. The adjusted R square is 0.39 which means that 39 % of the variation is explained by market premium in HLLP portfolios. Secondly when we applied FF three-factor model the results shows that market and value premia are positive and significant having a t value of 12.68 and

3.5. Where SMB is negatively significant and indicate a negative relationship. The adjusted R square increases from 0.39 to 0.74. This means that 74% of the variation in HLLP portfolio stock is explained by Market, size and Value premium. Furthermore when additional variable HPMLP is added the result indicates that HML and loan loss provision is positive and significant having a t value of 3 and 5.1 respectively. This shows that high loan loss provision has a positive effect on stock return and increase in the provision will cause increase in return. The adjusted R square increased from 0.74 to 0.78, which refer that 78% of the variation in HLLP portfolio is caused by independent variables.

The portfolio sorted on LLLP low loan loss provision is first regressed with market premium. The results indicate that market premium is found positive and significant having a t value of 8. The adjusted R square is 0.299 which means that 30% of the variation in LLLP portfolio is explained by market return. Secondly when FF three-factor model is applied the result indicates that market, size and value premia are positive and significant having a t value of 9.6, 12.13 and 2.4 respectively. The adjusted R square increases from 0.299 to 0.68. This means that 68% of the variation in LLLP portfolio stock is explained by Market, size and Value premium. Furthermore when multi factor model for adding HPMLP is tested the result indicates that HML is positive significant having a t value of 3. Where HPMLP (loan loss provision) is negative and significant having a t value of -3.62. The adjusted R square increased from 0.68 to 0.71, which refer that 71% of the variation in LLLP portfolio is caused by independent variables.

Table 4.3 (a) FF approach multi factor model of size value and credit risk premium (India)

$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t$									
$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t + \beta_4 \text{HPMLP}_t$									
	P	P	P	S	S	S	B	B	B
Coefficients	-0.009	-0.008	-0.008	-0.007	-0.008	-0.008	-0.011	-0.008	-0.008
T Stat	-1.667	-1.459	-1.489	-1.175	-1.459	-1.489	-1.877	-1.459	-1.489
P-value	0.098	0.147	0.139	0.242	0.147	0.139	0.063	0.147	0.139
β_1 (MKT)	1.132	1.134	1.128	1.126	1.134	1.128	1.138	1.134	1.128
T Stat	14.330	14.472	14.485	13.646	14.472	14.485	12.834	14.472	14.485
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
β_2 (SMB)		-0.137	0.024		0.363	0.524		-0.637	-0.476
T Stat		-1.375	0.174		3.634	3.874		-6.384	-3.526
P-value		0.171	0.862		0.000	0.000		0.000	0.001
β_3 (HML)		-0.174	-0.070		-0.174	-0.070		-0.174	-0.070
T Stat		-1.732	-0.606		-1.732	-0.606		-1.732	-0.606
P-value		0.085	0.545		0.085	0.545		0.085	0.545
β_4 HPMLP			0.220			0.220			0.220
T Stat			1.749			1.749			1.749
P-value			0.082			0.082			0.082
Adj. R²	0.588	0.595	0.601	0.564	0.608	0.613	0.534	0.636	0.641
F-stat	205.362	71.115	54.886	186.202	74.830	57.714	164.721	84.310	64.928
F sig	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

In table 4.3 (a) P is the average portfolio and is firstly regressed with market premium on CAPM approach the result indicates that market premium is significant and coefficient is positive. The t-value is 14.33 and thus it indicates that market premium is able to explain the variation in the stocks of BSE. The adjusted R square is 0.58 which means that 58.8% of the variation in the dependent variable is due to the independent variable. Secondly when some more additional variables is added and FF model is applied, the result indicates that only market is positive and

