RISK RETURN CONUNDRUM: INTERNATIONAL EVIDENCE

By

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ABSTRACT

Thesis Title: Risk Return Conundrum: International Evidence

This study examines the relationship between market premium, size premium, profitability, investment pattern and financial bankruptcy and stock return in Brazil, Russia, India, China and South Africa (BRICS nation) and Pakistan using convenient sampling technique for the period of 2005 to 2017 using multivariate regression analysis for 60 non-financial firms from each stock exchange; Bovespa stock exchange, Moscow stock exchange, Bombay stock exchange, Shanghai stock exchange, Johannesburg stock exchange and Pakistan stock exchange on the basis of market capitalization. This study is an effort to provide an insight by testing the multifactor asset pricing model especially it focuses on financial bankruptcy factor whether it is priced by BRICS and Pakistan economies. Findings reveal that each factor behave differently in each country as market premium found positive significant in the context of Brazil, Russia, India, Pakistan and China. Size premium found relatively positive significant throughout the study. As far the profitability and investment pattern is concerned, inconsistency can be seen in pricing of Profitability factor which is significantly priced only in Russia and South Africa. Investment pattern is partially priced in all countries. Financial bankruptcy is found significant except India and China where it partially influencing the portfolios returns. Moreover, augmented five factor model is found more explanatory in nature as compared to CAPM for all the six countries. So, this augmented five factor model can facilitate the investors in making the financial decisions.

Key words: Financial bankruptcy, Asset pricing, F&F Five factor model.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

CAPM	Capital Asset Pricing Model
APT	Arbitrage Pricing Theory
MKT	Market Premium
SMB	Small Minus Big (size premium)
HML	High Minus Low
RMW	Robust Minus Weak (operating profit)
CMA	Conservative Minus Aggressive (Investment pattern)
FB	Financial Bankruptcy
WML	Winners Minus Losers
BRICS	Brazil Russia India China South Africa
PSX	Pakistan Stock Exchange
BSE	Brazil Stock Exchange
MICEX	Moscow Interbank Currency Exchange
BSX	Bombay Stock Exchange
JSX	Johannesburg Stock Exchange
SSE	Shanghai Stock Exchange
ICRIER	India Council of Research on International Economic Relations
CPEC	China Pakistan Economic Corridor
US	United States
KSE	Karachi Stock Exchange

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Bushra Tahira

DEDICATION

I dedicate this thesis to my parents. Without their understanding, altruistic love and prayer the completion of this work would have not been possible.

CHAPTER NO.1

INTRODUCTION

1.1 Background of Study:

The most evident trait of modern finance which discriminate modern finance to the economic theory is its sole target on financial markets. Capital markets are those markets where buyers and sellers are engaged in trade of financial securities such as long term debt (over a year) or equity backed securities. The process of buying and selling is undertaken by the individuals and institutions. The core function of capital markets is to raise the fund or provide a relationship of bridge between seller and investor. The models that are put forth by finance theories have given some understanding that helps the investors to make rational decisions. Theory on asset pricing explains how to hedge from the risk associated with the securities or financial assets. As we know that systematic risk can't be diversified so this risk is awarded as risk premium. To deal with this type of financial assets in uncertain world asset pricing theories have been introduced.

The theory of portfolio of market is the fundamental basis of the asset pricing. Number of models regarding to asset pricings have been introduced so far that attempt to explain the relationship of return and risk. The core hypotheses of the most theories of financial economic are that investors prone to risk and bridge between return and risks is defined as risk premium; return outcome over risk free outcome. Systematic risk premium was firstly addressed by (Sharpe, 1964) bring forward CAPM which addresses only one beta which explains the risk-return relationship the invention of CAPM entirely changed the way of investment analysis for the practitioner as these theories firmly based on assumptions, capital market is efficient and the market prices reflect almost available information.

(APT) theory of arbitrage pricing in 1976 introduced by (Stephen, 1976), but APT not provide a good fit in explaining risk-return relationship. In 1993, model of three factors introduced by Fama & French (Fama & French, 1993)incorporating three factors including

premium of value, size and market, referred as (HML), (SMB) respectively. This model also has to face criticism by researchers. As much of the researchers of the view that three factors theory of (Fama & French, 1993) miss great deal of fluctuations to capture risk-return relationship. Afterwards, the theory included five factors in 2015 by (Fama & French, 2015) by inclusion of other two factors; (RMW) operating profit and (CMA) investment pattern to three factors theory by Fama & French. In this study Fama & French proposed model which included five factors incorporating market premium, premium of size, operating profit, investment pattern and financial bankruptcy measured by Altman Z score (2012) to investigate the risk and return relationship in the Pakistan, China, South Africa, Brazil, Russia and India.

1.1.1 Theoretical Background:

Theories of assets pricing is introduced in particular section which help us to understand more precisely the triangle of risk, return and investor. Asset pricing theories are the back bone of finance as these theories are based on the risk returns trade off or lag. Therefore, ultimate concern of the theory of modern portfolio addressed the risk return and proxies which addressed stock returns, in other words it would not wrong to say that modern portfolio theory identifies the risk factors and sources of risks and determines the premium.

Considerations on risk return relationship starts when Markowitz (H Markowitz, 1952) present optimum mechanism for selection of portfolio and mean variance theory. Theory of mean variance theory put forwarded in 1952 by Markowitz, which depict significant impact in development of theory regarding modern portfolio which led foundation of (CAPM). Mean variance in fact, a process in which risk quantified express as variance over the expected return. Investors use mean variance theory in making financial decisions that how risk associated with investment which they are going to made. Mean variance analysis basically gives an idea to investor or financial analyst that how much risk associated and in rotation which comparing the yields of the investment. In brief mean variance analysis allows an investor to invest in such a portfolio that is either gives an investor maximum reward by given level of the risk or least the risk at the level of the return.

Capital assets pricing theory an updated version of Markowitz (Harry Markowitz, 1959) worked by addition of securities that relatively move with market. Core assumption of this

theory is risk and return has linear relationship. The innovation of this theory majorly satisfies the risk averse investors as it says there is risk free asset in asset class. Within (CAPM) investors, always try to maximize their portfolios return so they interact with the economy and agree on joint distribution return this situation put the prices in equilibrium ultimately, asset with the elevated systematic risk awarded with more return or yield as compare to an asset with low systematic risk.

Although, CAPM set the most valuable pricing model regarding assets. However, (CAPM) criticized by some researchers and practitioners they were of the view that only beta is the not an entity to explain risk and return interdependence. Traditionally, (CAPM) proposed by the (Sharpe, 1964), (Lintner, 1975) and by (Black, Jensen, & Scholes, 1972) suggested that risk and return has positive relationship. Roll's criticism in 1976 on traditional (CAPM) changed to the point of view regarding CAPM. As Roll (1976) proclaimed that market index should comprise of all wealth and asset therefore, the proxy used for market portfolio didn't represent well market portfolio. As concerning with it the emergence of anomalies Price/Earning (Basu, 1977) Size of the portfolio (Banz, 1981) value of the anomaly (Barr Rosenberg & Lanstein, 1984) more clearly explain the effect of these anomalies on systematic risk factor.

The notable criticism on (CAPM) was only includes the factor of risk that explain risk return trade off. In brief CAPM implies that none of other factor than that of market risk which affects return. In 1986 (N.-F. Chen, Roll, & Ross, 1986) addressed that criticism in was that adding and introducing the theory of arbitrage pricings. Same as CAPM and APT also suppose that risk and return on a portfolio has linear or direct relationship but the key innovation of APT was under discussed assumptions: 1) Capital markets are efficient and all the market participants are trading with a view of maximizing profit 2) it also assumes that no arbitrage exist if it exist market participant will get the benefit from it and put back market in equilibrium level, 3) it assumes that markets are gentle or frictionless: there is transaction cost , no taxes and infinite number of securities are available.

(N.-F. Chen et al., 1986) put an empirical test on APT. By the Ross, in the lack of arbitration opportunities, positive association exists between return and risk. Although, APT didn't contribute while identifying the factors that engender return. Lot of elements have been so far around the world but this debate is under consideration till now as no one justifies that which

factors are significant in generating the returns. APT was also criticized by (Shanken, 1985) as he states that concept of APT is not clear furthermore, it is very difficult to get the accurate pricing of securities under such assumptions. Fama & French was first two person who introduced the multi factor asset pricing model. They induce a new thinking in financial market by their contribution which implies that return or yield on securities in directly affected by Market, premiums of size and value (SMB) and the (HML) respectively. The efficiency of the model was also been demonstrated by (Fama & French, 1996) and by other researchers. The findings suggested that Fama & French's model of three factors proved more precise in explaining of risk return relationship than earlier models.

Fama & French proposed that CAPM is suitable approach to address the risk return tradeoff. Although, later on the results of the empirical testing of CAPM did not support the argument. However, soundness of Fama & French three-factors model, proved by the several subsequent researches till now. A conspicuous effort made by (Carhart, 1997) proposed the fourth aspect as momentum by adding in three factors model of Fama & French. Recently (Fama & French, 2015) proposed model of five-factors by inclusion of two other factors, including Profitability and Investment to improve the explanatory power and generating more accurate results that provides an edge to investor in making the rational decisions.

In our study Fama & French augmented model of five factors is used included market premium, premium of size, investment and its pattern and distress level on the BRICS countries, and this comprehensive study will give a better understanding to investor that how the national and international market behave and it will provide an insight to financial analyst that how to capture the maximum return by hedging itself from risk associated securities.

Moreover, Terms and trade relation of Pakistan with BRICS countries briefly discussed as Pakistan stock exchange, (PSX) is not a stable market. Investors find the dramatic changes in prices of stock within nanosecond. In Pakistan stock exchange fluctuations in prices take place in every second. Every investor is of the view that return should be enough which can satisfy him but in case of Pakistan stock exchange it is very difficult to quantify the risk associated with securities. To check if this market can be modeled Fama & French proposed model of five factors applied through comparing that of real return to the returns predicted in context of Pakistan and BRICS.

1.1.2 Pakistan Brazil relation:

Pakistan and Brazil has pleasant bilateral trade relations. Both the countries are interested in deepening trade relations in terms of improving volume of trade. Bilateral trade agreement is in operation since 1982 between Pakistan and Brazil. Both the countries have been talking over for setting up Pak-Brazil chamber of commerce. Along with it, Brazil is also ready to help Pakistan by offering Brazil's renewable energy sector expertise and technologies. As it is said "Brazil is always ready to assist the Pakistan via renewable energy resources which includes, coal, solar and wind to meet Pakistan energy need' (Envoy). Brazil is also rich in technologies of agriculture and Brazil is ready to support the agriculture sector of Pakistan.

1.1.3 Pakistan and Russia:

Pakistan and Russia agreed to strengthen bilateral ties in all areas of mutual interest including politics, trade, economy, energy, education and people to people contacts. Pakistan and Russia are building the economic, diplomatic and military ties which could open the ways for gas market hastily growing for energy units of the Moscow. By knotting the ties in military and energy deals the relation between Pakistan and Russia which has been dead for many years will promise to spark the life in Pak-Russia relationship. Both the countries have set up plans to establish the military cooperation commission to get control over the threat of IS in the region. Pakistan and Russia now have contracted the agreement for the methane channel from Lahore to Karachi. Pakistan has also given access to the Russia in Gwadar Port situated Pakistan.

1.1.4 Pakistan-India relations:

The interactions amongst India and Pak have been complicated due to number of political and historical events. According to the ICRIER (Indian council of research on international economic relations) the informal exchange amongst India and Pakistan via third country gets been concluded at $ 4.71 billion. However, Pakistan is at one of the top ranked destinations that exports goods from India. Similarly, India is also one of the important destinations for exporting goods from Pakistan which includes dried fruits, medical and surgical instruments, raw cotton and woven denim fabric etc. Now, trade between Pakistan and India is growing consistently after constant tension of several years.

1.1.5 Pakistan-China relations:

China and Pakistan relation began in 1950. These both are neighbors. China is currently Pakistan's largest single trading partner, while Pakistan is China's second largest trading partner in South Asia. In order to wider the ways in trade both of these countries have ongoing trade agreement. Pakistan is China's largest arms buyer. According to a report Chinese collaboration with Pakistan has achieved at high-ranking economic positions with significant financing in Pakistan infrastructure growth includes deep-rooted water port at Gwadar. Along with it, China Pakistan economic corridor (CPEC) by a high way will connect the Pakistan with China and countries of central Asia. This lofty mode will link Kashgar to Khungrab and Gwadar. Most of the oil trade will do through the Gwadar port. In fact, both the countries will get benefit from China Pakistan economic corridor.

1.1.6 Pakistan-South Africa relations:

South Africa is the largest trading of Pakistan in the continent. South Africa and Pakistan has pleasant bilateral trade relations. Currently trade volume between Pakistan and South Africa has reached at 450 million (Commissioner of South Africa). Total worth of Pakistan's exports is estimated at $ 210 million. In case of South Africa total value of exports to Pakistan is $ 240 million. Now both the countries are interested in enhancing the two-way investment. Along with it, both the countries are agreed to amend the ways in transportation, mining, consular issues and energy sector.

1.2 Problem Statement

(Fama & French, 1993) suggested that the CAPM single factor model was not a sophisticated model that could elaborate cross-sectional returns difference. After CAPM, Fama & French introduced model of three factor which also faced many criticisms. In 2015, Fama & French introduced model of five factor which included two new factors i.e investments and profitability. However, this study proposes a model include factors which incorporating financial bankruptcy as a fifth factor suggesting a better explanation of systematic risk. The notion behind to explore critical importance of said factors and associated pricings in the Pakistan's equity markets and that of BRICS to investigate cross country implication of proposed model in order to capture the fluctuations by providing an edge for investors. As there is no detailed study

jointly done in term of BRICS. This study compares asset pricing mechanism in Pakistan and BRICS. It also facilitates demand of the investors regarding their behaviors of these emerging economies in forming optimal decisions.

1.3 Research Questions

- Does augmented five factor model explains stock returns in Pakistan and BRICS countries?
- Whether financial bankruptcy is priced by Pakistan and BRICS countries?
- Is asset pricing mechanism in BRICS countries and Pakistan constant?

1.4 Objectives of the Study:

- To provide an insight about the role of financial bankruptcy in describing stock returns.
- To compare asset pricing mechanisms in Pakistan and BRICS countries.