significant the adjusted r square value increased from 0.588 to 0.595. This evaluate that 59 % of variation in P is explained by independent variable. Further more when additional variable HPMLP (loan loss provision) is added to FF three factor model the adjusted R square increase from 0.59 to 0.608, market premium and SMB is found positively significant. Thus from four factor model the analysis regrets that 61% of the variation in P is due to independent variables. When small portfolio S is regressed with market the analysis indicated that Market is positively significant having a t value of 13.646. The adjusted R square is 0.56 which shows that change in dependent variable are 56% explained by independent variable. Secondly when FF three-factor model is tested, the results indicate that market and SMB are significant and positive. T value is 14.47 and 3.63 for market and size. Where as value premium is found insignificant for small size portfolio. . The adjusted R square increased from 0.56 to 0.60. This means that 60% of the variation in Small cap portfolio return is due to market and Size small cap firms will generate high return. Further more when additional variable is added and multi factor model is applied the result indicates that market and size are positive and significant. The additional variable credit risk is insignificant for S portfolio and adjusted R square increase a little bit from 0.608 to 0.613. The model explains 61% of variation is due to independent variable. In the same way B portfolio big stocks is regressed with market premium and result shows that market premium is positive and significant having a t value of 12.83. This mean market premium is able to explain stocks return. The adjusted R square is 0.53 and F probability is also significant. This shows that model is valid 53% variation in dependent variable is explained by market premium. Similarly when additionally size and value premium is added and FF three factor model is applied the result shows that Size is negative and significant having a t value of -6.38. This indicates that size has a negatively relationship with return and increase in SMB will cause decrease in stocks return. The adjusted R square for the model is increased from 0.534 to 0.636. This mean 63% of the variation is explained by these factors.

Further more an additional fourth factor HPMLP (loan loss provision) is added to FF model and result indicates that the market is positively significant having t value of 14.48. Where SMB is found to be negatively significant having a t value of -3.53 this indicates that big firm stock will perform poor. HPMLP is insignificant and there is no effect of loan loss provision on big stocks. The adjusted R square is increased from 0.636 to 0.64 mean 64% changes in dependent variables are explained by independent variables.

Table 4.3 (b) FF approach multi factor model of size value and credit risk premium India (High and Low Portfolio)

	H	H	H	L	L	L
Coefficients	-0.0076	-0.0079	-0.0080	-0.0104	-0.0079	-0.0080
T Stat	-1.3961	-1.4824	-1.5116	-1.7269	-1.4824	-1.5116
P-value	0.1649	0.1405	0.1329	0.0864	0.1405	0.1329
β1 (MKT)	1.1399	1.1319	1.1258	1.1197	1.1319	1.1258
T Stat	13.962	14.387	14.396	12.420	14.387	14.396
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
β2 (SMB)		-0.1432	0.0159		-0.1432	0.0159
T Stat		-1.4284	0.1174		-1.4284	0.1174
P-value		0.1554	0.9067		0.1554	0.9067
β3 (HML)		0.3170	0.4194		-0.6830	-0.5806
T Stat		3.1505	3.6079		-6.7878	-4.9951
P-value		0.0020	0.0004		0.0000	0.0000
β4 HPMLP			0.2175			0.2175
T Stat			1.7237			1.7237
P-value			0.0870			0.0870
Adj. R²	0.5756	0.6062	0.6117	0.5173	0.6327	0.6378
F-stat	194.95	74.38	57.31	154.27	83.11	63.95
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4.3 (b) show the regression analysis of H and L sorted portfolio. H portfolio sorted on high book to market ratio is firstly regressed with market premium on CAPM approach. The result shows that market premium is positive and significant having a t value of 13.96. Which mean that market premium can explain the stock return. The adjusted R square is 0.57 which means that 57% of the variations in the stock returns is explained by market premium. Secondly Fama and French three factor is applied and the result shows that market premium and HML are positive and significant having a t value of 14.38 and 3.15. This shows that increase in HML when lead to high return for the stock. The adjusted R square is increase from 0.57 to 0.60, which refers that 60% of the variation, is explained by HML and market premia. Further more when fourth variable HPMLP is added the result shows that SMB and HPMLP factor are insignificant for the stock sorted on the basis of high book to market ratio. Market premium and HML is positive and significant. The t value of HML is 3.60. The adjusted R square is increased from 0.60 to 0.61. This mean that 61% of the variation in H portfolio is explained by the independent variable.