1.5 Significance of the Study:

This study investigates the applicability of Fama & French proposed five factors for the Pakistan and BRICS by adding financial bankruptcy as a fifth factor. The previous literature is not so significantly supportive contrast of Pakistan with BRICS, Fama & French augmented model of five factors (financial bankruptcy as fifth factor) has not been studied so far. Global markets are combined with local markets which provide a good scenario in capturing and explaining the returns in each individual market as well in comparison (Hakim, Hamid, & Meera, 2015) and (Cakici, 2015). So, the contribution of our study is combining global (BRICS) and local market (Pakistan). Secondly, there was an intense need to conduct comparative study of BRICS and Pakistan to explore the asset pricing mechanism that provides a wider way for future investments (Hakim et al., 2015). This study enables the investors to invest rationally by following the return pattern of each market capture by this study. Moreover, financial bankruptcy as a measure for distress level provides new insight in asset pricing domain (Zada, Rehman, & Khwaja, 2018). Distress level is a financial ratio that estimates the financial health of company. Ultimately distress level give investor an estimate in which they should invest to maximize their portfolio's return today and the days coming after. Simply by diversifying the international portfolios among BRICS-Pak will help the stakeholders to expect maximized return on a given level of risk (Arif, Iqbal, Ali, & Sohail, 2017). Results of diversified portfolios help the investors

to make the decision rationally by merging their funds with selected economies because diversified portfolios would be rewarded better in the terns of risk return performance than having portfolios with native fund. Although, CPEC (China Pakistan Economic Corridor) concerned, which economically game shifter project for Pakistan. If it progressive and passive, it can give four to five time more output in term of returns of $47 billion of investment. This partnership will help the Pakistan to once again bringing back the strong economy, by retrieving foreign stakeholders who switched from country in 2008 elections. Before 2010, the term referred as BRIC but after 2010, South Africa was comprised so it becomes BRICS. So, this study also captures the fluctuations before and after entering South Africa because time period for this study is 2005 to 2017.

1.6 Contribution of the Study:

Although, till now some studies has tested the Fama and French Five factor model but under the framework of financial bankruptcy Fama and French Augmented Five factor model has not been tested so far in the context of BRICS in comparison with Pakistan by combining the local and global markets (Hakim et al., 2015) and (Cakici, 2015). Along with it, present study also investigates the utilities which are associated with international portfolio diversification among BRICS-Pakistan which help the stakeholders to expect maximized return on a given level of risk (Arif et al., 2017) for the period of 2005 to 2017.

CHAPTER NO. 2

LITERATURE REVIEW

2.1 Theoretical background

Finance is basically, branch of economics which in early life of subject, focuses on the capital markets; strong emphasis on describing the market environment and valuing the individual securities. After some lapse of time modern finance developed the new methodologies to value the wide variety of assets which ultimately proposes the complex and intricate risks on the investors. Modern financial theory is particularly underpinned the assumptions as: efficient markets, utilization of arbitrage by investors and investors are rational and having complete information.

Study of (H Markowitz, 1952) on selection of portfolio remodeled the term finance. From the days of Bernoulli, he put forth the concept that every individual or investor prefers to maximize his wealth under minimum risk. In short words that represent the central idea of Markowitz's theory is; Markowitz's mean variance is a process in which risk is quantified express as variance over the expected return.

Theory of mean variance by Markowitz's laid the base of (CAPM). After some lapse of time broader aspect of pricing the risky asset was introduced. Modern asset pricing model sufficiently explains how the systematic risk is correlated with the return. CAPM in fact is an extension of theory of the mean variance by Markowitz. (Sharpe, 1964) introduced the (CAPM) in which he identified the risk return's trade off and explains how a factor namely beta effect the return of e security and how portfolios could be diversified to minimize the risk. Later, tests outcome of capital asset pricing model reviewed by many scholars or researcher and they raise questions on the validity of the CAPM as such (Drew, 2003) proposed, sole factor beta, which is not plenty factor to capture the premiums; reward for bearing the risk captured by single factor beta in the(CAPM).

(Roll & Ross, 1977) presented theory of arbitrage pricing (APT) similar to CAPM this theory also postulates the linear association between the return and that of risk under some

assumptions: efficient markets, investors are rational and there is no transactional cost to deal in the market. (Shanken, 1985) stated that concept of APT is not clear and it is not able to get the exact pricing under the unclear concept. Motivated by the growing anomalies namely P/E (Basu, 1977) Size (Banz, 1981) and value anomaly introduced by (Barr Rosenberg & Lanstein, 1984) after that (Fama & French, 1993) proposed the model of three factor including market premium, size premium and value premium (MKT) (SMB) and (HML) respectively. Where factors of market meant to excessive market portfolio return, size premium is small subtracted big portfolio return and premium of value represented portfolio return on value stocks minus growth stock's return. Fama & French concluded that the three factors have positive effect and efficiently they captured the return fluctuations. Three factors of Fama & French had wider acceptance which had the empirical success story because of its simplicity and development.

In base paper of (Fama & French, 1996) explained that almost anomalies known up to now had good fit and captured the returns efficiently and accurately. Later on the (Carhart, 1997) constructed a single factor of risk belonging to momentum (WML) in adding Fama and French three factor in directive to encapsulate (Jegadeesh & Titman, 1993) year one momentum anomaly. Where WML stands for winners subtraction losers in the terms of the returns. Ultimately, Fama & French demonstrated that due to inability to pronounce commemorate sectional fluctuations in the returns in portfolios arranged under momentum. Therefore, momentum was comprised by (Fama & French, 1993) model of three. Model of Four factors tested by many researchers some were in support of momentum test accuracy and some were against of it. However, (Carhart, 1997) investigated the impact of four factors and his results indicate the significant results regarding all the factor including momentum. Later (Hong, Lim, & Stein, 2000) and (Jegadeesh & Titman, 2001) concluded in their study that in large caps the effect of momentum is non-existence it was observed that momentum is just redundant in nature and having negligible describing power for the purpose of explaining return. Recently Fama & French study show that model of five factors including market premium of value and size, (HML) and (SMB) respectively, profitability and the investment pattern.

For the purpose of adding explanation power and to tackle with the inadequacy of the previous model proposed by Fama & French comprised more two factors namely investment Pattern and Profitability. Reason for adding two more factors in model of three factors were

missed and to cover up to a great limit of return fluctuations related to investments and profit ratios in accordance (Fama & French, 2015). Theoretical starting of the Fama & French so that model of five factors was considered to standard of dividend discount. As model enumerate the stocks value at present and in depends on some future dividends. The researchers, Fama & French was considered model of the dividend discount and get two factors by it as profitability cum investment.

Size anomaly or size effect can be defined as negative association between return on stock and total market capitalization refer to size anomaly. Empirical evidence showed that size had significant effect on CAPM. For a variety of reasons, size had used as an indicator of undiversified systematic risk. Small firms are more likely to liable to macroeconomic shocks than large firms. Macroeconomic shocks hit the small firms adversely earning prospects (Chan, Chen, & Hsieh, 1985).

(Javid, 2008) empirically investigated the traditional CAPM and model of three factors by Fama & French evidenced from Pakistan's stock exchange PSX for period of the 1993 to 2004. He postulated that market to book value and size are pricings in some of the sub-periods. The findings didn't support to traditional CAPM as an equation that explicit the return fluctuations in Pakistan stock market.

Although, in contrast to (Javid, 2008) study of (Hassan & Javed, 2011) showed the association between premiums of value and size premium and stock return on Pakistan equity market in era of 2000-2007 of 250 listed firms on PSX. CAPM was found to be priced in PSX although Fama & French's model of three factors showed elevated descriptive power in assessment of CAPM traditionally. They postulated size and value factor exists and affect the returns in stock markets so investors considered these factors while making decisions regarding their investment.

(Van Dijk, 2011) concluded on size effect is significant and priced in the observed market. (Van Dijk, 2011) shed a light on the size effect either is it dead or not? He tried to address this issue. He found the effect of size firstly as significant but later he found it redundant while observing it closely. Therefore, he concluded that empirical results of research needed to assess the soundness of extent effect in U.S and international stock market too. Theoretical

explanation and more empirical research should be done on size effect to provide an insight about it.

Similarly, (Lischewski & Voronkova, 2012) hypothesized that emerging markets bearing a title of liquidity, value and size, do they really influential? In markets of emerging stock. Their study concluded that size, book-market and market are dominant in describing the returns. While, these factors add explaining power in explaining the returns but these three factors including market, size and book-market doesn't capture entire market premiums. Along with it, extension of this model made by increasing the liquidity risk also fails to capture the entire market premium. Therefore, they concluded that liquidity risk is irrelevant to polish stock market while, market, size and book-market have far better power of explanatory nature and holding cross section differences.

However, (Eraslan, 2013) tested the validity of the Fama and French three-factor asset pricing model on the Istanbul Stock Exchange (ISE) for the period of 2003 to 2010 and he concluded that Size factor has no effect on portfolios having big-size firms but can explain the excess return variations on portfolios having small and medium-sized firms. Book-to-market ratio factor has an effect on portfolios with high book-to-market ratio firms. Fama and French three-factor model has power on explaining variations on excess portfolio returns but this power is not strong throughout the test period on the ISE

In comparison with (Eraslan, 2013), (Osamwonyi & Ajao, 2014) conducted a study for the time span 2003 to 2012 and he reported that all the three risk factors explain and capture the market return fluctuations so well although, the explanatory power of size (SMB) dominate over the value premium.

However, (Alvi & Ikram, 2015) conducted a study in order to examine association of effect of size over market return in context of Pakistan stock market for time span of 2007-2011. He constructed 10 portfolios constructed on size; market cap, sales, total assets and dissected stock returns. Their result proposed that size had notable effect on small firms have immense average annual excessive return than big businesses. He proved that size effect had significant effect on Karachi stock exchange.

Similarly, (Nahzat Abbas, Aziz, & Sumrani, 2015) tested the explanatory power of Fama and French three factor model (1993) in explaining cross-sectional average return for Pakistan's equity market for the time frame of 10 years from 2004-2014. The sample includes firms that traded on KSE-100 index from 2004-2014 by using regression analysis. results showed that the slope of small stocks is higher than the slope of big stocks and average return on SMB is also found to be positive. Moreover, they also found that value stocks (High B/M stocks) have higher return than growth stocks (low B/M stocks). Their estimation results show that all three-factors are significant in explaining cross-sectional variation in average stock returns and hence the three-factor does a good job at explaining cross-sectional average returns.

(Chughtai & Hasan, 2016) tested Fama & French augmented model of Five Factor including institutional ownership, financial reporting's quality and size of market. They investigated the institutional ownership pricing, financial report quality and market size on Pakistan Stock Exchange. The data was consisted of non-financial 189 firms for the era of June 2002 to 2012. Their test analysis showed value and size effect were significantly priced in PSX. Moreover, ownership by different institutions and financial reporting quality directly affect to stock returns.

(Hu, Chen, Shao, & Wang, 2019) extended the study of (Alvi & Ikram, 2015; Lischewski & Voronkova, 2012) and tested the efficacy of value and size on Chinese stock markets and they proposed that size had significant effect but there is no robust effect of value. In both tests results regressions of time series and regression of Fama-Macbeth SMB depicts to strongest factors in elaborating cross section return in Chinese context.

As literature growing we can see that handful of studies had been done so far in the context of Pakistan and BRICS that combines the local and global markets while testing the asset pricing. Therefore, our study addresses the local and global markets under asset pricing paradigm.

Just to compensate the gap of the inadequacy in past models Fama & French model of five factors was introduced by (Fama & French, 2015). The implication of Fama & French model of five factors was model of dividend discount as that model stated today's value of stock in dependent on future payments of dividend when discounted back to present value.

Fama & French took into consideration the model of dividend discount and obtain two factors by it profitability and investment (Fama & French, 2015).

(L. Chen, Novy-Marx, & Zhang, 2011) investigated the model of three factor of asset pricing and outlined that those factors are different from Fama & French model of three factors (Fama & French, 1993). Which have investment premium, and markets premium and profitability. This model found healthier than model of three factors by Fama & French and that paradigm did not treat investment and profitability factor as risk factor they link expected return to firm characteristics without supposing the mispricing. The new model of three factors outruns typical CAPM in describing the cross section return difference. This model also came into view as new model.

The postulation performed by (Fama & French, 2015) they found Value factor redundant in explaining the return on average when the investment and profitability is present in the equation. Their study also concluded that model of five factors by Fama & French found more truthful and efficient in capturing the returns along with it the five factor model attained highest expected returns Fama & French (2015).

(Hakim et al., 2015) combined the global and local markets: Evidence from three BRICS nations. Their test results showed that models behaved differently in each market in capturing the elements. Although, local markets played the dominant role in all of the global markets including china, India and South Africa. Chinese market behaved like segmented market however, local markets portfolio fully captures the return relevant information. Although, other two markets India and South Africa acted as partially integrated markets. Wherein, local markets and global markets needed to be combined in order to capture all relevant information.

Although, (Adu, Alagidede, & Karimu, 2015) investigated the stock return distribution in the BRICS. Their findings showed that returns of stock are undeviating in term of horizon of time and measurement for BRICS for the period of 1995 to 2014. Main findings urged that the distribution of stock returns for the BRICS exhibits peakedness with fatter and longer tails, and this is invariant to both the unit of measurement and the time horizon of returns. Volatility clustering is prevalent in all markets, and this decays exponentially for all but Brazil.

The risk return relationship found to be significant and risk premiums are widespread in their sample.

However, (Chiah, Chai, Zhong, & Li, 2016) enumerated that Australia applying the Fama & French model of five factor, their finding report that Fama & French model of five factors which adds two other factor investments (CMA) and profit abilities (RMW) have the more power to describe the return fluctuations in pertaining market but it does not have competence to cover entirely the fluctuations in returns of expected nature.

Similarly, introducers of multifactor models of assets pricing Fama & French (Fama & French, 2015) investigated the performance of Fama & French's model of five factors which have size's premiums and premiums of market, investments and profitability patterns for the United States, a developed equity market by using data for era of 1963 to 2013. Their findings suggest that Fama & French model of Five Factors showed better results, captures more accurately fluctuations in market return as compare to Fama & French model of Three Factors.

However, (Singh & Yadav, 2015) investigated asset pricing dynamics of India Stock Exchange (from CNX 500 Index) over 15 years from 1999 to 2014. By using time series data sets of hierarchy multiple regressions, resulting that there exist a negative relationship among market capitalization and returns, return and profitability, investment, returns and positive relationship in book-market equity fractional and returns.

Similarly, (Cakici, 2015) study show model of five factors and its validity of Fama & French on 23 developed stocks market for the era July 1992 December 2014. Their study was comprising of model of three factors, model of four factors and model of five factors in order to elaborate returns on global and that of local factors. Their findings proposed that other dual additional factors investments and profits pattern are redundant in describing the returns as these factors didn't play any significant character in capturing return. Profitability and investment pattern do not add or enhance the ability of model's explanation power.

However, (Heaney, Koh, & Lan, 2016) investigated Fama & French model of Five Factors in era of 1982 to 2013 and 1993 to 2015 period for Australia. The analysis showed that Fama & French model of Five Factors is much better than Fama & French model of Three Factors in describing average stock. As (Heaney et al., 2016) did not get much attract with the

Fama & French model of five factor as they feel better explaining power by adding the two more variables in past model by Fama & French (Fama & French, 1993). Conclusion on the remarks that Fama & French model of five factors is better than that of model of three factors but not that much outperform in capturing the return as it should be.