As like L portfolio is regressed with market on CAPM based approach. The result indicates that market premium is positive and significant having a t value of 12.42, which refers that market premium, can determine the fluctuations in the L stocks. The adjusted R square is 0.517 which means that 52% of the change in the stock returns is explained by market premium. Secondly Fama and French three factor is tested and result indicates that market is positive and significant having a t value of 14.3. The HML factor is found significant and having t value - 6.8. The adjusted R square is increased from 0.517 to 0.63. This shows that 63% of the changes in L portfolio is caused by independent variables. Furthermore when an additional factor HPMLP is added the result is found insignificant and there is no effect of credit risk on L sorted

portfolio. F is significant and adjusted R square is increased a little bit from 0.63 to 0.64, which means that 64% of the variation is due to independent variables.

Table 4.3 (c) FF approach multi factor model of size value and credit risk premium

India (HLLP and LLLP portfolio)

	HLLP	HLLP	HLLP	LLL	LLL	LLL
Coefficients	-0.0110	-0.0075	-0.0078	-0.0068	-0.0080	-0.0078
T Stat	-1.7375	-1.2969	-1.4967	-1.2646	-1.4994	-1.4967
P-value	0.0845	0.1968	0.1367	0.2081	0.1360	0.1367
β1 (MKT)	1.1429	1.1454	1.1255	1.1161	1.1175	1.1255
T Stat	12.076	13.318	14.461	13.996	14.163	14.461
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
β2 (SMB)		-0.5061	0.0159		0.2253	0.0159
T Stat		-4.6194	0.1180		2.2418	0.1180
P-value		0.0000	0.9062		0.0266	0.9062
β3 (HML)		-0.4117	-0.0758		0.0589	-0.0758
T Stat		-3.7431	-0.6553		0.5840	-0.6553
P-value		0.0003	0.5133		0.5601	0.5133
β4 HPMLP			0.7137			-0.2863
T Stat			5.6835			-2.2798
P-value			0.0000			0.0241
Adj. R²	0.5032	0.5901	0.6650	0.5768	0.5860	0.5980
F-stat	145.82	69.62	71.96	195.89	68.46	54.19
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4.3 (c) explains the regression analysis of HLLP and LLLP sorted portfolio. HLLP portfolio sorted by high loan loss provisions is firstly regressed with market premium. The result shows that market premium is positive and significant having a t value of 12.07. The adjusted R square is 0.50 which means that 50 % of the variation is explained by market premium in HLLP portfolios. Secondly when FF three-factor model is tested the result indicates

that size and value premia are significant and negative having a t value of -4.61 and -3.74. The adjusted R square increases from 0.50 to 0.59. This means that 59% of the variation in HLLP portfolio stock is explained by Market, size and Value premium. Furthermore when additional variable HPMLP is added the result indicates that market premium and loan loss provision is positive and significant having a t value of 14.5 and 5.7 respectively. This shows that high loan loss provision has a positive effect on stock return and increase in the provision will cause increase in return. The adjusted R square increased from 0.59 to 0.67, which refer that 67% of the variation in HLLP portfolio is caused by independent variables.

The portfolio sorted on LLLP low loan loss provision is first regressed with market premium. The results indicate that market premium is found positive and significant having a t value of 14. The adjusted R square is 0.57 which means that 57% of the variation in LLLP portfolio is explained by market return. Secondly when FF three-factor model is applied the result indicated that market and size are positive and significant having a t value of 14.2 and 2.24.

The adjusted R square increases from 0.57 to 0.68. This means that 68% of the variation in LLLP portfolio stock is explained by Market, size premium. Furthermore when multi factor model is applied for adding HPMLP the result indicates that market premium is positive significant having a t value of 14.5. Where HPMLP (loan loss provision) is negative and significant having a t value of -2.3. The adjusted R square increased from 0.58 to 0.59, which refer that 59% of the variation in LLLP portfolio is caused by independent variables.

Table 4.4(a) FF approach multi factor model of size value and credit risk premium (Bangladesh)

$$R_t - R_{ft} = \alpha + \beta_1 \text{MKT}_t + \beta_2 \text{SMB}_t + \beta_3 \text{HML}_t$$

$R_t - R_{ft} = \alpha + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 HPMLP_t$									
	P	P	P	S	S	S	B	B	B
Coefficients	-0.006	-0.005	-0.005	-0.003	-0.005	-0.005	-0.010	-0.005	-0.005
T Stat	-1.087	-0.914	-0.895	-0.497	-0.914	-0.895	-1.468	-0.914	-0.895
P-value	0.279	0.363	0.373	0.620	0.363	0.373	0.145	0.363	0.373
β_1 (MKT)	1.177	1.181	1.175	1.197	1.181	1.175	1.156	1.181	1.175
T Stat	13.573	13.75	13.742	13.299	13.758	13.742	11.799	13.758	13.742
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
β_2 (SMB)		-0.159	-0.010		0.341	0.490		-0.659	-0.510
T Stat		-1.462	-0.071		3.147	3.359		-6.071	-3.502
P-value		0.147	0.943		0.002	0.001		0.000	0.001
β_3 (HML)		-0.182	-0.085		-0.182	-0.085		-0.182	-0.085
T Stat		-1.706	-0.679		-1.706	-0.679		-1.706	-0.679
P-value		0.091	0.498		0.091	0.498		0.091	0.498
β_4 HPMLP			0.199			0.199			0.199
T Stat			1.512			1.512			1.512
P-value			0.133			0.133			0.133
Adj. R²	0.606	0.615	0.619	0.596	0.634	0.638	0.537	0.646	0.650
F-stat	184.21	64.29	49.33	176.87	69.62	53.37	139.2	73.31	56.16
F sig	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

In table 4.3(a) P is the average portfolio and when it is regressed with market premium on CAPM approach the result indicates that market premium is significant and coefficient is positive. The t-value is 13.58 and thus it indicates that market premium is able to explain the variation in the stocks of Dhaka Stock Exchange. The adjusted R square is 0.60 which means that 60% of the variation in the dependent variable is due to market premium. Secondly when more additional variables is added and FF three factor model is applied the result indicates that only market is positive and significant the adjusted R square value increased from 0.60 to 0.61. This evaluate that 62 % of variation in P is explained by independent variable. Further more an additional variable is added FF model that is HPMLP (loan loss provision) the result

indicates that adjusted R square increases from 0.608 to 0.62 and only the market premium is found positively significant. Thus from four factor model we also regret that 62% of the variation in P is due to independent variables.

When small portfolio S is regressed with market the analysis indicates that market is positively significant having a t value of 13.299. The adjusted R square is 0.59 which shows that change in dependent variable are 59% explained by independent variable. Secondly when more variable is regressed with FF three-factor model the results are significant and positive for market and SMB factors. T value is 13.76 and 3.35 for market and size. This means that small cap firm have a positive relation with firm return. Size and market is able to explain the variation in small firms stock. Value premium is found insignificant for small size portfolio. . The adjusted R square increased from 0.59 to 0.63. This means that 63% of the variation in Small cap portfolio return is due to market and Size. Small cap firms will generate high return. Further more when additional variable is added and multi factor model is applied the result indicates that market and size are positive and significant. The additional variable is insignificant for S portfolio and adjusted R square increase a little bit from 0.634 to 0.638. The model explains 64% of variation is due to independent variable.

B portfolio (big stocks) is regressed in the same way with market premium and result shows that market premium is positive and significant having a t value of 11.8. This mean market premium is able to explain stocks return. The adjusted R square is 0.54 and F probability is also significant. This shows that model is valid 54% variation in dependent variable is explained by market premium. Similarly when additionally size and value premium is added, and FF three factor model is applied the result shows that Size is negative and significant having a t value of -6.07. This indicates that size has a negatively relationship with return and increase in SMB will cause decrease in stocks return. The adjusted R square for the model is increased from 0.54 to 0.64. This mean 64% of the variation is explained by these factors. Further more

in addition a fourth factor HPMLP (loan loss provision) is added to FF model and the result shows that the market is positively significant having t value of 13.74. Where SMB is negatively significant having a t value of -3.50 this indicates that big firm stock will perform poor. HPMLP is found insignificant and there is no effect of loan loss provision on big stocks. The adjusted R square is increased from 0.64 to 0.64 mean 65% changes in dependent variables are explained by independent variables.