Similarly, (Nguyen, 2016) investigated Vietnamese market of stock in era of 2008 to 2015. Test results of study showed that five factors model by Fama & French had improved illustrative strength in expounding risk return relationship over Capital Asset Pricing model and three factors model by Fama & French. The study also showed state owned equities are significantly priced that private firms.

While, (Guo, Zhang, Zhang, & Zhang, 2017) investigated, model of five factors by Fama & French in case of Chinese stock exchange their findings show that profitability size and value forms are strong and investment pattern as redundant factor. They found that profitability factor has robustness to describe the average returns while investment pattern made marginal contributions toward explaining the average return as it does not prove to be significant in nature for Chinese stock market. Moreover, result of the factor spanning test clearly suggested that investment factor is redundant in different time periods.

However, (Lin, 2017) studied the Fama and French three factor model and Fama and French Five factor model for the period of 1997 to 2015 in China. Their findings show that Fama and French Five factor model outperforms as compare to the Fama and French three factor model. They found strong evidence that value and profitability factors are not redundant while investment factor has no role in describing stock return.

(Karaomer, 2017) verified the legitimacy of model of five factors by Fama & French which have premium of market, value and size and pattern for the period between July 2005 to 2016 (132 months) in Bursa Istanbul Stock Exchange. Study found that Fama & French model of Five Factor show fruitful explaining power of explaining return in Bursa Istanbul Stock Exchange.

(Kubota & Takehara, 2018) shed light on Fama & French model five factors for long run data in Japan stock market they conducted the asset pricing in cross section test and scrutinized additionally two factors profitability; robust subtracted weak and pattern of

investment (CMA); conservative subtracted aggressive. The findings were comprised two new factors are insignificant, which is in contrast of Fama & French model of five factors (2015) evidenced from US market. In light of asset pricing test, they found that profitability and investment betas were weakly correlated in cross sectional fluctuations in return of stock, which refer crucially differ from U.S study. Finally, they concluded, co-efficient of these dual factors found statically insignificant.

However, (Foye, 2018) tested Fama and French five factor model and concluded that using gross profit as a replacement for of operating profit provide insight of UK equity returns. However, the factors behaved differently when tested against different test portfolios. The study was concluded in Europe largest equity market for the period of October 1989 to September 2016. He concluded that Fama and French five factor model fails to provide an improved description of equity return in the region.

However, (Charteris, Rwishema, & Chidede, 2018) tested validity of Fama & French model of Five Factor: A South African Prospective. Analysis of study showed that neither (CAPM) Fama & French model of Three Factor nor (Carhart, 1997) model of four factors could elaborate risk return relationship. Although, Fama & French model of Five Factors (2015), which pricing factors includes investment and profitability provide more accurate results and less pricing errors. (CAPM) and classical model of three factors were also significant.

Along with it, (Leite, Klotzle, Pinto, & da Silva, 2018) studied Fama and French four factor model and Fama and French five factor model and concluded that both of the model perform better than three factor model of Fama and French in most of the tests. They found clear evidence of size effects in average stock excess return while little evidence they found regarding value, profitability and some investment factor effects. Along with it they added local factors perform better than US and global factors.

Similarly, (Huang, 2019) investigated in his study five factors model of Fama & French and he profound that model of five factors is better in respect to previous ones as this one has the capability of capturing the changing in returns. Furthermore, he comprised this model extended the explanatory power of the previous models as two more factors are comprised. Although, while closely investigation he found that model of five factors by Fama & French has

capacity of capturing the returns varies by the time in markets of Chinese: the targeted market of analysis. Concentrating on Chinese stock market, learning made a comparison in the term of performance of different pricing models Sharpe (Sharpe, 1964), Capital asset pricing model (CAPM), model of three factors by Fama & French (Fama & French, 1993) model of four factors by (Carhart, 1997) and Fama & French's model of five factors (Fama & French, 2015). Distinction of this study over the previous is this research drives return on specific stock as related variable rather than portfolio return. Overall the results suggested that model of five factors by Fama & French bears more descriptive energy than the other patterns when explaining the individual stocks. Moreover, investment and profitability slightly boost the describing strength of model.

Risk and return are the factors which had been under observation from many years. Investors considered to avoiders of risk and they always going to make their investment in securities of portfolio which reward them at higher rate of return. Returns and risks has always been hot topic for stakeholders as they want to maximize their wealth by investing in the security with bears lower risk and higher return. Distress level is a financial ratio that estimates the financial health of company as we know that under the model of dividend discount. Which stated stocks value of a company of recent is dependent on coming days divided. Ultimately distress level will give investor an estimate in which they should invest to maximize their portfolio return. The Altman Z-score model proposed by Altman (2012), this typical model is single of the extensively used and cited model. It is a helpful tool that addresses the financial failure probability of a company. Financial failure is not just a failure or loss of a company it is also adversely affects the community.

The purpose to figure out the financial-distress level for estimation of firm's financial heal and soundness that could help the investor and stakeholders while doing the investment decisions. Researchers and practitioner are of the different point of view regarding financial distress level that could affect the firm's value today and in the days coming after.

Indeed, many studies confirmed that opposed findings, stated as, stock of the firms that deals in the high stock of default commonly earn low return. An ordinary elucidation of the empirical result assert that, when the situation of default risk occurs firms do not demand

excessive premium to be rewarded for default risk. Popular studies of (Griffin & Lemmon, 2002) showed lower return for high default risk firms.

A good predictive model not only timely saves a company from bankruptcy but also proved to be beneficial to the range of stakeholders. Altman Z score also crucially addressed the qualitative analysis of a firm; inability to perform successfully along with poor management and leadership are the main cause of a failure of a firm (Xu & Wang, 2009).

While, (Xu & Wang, 2009) reported that financial failure of the firm is the cause of inability to perform successfully along with poor management, managerial skills, knowledge and incompetent leadership are the main cause of a failure of a firm.

(Chava & Purnanandam, 2010) tested the relationship between default risk and stock return by using an ex ante proxy based on impact cost of capital and they found positive significant influence of default risk and stock return. They concluded that risk return trade off can change significantly depending upon on the way expected way is measured.

(Malik, Aftab, & Noreen, 2013) investigated the relationship among distress risk and market performance of the firm for distressed listed firms in Pakistan stock exchange. They use Altman Z score (1968), proxy for measuring the distress risk. Their findings showed that financial distress is positively related with share performance. However, in the case of Pakistan listed distress firms result were not finalized as positive relationship found among stock return and distress risk which is not statistically significant. In fact, distress listed firms over perform. On the basis of theories, higher risk should be rewarded with the higher return (CAPM). This show that Karachi stock exchange (KSE) is efficient enough to reward the investors for bearing the risk in the terms of reward.

Similarly, (Husein & Mahfud, 2015) examined the influence of distress risk, firm size, Book to Market ratio (BMR), return on Asset (ROA) and debt to equity ratio (DER) to stock return for the period of 2009-2013 under 25 corporate sample on Indonesian capital market using multiple regression analysis. Finding of the study showed that distress risk has positive influence but not significant to stock return. Similarly, size and BMR has significant but negative effect on stock return. Although, ROA, DER found insignificant on stock return.

(Li, Lai, Conover, Wu, & Li, 2017) proposed a four factor financial distress of Australian and other six countries model in the stock markets (Malaysia, Singapore, Korea, Hong Kong and Thailand). O score was used for level of financial distress which was calculated form variable accounting taken from statement of financial matters published annually for the period from 1995 to 2009. They found significant support of these factors including four variables to predict the financial-distress models. They concluded that model of assets pricings having four factors to estimate financial-distress enhance explanation power beyond the Fama & French (Fama & French, 1993) model of three factors distress risk was notably priced in seven of six Asian pacific markets. Although, (Carhart, 1997) momentum factor only improves explanatory power.