Table 4.4 (b) FF approach multi factor model of size value and credit risk premium Bangladesh (High and Low Portfolio)

	H	H	H	L	L	L
Coefficients	-0.0066	-0.0055	-0.0053	-0.0064	-0.0055	-0.0053
T Stat	-1.0955	-0.9358	-0.9175	-0.9593	-0.9358	-0.9175
P-value	0.2755	0.3513	0.3608	0.3394	0.3513	0.3608
β1 (MKT)	1.1694	1.1790	1.1727	1.1790	1.1790	1.1727
T Stat	13.070	13.675	13.653	11.826	13.675	13.653
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
β2 (SMB)		-0.1623	-0.0174		-0.1623	-0.0174
T Stat		-1.4902	-0.1186		-1.4902	-0.1186
P-value		0.1389	0.9058		0.1389	0.9058
β3 (HML)		0.3086	0.4043		-0.6914	-0.5957
T Stat		2.8745	3.2330		-6.4395	-4.7630
P-value		0.0048	0.0016		0.0000	0.0000
β4 HPMLP			0.1945			0.1945
T Stat			1.4719			1.4719
P-value			0.1438			0.1438
Adj. R²	0.5880	0.6185	0.6223	0.5385	0.6558	0.6592
F-stat	170.82	65.30	50.01	139.86	76.58	58.55
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4.4 (b) demonstrates the regression analysis of H and L sorted portfolio. H portfolio sorted on high book to market ratio is firstly regressed with market premium on CAPM

approach. The result shows that market premium is positive and significant having a t value of 13.07. Which mean that market premium can explain the stock return of High sorted portfolio. The adjusted R square is 0.59 which means that 59% of the variations in the stock returns is explained by market premium. Secondly Fama and French three factor is applied and result indicates that market premium and HML are positive and significant having a t value of 13.67 and 2.9 This shows that increase in HML will lead to high return for the stock. The adjusted R square is increased from 0.59 to 0.61, which refers that 61% of the variation, is explained by HML and market premia. Further more when fourth variable that is HPMLP is added the model, the result shows that SMB and HPMLP factor are insignificant for the stock sorted on the basis of high book to market ratio. Market premium and HML is positive and significant. The t value of HML is 3.60. The adjusted R square is increased from 0.61 to 0.62. This mean that 62% of the variation in H portfolio is explained by the independent variable.

In this way L portfolio is regressed with market premium on CAPM based approach. The result indicates that market premium is positive and significant having a t value of 11.82, which refers that market premium, can determine the fluctuations in the L stocks. The adjusted R square is 0.54 which means that 54% of the change in the stock returns is explained by market premium. Secondly Fama and French three-factor is tested and the result indicates that market is positive and significant having a t value of 13.68. The HML factor is found significant and negative and having t value of -6.44. The adjusted R square is increased from 0.54 to 0.65. This shows that 65% of the changes in L portfolio is caused by independent variables. Furthermore when an additional factor HPMLP is added and multi factor model is applies the result shows that loan loss provision on L sorted portfolio is found insignificant. Market is positively while HML is negatively significant having a t value of 13.6 and -4.8. F is significant and adjusted R square is increased a little bit from 0.64 to 0.65, which means that 65% of the variation is due to independent variables.

Table 4.4 (c) FF approach multi factor model of size value and credit risk premium Bangladesh (HLLP and LLLP portfolio)

	HLLP	HLLP	HLLP	LLL	LLL	LLL
Coefficients	-0.0092	-0.0057	-0.0052	-0.0036	-0.0050	-0.0052
T Stat	-1.2955	-0.8855	-0.9004	-0.6124	-0.8482	-0.9004
P-value	0.1977	0.3777	0.3698	0.5414	0.3981	0.3698
β1 (MKT)	1.1789	1.1966	1.1741	1.1722	1.1642	1.1741
T Stat	11.196	12.643	13.751	13.405	13.398	13.751
P-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
β2 (SMB)		-0.5355	-0.0187		0.2096	-0.0187
T Stat		-4.4787	-0.1284		1.9094	-0.1284
P-value		0.0000	0.8981		0.0587	0.8981
β3 (HML)		-0.4296	-0.0883		0.0625	-0.0883
T Stat		-3.6446	-0.7101		0.5772	-0.7101
P-value		0.0004	0.4791		0.5649	0.4791
β4 HPMLP			0.6936			-0.3064
T Stat			5.2797			-2.3322
P-value			0.0000			0.0214
Adj. R²	0.5110	0.6060	0.6801	0.6003	0.6063	0.6208
F-stat	125.35	62.00	64.24	179.70	62.08	49.70
F sig	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 4.4 (c) demonstrates the regression analysis of HLLP and LLLP sorted portfolio. HLLP portfolio sorted by high loan loss provisions is firstly regressed with market premium. The result shows that market premium is positive and significant having a t value of 11.2. The adjusted R square is 0.51 which means that 51 % of the variation is explained by market premium in HLLP portfolios. Secondly when we add more factors and check FF three-factor model the results indicate that SMB and HML are significant and negative having a t value of -4.48 and -3.64. The adjusted R square increases from 0.51 to 0.61. This means that 61% of the

variation in HLLP portfolio stock is explained by Market, size and Value premium. Furthermore when an additional variable HPMLP is added the result indicates that market premium and credit risk are significant having a t value of 13.75 and 5.28 respectively. This shows that credit risk has a positive effect on stock return and increase in the credit risk (loan loss provision) will cause increase in return. The adjusted R square increased from 0.61 to 0.68, which refer that 68% of the variation in HLLP portfolio is caused by independent variables.

The portfolio sorted on LLLP (low loan loss provision) is first regressed with market premium. The results indicate that market premium is found positive and significant having a t value of 13.41, which show that market premium, is able to explain the fluctuation in stock return sorted by LLLP. The adjusted R square is 0.60 which means that 60% of the variation in LLLP portfolio is explained by market return. Secondly when FF three-factor model is applied by adding size and value the result indicates that market and size are positive and significant having a t value of 13.4 and 2. The adjusted R square increases from 0.60 to 0.61.

This means that model explain 61% of the variation in LLLP portfolio stock is caused by Market, size premium. Furthermore when multi factor model is applied by adding HPMLP the result indicates that market premium is positive significant having a t value of 14.5. Where HPMLP (loan loss provision) is negative and significant having a t value of -2.3. The adjusted R square increased from 0.61 to 0.62, which refers that 62% of the variation in LLLP portfolio is caused by independent variables.

4.2 Discussions

The explanatory power of CAPM, three-factor model of Fama and French model and multi factor model has been explored by regressions analysis to capture the relationship between market premium, size premium, value premium and credit risk premium in India, Pakistan and Bangladesh. The results are reported in tables above. The value of F is significant at 95%

confidence level that shows the goodness of fit and report the model is fit to describe the relationship among independent and dependent variables.

For Pakistan size premium is found significant and positive for small portfolios return like S, but it is significant and negative for big portfolios return like B SMB is not significant influence return for big B stocks. Value premium (BTM) is significant and positive for H while negative for L. Size premium is not significantly influence on returns of big stocks while it is significant and positive for small portfolios. The results are in line with prior studies; Hassan and Javed (2011), Mirza, Sara and Abbas (2013), Chaibi, Alioui and Xiao (2014), and Baek & Bilson (2015). The results of above tables show that Market premium is consistent with conventional capital asset pricing model because it is significant equity return but it is not able to explain the returns completely. So size premium and value premium define those returns that are not explained by market factor only. An additional factor credit risk premium is added to FF model approach and the above result indicate that credit risk premium is significant for high risky stocks HLLP (high loan loss provision). Firms having high credit risk will generate high return. Where as credit risk is negatively significant with LLLP low risky firms.