Several researches claimed for "default risk factor". This argument assert that shareholder should give the premium for investing in the higher financial bankrupt firms as on the theoretical grounds highly financial bankrupt firms should be compensated in higher return. (Boubaker, Hamza, & Vidal-García, 2018) and many other researchers showed their consent on above stated postulation.

However, (Idrees & Qayyum, 2018) enumerated Pakistan's stock exchange (PSX) on the list of non-financial businesses, in era of 2010 to 2016 by using O score prediction model for predicting distress risk. Fama & French model of three factors (Fama & French, 1993) used for investigations of relationship among size, book-market value and distress risk. Findings of the study show that the financial distress risk and book-to-market equity effect are statistically insignificant to explain the stock returns of distress firms due to the inefficiency of market. However, size effect is significant in explaining the stock returns of distress firms.

As the above stated literature convey a strong meaning that developed and developing markets have different behavior in capturing the returns and it has also been indicated from above literature that asset pricing mechanism has not been studied in BRICS in detail. So, in order to capture all the relevant information in the markets global markets should be combined with local markets (Hakim et al., 2015). When global markets be combined with local or emerging markets it ultimately enhance the explanatory power of stock returns in emerging markets and it surely provide a good fit in capturing and explaining the return and performance of each individual market as well in comparison. So, there is need to study pricing mechanism in

Pakistan and BRICS by using financial bankruptcy augmented model. Overview of literature provides an empirical support that financial bankruptcy factor has significant impact in different economies.

2.2 Hypothesis:

Hypothesis 1:

H1: There is significant relationship between market premium and portfolio return.

Hypothesis 2:

H1: There exists a relationship between size premium and portfolio return.

Hypothesis 3:

H1: There is a significant relationship between profitability and portfolio return.

Hypothesis 4:

H1: There exists a relationship between investment pattern and portfolio return.

Hypothesis 5:

H1: There is a significant relationship between financial bankruptcy premium and portfolio returns.

CHAPTER NO. 3

RESEARCH METHODOLOGY

3.1 Methodology:

In this study, Multivariate (MV) regression & augmented model of five factors by Fama & French incorporating premiums of size and market (SMB), profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB) using convenient sampling technique to investigate the risk return relationship in Pakistan's stock market, Brazil, Russia, India, China and South Africa (BRICS) on 60 listed companies from each stock exchange for the time period of 2005 to 2017 to investigate the pricing mechanism in equity market of Pakistan in comparison with BRICS. The average returns of portfolios are calculated. The study uses 3-months T-Bill from IFS database as the risk free rate of return. The data set used for the study taken from published financial and annual reports of the entities from published sources and OSIRIS database along with relevant Stock Exchanges (PSX, BSE, MISE, BSX, SSE, JSE) and Business recorder.

3.2 Data Description:

3.2.1 Population and Sample:

Data is consisted for non-financial concerns listed on Pakistan stocks exchange and BRICS nation (Brazil, Russia, India, China, South Africa) respectively from period of 2005 to 2017. The study utilizes data of 60 non-financial concerns. (Davis, Fama, & French, 2000) and Fama & French (Fama & French, 1992) postulated time period and sample's size significantly wedged on empirical results driven from study. Therefore, current study utilized data of 13 years data.

3.2.2 Time periods and Data:

Being quantitative analysis and employs the data of non-financial firms for the time span 2005 to 2017 listed on the PSX, BSE, MICE, BSX, SSE and JSE. The data is comprised of market data; stock share price data, rate risk-free nature and accounting data along with market capitalization of stocks. This study uses 3 month rates of T-Bill using proxy for rate of risk-free

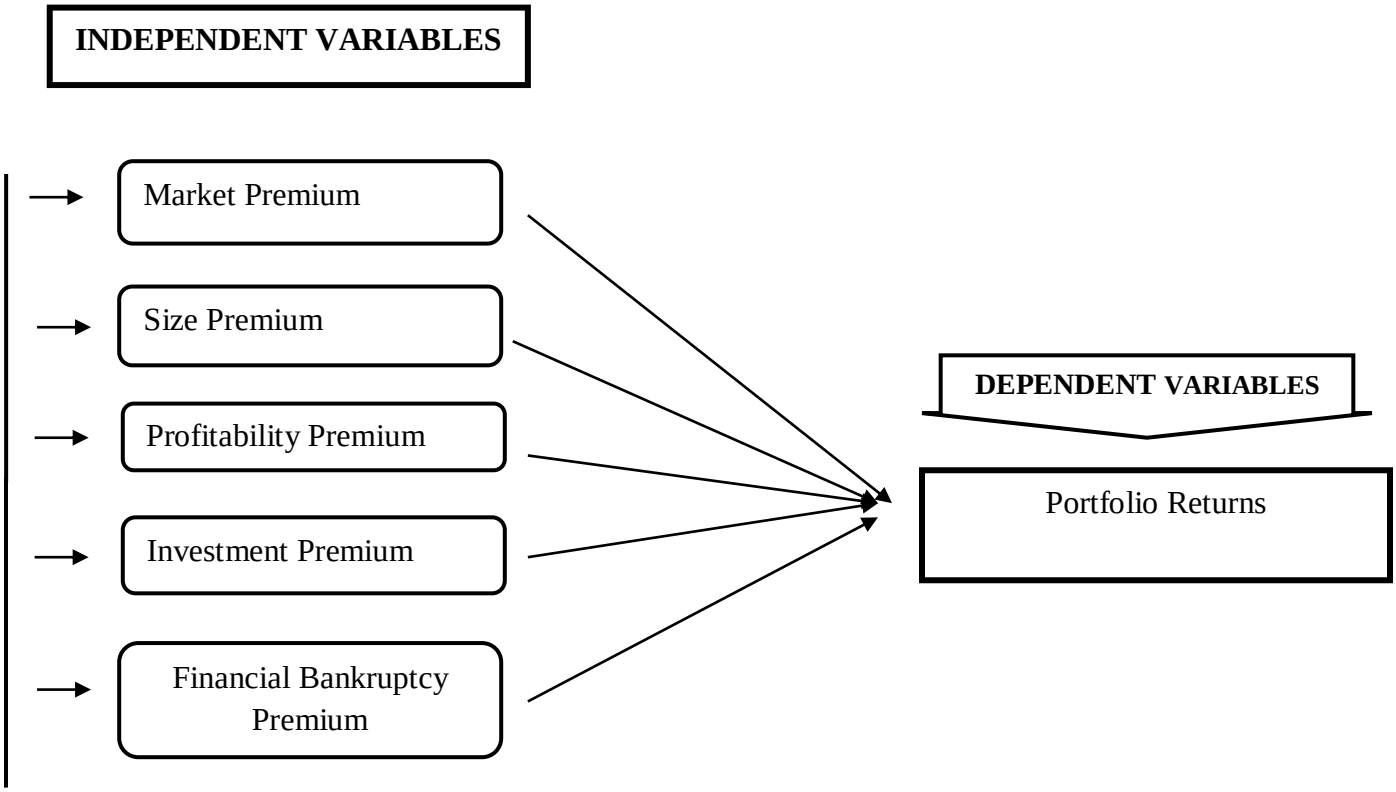
nature, market capitalization as a proxy for SMB, proxy for the profitability and investment pattern is operating profit margin and growth in total asset respectively. Although, financial bankruptcy is measured by using Altman's z-score. Here, accounting data means annual accounting financial statements issued by the companies which convey the financial soundness of the firm. Data sets used for the analysis obtained from audited balance sheets and published reports annually by online sources and OSIRIS database along with relevant Stock Exchanges (PSX, BSE, MICE, BSX, SSE, JSE) and Business recorder.