For India FF three factor and multi factor model is able to explain the fluctuations in the stock return. CAPM cannot explain all variations in the stocks. Size premium is found significant and positive for small portfolios return like S, but it is significant and negative for big portfolios return like B SMB is not significant influence return for big B stocks. Value premium is significant and positive for H while negative for L. Size premium is not significantly influence returns of big stocks because it is significant and positive for small portfolios. The finding are similar to the previous studies; Hassan and Javed (2011), Mirza, Sara and Abbas (2013), Chaibi, Alioui and Xiao (2014), and Baek & Bilson (2015). The results of above tables show that Market premium is consistent with conventional capital asset pricing model because it is significant equity return but it is not able to explain the returns completely. So size premium

and value premium define those returns that are not explained by market factor only. An additional factor credit risk premium is added to FF model approach and the above result indicate that credit risk premium is significant for high risky stocks HLLP (high loan loss provision). Firms having high credit risk will generate high return. Where as credit risk is negatively significant with LLLP low risky firms.

In term of Bangladesh Fama and French three factors model is valid. Size premium is found significant and positive for small portfolios return like S, but it is significant and negative for big portfolios return like B SMB is not significant influence return for big B stocks. Value premium is significant and positive for H while negative for L. The results are consistent with prior Hassan and Javed (2011), Mirza, Sara and Abbas (2013), Chaibi, Alioui and Xiao (2014), and Baek & Bilson (2015). The results of above tables show that Market premium is consistent with conventional capital asset pricing model because it is significant equity return but it is not able to explain the returns completely. So size premium and value premium define those returns that are not explained by market factor only. An additional factor credit risk premium is added to FF model approach and the above result indicate that credit risk premium is significant for high risky stocks HLLP (high loan loss provision). Firms having high credit risk will generate high return. Where as credit risk is negatively significant with LLLP low risky firms.

Chapter 05

Conclusion and Recommendations

5.1 Conclusion:

The study explores the effect of market premium, size premium Book-to-Market ratio, and credit risk premium on abnormal returns of stocks whether these four factors can be use to recognize and predict misprice securities across the three emerging countries which are India, Pakistan and Bangladesh. Results showed that stock returns in all these developing countries are related positively with the value premium except low stock returns for BTM. The result of size premium is found positive and significant for small cap portfolio where as significant and negative for Big portfolio. These findings are similar to the empirical evidences Hassan and Javed (2011), Minovic, J., & Zivkovic, B. (2012), Mirza, Sara and Abbas (2013), Chaibi, Alioui and Xiao (2014), and Baek & Bilson (2015). That value premium is positively related to all portfolios except for stocks with low Book-to-market ratio, size is also found positive significant for all portfolio except big.

In case of multi factor model credit risk premium is found significant only with High loan loss provision sorted portfolio HLLP in these three countries Pakistan India and Bangladesh. This indicates that high risky securities on the base of high loss provision stock will generate higher return. Size premium and value premium are not controlled. The study concentrate on the credit risk premium in explaining stocks return in equity market of India, Pakistan and Bangladesh.

To explore the assets pricing mechanism in these emerging markets stock prices we collected monthly data from January 2004 to December 2015. Fama and French [1992,1993] study many factors like size and Book-to-market ratio except the market premium, and reported positive effect of size and Book-to-marker ratio on monthly return. The new factors credit risk premium premiums has been selected for this study to explore their effect on stock returns. In this study the combine effect of size, market, book-to-market and new factors credit risk premium is

explore by using the Fama and French [1992,1993] methodology. The size premium is positive for small portfolios whereas negative for big portfolios it shows SMB is not significant influence returns of big portfolio stocks [Hassan and Javed, 2011]. So variations are discovered for size effect, Value premiums [Book-to-market] and credit risk premium (loan loss provision). Credit risk premium measured by loan loss provision is significant and positive for portfolios of high-risky stocks HLLP. Therefore it is concluded that credit risk premium effect is discovered in these three emerging markets Pakistan, India and Bangladesh stock market.

5.2 Recommendations and Implementations

The positive associations of value premium, size premium and credit risk premium on stocks return is discovered in this study for these three emerging countries; Pakistan, India and Bangladesh.

The investors should adopt investment strategies on the basis of these factors. This will provide assistance to investors in positioning their portfolio for better earnings.

Multi factors should be used instead of single factor model for asset pricing and judging the actual positions of firm.

Therefore, investors and policy makers have to think about these factors in implementing the policies regarding investment, financing and valuation.

5.3 Limitations and Directions for Future Research

The research has been undertaken on only financial sector (banks stocks) of Pakistan, India and Bangladesh. The study needs to be tested on both financial and non-financial sector for better output. Secondly the sample selected was small (90 banks) because financial sector in all these countries are smaller than non-financial firm. The sample should be also increased for the study as well. In this study the sample was divided into median and only two portfolios big and small were constructed. It can be further classified in small, median and large portfolios. Further more other proxies can be used for credit risk measurement (like non performing loan), size and value to check the fluctuation in the returns of stocks.

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Upwork Writer

Appendix A: List of Financial banks from Pakistan India and Bangladesh

PAKISTAN LISTED BANKS

- ALLIED BANK
- ASKARI BANK LIMITED
- ARIF HABIB BANK LTD
- BANK AL HABIB LIMITED
- BANK ALFALAH LIMITED
- BANK OF KHYBER LTD
- BANK OF PUNJAB LTD
- BANK ISLAMI PAKISTAN
- CRESCENT COMM. BANK
- FAYSAL BANK LTD
- HABIB BANK LIMITED
- HABIB METROPOLITAN BANK LTD
- JS BANK LIMITED
- MCB BANK LIMITED
- MEEZAN BANK LTD □ NATIONAL BANK OF PAKISTAN
- NIB BANK LTD.
- SAUDI PAK COMMERCIAL BANK LTD
- SAMBA BANK (CRESCENT COMM. BANK)
- SILKBANK LTD
- SONERI BANK LTD
- STANDARD CHARTERED BANK

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SUMMIT BANK LTD
UNITED BANK LIMITED

INDIA LISTED BANKS

- BANK OF MAHARASHTRA
- DHANLAXMI BANK LIMITED
- ICICI BANK LTD
- PUNJAB NATIONAL BANK
- ALLAHABAD BANK
- ANDHRA BANK
- ARUR VYSYA BANK LTD
- AXIS BANK LTD
- BANK OF BARODA
- BANK OF INDIA
- CANARA BANK
- CENTRAL BANK OF INDIA
- CITY UNION BANK LTD
- CORPORATION BANK
- DCB BANK LIMITED
- DENA BANK
- FEDERAL BANK LTD.
- HDFC BANK LTD
- IDBI BANK LTD □ INDIAN BANK

INDIAN OVERSEAS BANK

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INDUSIND BANK LTD

JAMMU & KASHMIR BANK LTD

KARNATAKA BANK LTD

- KOTAK MAHINDRA BANK LTD
- LAKSHMI VILAS BANK LTD
- ORIENTAL BANK OF COMMERCE
- SOUTH INDIAN BANK LTD
- STATE BANK OF BIKANER & JAIPUR
- STATE BANK OF INDIA
- STATE BANK OF MYSORE
- SYNDICATE BANK
- UCO BANK
- UNION BANK OF INDIA
- UNITED BANK OF INDIA
- VIJAYA BANK
- YES BANK LTD

BANGLADESH LISTED BANKS

- AB BANK LTD
- AL-ARAFAH ISLAMI BANK LTD.
- BANK ASIA LIMITED
- BRAC BANK LIMITED
- THE CITY BANK LIMITED
- DHAKA BANK LIMITED
- DUTCH-BANGLA BANK LIMITED

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EASTERN BANK LIMITED EXPORT

IMPORT BANK OF BD LTD

FIRST SECURITY ISLAMI BANK LTD.

Upwork Writer

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IFIC BANK LTD.

- ISLAMI BANK BANGLADESH LIMITED
- JAMUNA BANK LIMITED
- MERCANTILE BANK LIMITED
- MUTUAL TRUST BANK LIMITED
- NATIONAL BANK LIMITED
- N C C BANK LIMITED
- ONE BANK LIMITED
- THE PREMIER BANK LIMITED
- PRIME BANK LIMITED
- PUBALI BANK LIMITED
- RUPALI BANK LIMITED
- SHAHJALAL ISLAMI BANK LIMITED
- SOCIAL ISLAMI BANK LIMITED
- SOUTHEAST BANK LIMITED
- STANDARD BANK LIMITED
- TRUST BANK LIMITED
- UNITED COMMERCIAL BANK LTD.
- UTTARA BANK LIMITED