3.2.2.1 Initial Screening and Sample Construction:

Screening criterion used in study is ordinary nature. The study follows existing practice to attain the robust and commensurate estimate. The sample selection criteria in-line with Fama & French (Fama & French, 1992) adopted methodology. Following criterion is use to choose sample of the study.

i. The continuity of being listed of concerns on its respectively stock exchange.
ii. Companies share the same fiscal year.
iii. All the selected firms under study are non-financial.
iv. Both accounting and market data were available while selecting the data.

3.3 Conceptual Framework:



3.4 Description of Variables:

Table 3.4.1 depicts the all variables of the study and their relevant symbols and proxies which going to use in the analysis and study.

Table 3.4.1: Variable Description

Variable	Abbreviation	Description	Proxy	Earlier Studies Used These Proxies
Portfolio Return	Rp	Excess return on portfolio for time t		
Risk Free	Rf	Risk free rate of return		

Rate of Return		at time t		
Independent Variables				
Market Return	Rm	Market return at time t	(Rmt-Rft)	(Fama & French, 1993) (Foye & Valentinčič, 2020)
Size	SMB	Difference between the returns of the small size firms and the large size firms at time t	Small minus big on basis of market capitalization	(Fama & French, 1993) (Foye & Valentinčič, 2020)
Profitability	OP	Measured by operating profit margin	Operating profit margin	(Fama & French, 2015) (Foye & Valentinčič, 2020)
Investment Pattern	Inv.	Measured by	Growth in total assets	(Fama & French, 2015) (Foye & Valentinčič, 2020)
Financial Bankruptcy	FB	Measure by Altman Z score	Altman Z score	(Zhang, Zhang, & Pei, 2019)

3.4.2 Defining the variable:

Fama & French proposed model of five factors is used in this study which comprise of premiums of size and market, profitability, investment pattern and bankruptcy to explain the portfolio return.

3.4.2.1 Market Factor:

Market premium refer to surplus of return over the portfolio. On theoretical grounds, market portfolio covers up liabilities and assets in specific market. As Blume (Friend & Blume,

1970) proposed combining much as possible securities result in unique way diversification and risk specific to firm.

3.4.2.2 Size Factor:

Proxy for quantifying the size factor (SMB) was markets capitalization. The said relationship is utilized to alleviate the stocks size "*i"* on a day of trading "*t"* Fama & French, (Fama & French, 1992) and (Banz, 1981).

Market value (MV) = Number of shares outstanding* Current share price.

3.4.2.3 Profitability Factor:

To measure the profitability factor Operating profit proxy is used (Fama & French, 2015). Here operating profit is equals to Operating Profit divided by Total Revenue OP/TR where operating profit is equal Total revenue – cost of goods sold – interest – tax as well as Total Revenue = Total quantity sold* price per unit. As (Fama & French, 2015) add this factor due to inadequacy they feel due to absence of this factor this factor most probably adds explanatory power in explaining the portfolio return.

3.4.2.4 Investment Pattern:

Investment factor was comprised by (Fama & French, 2015) as they put under observation model of dividends discount which hypothesizes value of a stock now is reliant on the future disbursements. Investment form is gauged by the progress in complete assets Fama & French (Fama & French, 2015).

$$\text{Investment} = (\text{Total Assets}_{t} - \text{Total Assets}_{t-1}) / \text{Total Assets}_{t-2}$$

Where Total Assets t is the total assets at the end of the current year. Total assets t-1 is total assets of at the end of the previous year. Total assets t-2 means t total assets of at the end of the previous year.

3.4.2.5 Financial bankruptcy:

Risk and return are the factors which have been under observation form many years. The investors supposed to be risk avoiders and they always chanting to invest in securities of portfolio which reward them at higher rate of return. So, the Altman Z score model (2012), serve the investors in this way. Altman Z score is one of the widely used and cited model. It is a helpful tool that addresses the financial failure probability of a company. To measure the distress level proxy of Altman Z score (2012) is used in this study. This model is consisting on the accounting ratios that estimates the financial soundness of the firms and gives an edge to the investors in the way of maximizing the profit.

3.5 Portfolio Construction:

We raise the portfolios by subsequent the (Fama & French, 2015) practices of portfolio production (Fama & French, 1993, 2015).

Following steps are followed:

1) 60 firms are selected on the basis of capitalization by each stock (number of shares outstanding * current price per share) 60 firms are sorted into the portfolio of 30 Big size (B) and 30 small size.

2) Based on size of Small and Big sized companies are divided into the portfolio of big robust and big weak along with small robust and small weak.

3) Same as above companies are further divided as big conservative and big aggressive along with small conservative and small aggressive.

4) Further big and small size companies are alienated into portfolio of big highly financial bankrupt and big low financial bankrupt along with small highly financial bankrupt and small low financial bankrupt.

5) Average returns have computed for all.

The said method has been repeated for 2005 to 2017.

3.5.1 Portfolios Based On Profitability:

Fama & French (Fama & French, 2015) measure Operating Profit from the data of accounting for fiscal year as yearly income – cost of goods sold - interest expense – operating

expense/ book equity at the end of fiscal year while we are using a different proxy for measuring the operating profit, which is equal to Operating Profit divided by Total Revenue where, operating profit = Total earnings – cost of goods sold – interest – tax as well as Total Earnings = Total quantity sold* price per unit. Basis of capitalization of markets (no. of stocks outstanding* current price/ share) firms are sorted into tiny sized and big sized then on ground of calculated operating profit firms are sorted as high profit firms and low profit firms (RMW).

3.5.2 Portfolios Based On Investment Pattern:

Firstly, firms are arranged on the footing of size into small sized and big sized firms on the core of capitalization of market (no. of shares outstanding*current price per share) then on the basis of investment pattern which is growth in overall assets divvied by over-all assets at the completion of fiscal year (Fama & French, 2015).

$$\text{Investment} = (\text{Total Assets}_{t} - \text{Total Assets}_{t-1}) / \text{Total Assets}_{t-2}$$

Firms are sorted into the highly and lowly investment firms according to calculated investment ratio as highly investment ratio firms are graded as hostile one and at a low level investment firms are graded as traditional firms (CMA).

3.5.3 Portfolios Based On Financial Bankruptcy:

Firstly, organizations are arranged on the core of size calculated as capitalization of markets (no. of shares outstanding*current price per share) into small sized and big sized organizations then on the basis of financial bankruptcy either high and low which is measured by Altman's z score which has been explained as follow;

Altman's Z score:

Altman Z-scores introduced by Edward Altman (2012). It's an economic ratio that tells the probability of firm to be bankrupt. It involves five financial ratios which includes;

- Liquidity
- Movement to calculate whether a business has high likelihood of being bankrupt.
- Profitability
- Solvency

- Leverage

We can calculate Altman Z-scores as follows:

Z-Score = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E

Where

A = Working capital / total assets

B = Retained earnings / total assets

C = Earnings before interest and tax / total assets

D = Market value of the equity / total liabilities

E = Sales / total assets

On the basis of above stated obtained score firms are sorted as high financially bankrupt firms and low financially bankrupt firms.

3.6 Variable Construction:

Variables are constructed on the basis of 2*2 sorting as on size and B/M, size and profitability, size and investment pattern, size and financial bankruptcy.

SMB=(SH+SL+SR+SW+SC+SA+SHFB+SLFB)/8 – (BH+BL+BR+BW+BC+BA+BHFB+BFB)/8

RMW = (SR+BR)/2- (SW+BW)/2 = [(SR-SW)/2 + (BR-BW)/2]

CMA= (SC+BC)/2- (SA+BA)/2 = [(SC-SA) + (BC-BA)]/2

FB = (SHFB+BHFB)/2 – (SLFB+SLFB)/2 = [(SHFB-SLFB)/2+ (BHFB-BLFB)/2]

3.7 Model Specification:

The model of five factors intended for empirical assessment. The subsequent multi-factor models suggested to assess pricing of assets in context of Pakistan equity's market in comparison

with BRICS countries. The analysis aims its best to pinpoint aspects that might beneficial in evolving new model.

Equation 1:

$R_{pt} - R_{ft} = \alpha + \beta_1 MKT_t$

Where

R_{pt} = The expected portfolio return at time t

R_{ft} = Risk free rate at time t

R_{mt} = market return at time t

Equation 2:

$Rpt - R_{ft} = \alpha + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 RMW_t + \beta_4 CMA_t + \beta_5 FB_t + \varepsilon_t$

Where

R_{pt} = the expected portfolio return at time t

R_{ft} = risk free rate at time t

R_{mt} = market return at time t

SMB = difference amongst the small sized portfolio return - big sized portfolio return at time "t"

RMW = difference among return regarding robust profitability portfolio minus weak profitability portfolio at time "t"

CMA = difference amongst return of conservative investment portfolio - aggressive investment portfolio next to time "t"

FB = difference amongst the return of high financial bankruptcy portfolio - low financial bankruptcy portfolio at time "t"

εt = Error term

CHAPTER NO. 4

DATA ANALYSIS

4.1 Data Analysis

Descriptive statistics applied to demonstrate the significant traits of records, for instance fundamental tendency and irregularity or distribution of data. Standard deviations and means mutually are the simple measure of central deviation which reflects the deviation of data from mean.

4.1 (a) Descriptive Statistics Size Sorted Portfolios. (Brazil)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.008	0.011	0.209	-0.204	0.063	-0.292	4.345
BA	0.002	0.003	0.213	-0.251	0.074	-0.472	4.199
BC	0.013	0.011	0.29	-0.178	0.068	0.933	6.348
BHFB	0.014	0.008	0.293	-0.246	0.069	0.672	6.763
BLFB	0	0.001	0.2	-0.262	0.073	-0.494	3.939
BR	0.005	0.001	0.243	-0.216	0.071	0.038	4.468
BW	0.009	0.007	0.309	-0.224	0.071	0.03	5.733
S	-0.012	-0.008	0.225	-0.222	0.065	0.091	4.825
SA	-0.01	-0.011	0.29	-0.253	0.086	0.483	5.107
SC	0.336	0.009	6.305	-0.154	1.156	3.504	14.427
SHFB	0.005	0.006	0.335	-0.227	0.06	0.568	10.219
SLFB	-0.013	-0.011	0.283	-0.239	0.087	0.366	4.396
SR	1.837	-0.005	30.752	-0.266	6.293	3.249	12.17
SW	0.077	0.007	1.386	-0.25	0.273	3.14	12.476

Statistical outputs of the portfolios grouped on the size of Brazil are stated in the table 4.1 (a). Results indicate B is having high performing portfolio with minimal risk as compare to S. The B outpaces S standard deviation and means value of 0.00746 and 0.06332 one-to-one. Similarly, BA outperforms SA as BA is high-pitched yield and little-slung risk of portfolio. BC is inefficient to SC as SC is soaring portfolio returns. In the case of BC and SC the maximum value is 0.28946 and 6.30515 and the minimum value of BC and SC is -0.1779 and -0.154. Mean

value of BHFB is higher than the SHFB which means BHFB outperforms the SHFB which also bears the low risk as compare to the BHFB. Maximum value of BHFB and SHFB is 0.29264 and 0.33475. Minimum value of BHFB and SHFB is -0.2457 and -0.2274. BLFB outperforms SLFB with mean and values of standard deviation -00.0002 and 0.007 respectively. Full value belongs BLFB and SLFB is 0.20016 and 0.282817. SR outperforms the BR. Similarly, SW outperforms BW with maximum value of 0.308813 and 1.385546 along with the minimum value of -0.22386 and -0.2501.

Utmost B value is of 00.20887 and S relates 0.22493 likewise lowest possible value B and S -0.2039 and -0.2527. Along with it maximum value of BA and SA is 0.21251 and 0.28965 respectively with a minimum value of -0.2509, -0.2527.

Skewness reveals dissemination of data either the data is symmetric or asymmetric. For usual distribution, skewness ought to be zero which implies data is proportioned and has bell fashioned graph. In the real world right 0 skewness is pretty unreal in the data. If the skewness is constructive, it entails data sets are positively skewed, lie on the right side of the graph or its right tailed is extended than other side. If this is negative it shows negatively the data skewed lied on the left side of the graph. Skewness results are reported as table no. 4.1 (a). Skewness is negative for B (-0.29156), BA (-0.47206), BLFB (-0.49346). While results are positively skewed for BC (0.932645), BHFB (0.672311), BR (0.038062), BW (0.29914), S (0.090569), SA (0.483446), SC (3.504273), SHFB (0.568372), SLFB (0.365928), SR (3.248558) AND SW (3.140109).

The purpose kurtosis serve is to show comparative peak or uniformity of data quantified as compare to ordinary distribution. Usual distribution regarding kurtosis is marked as 3-kurtosis value if the kurtosis value is bigger than 3 it implies data dissemination is comparatively peaked or leptokurtic and kurtosis < 3 means that data dissemination is platykurtic. Results of table no. 4.1 (a) shows distribution is platykurtic relatively for all portfolios.

4.1 (b) Descriptive Statistics Size Sorted Portfolios (Russia)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.016	0.019	0.258	-0.367	0.08	-0.509	7.028
BA	0.009	0.013	0.352	-0.349	0.089	0.275	5.849
BC	0.003	0.009	0.245	-0.386	0.08	-1.236	9.324
BHFB	0.003	0.011	0.239	-0.284	0.07	-0.792	7.486
BLFB	0.011	0.014	0.386	-0.45	0.103	0.047	6.571
BR	0.005	0.009	0.371	-0.465	0.098	-0.135	7.443
BW	0.01	0.013	0.22	-0.279	0.071	-0.53	6.244
S	-0.003	0	0.23	-0.29	0.065	-0.432	6.271
SA	-0.004	0.004	0.247	-0.374	0.076	-0.549	7.272
SC	-0.002	-0.002	0.212	-0.241	0.071	-0.399	3.998
SHFB	-0.003	-0.003	0.274	-0.247	0.069	0.374	5.816
SLFB	-0.003	0.004	0.2	-0.352	0.076	-0.828	5.97
SR	-0.007	-0.006	0.308	-0.362	0.073	-0.143	8.75
SW	0.001	0.004	0.218	-0.261	0.075	-0.19	4.349

Statistical consequences of portfolios categorized on the size of Russia are stated in table no. 4.1 (b). Results indicate, B outperforms S with excessive return and minimal risk. Mean value pertaining to S and that of B is 0.016427, -0.00297 standard deviation for B and S are 0.080 and 0.064532. Maximum and minimum value for S and B reported 0.229563, 0.25799, -0.29001 and 0.36736 respectively. Similarly, BA outperforms SA with mean 0.008727 and standard deviation of 0.089403. Extreme value and the tiniest value for BA is 0.35231, -0.34877. Maximum value of SA is 0.246835 and the minimum value is -0.37368. BC with the high return and low risk outperforms SC. Maximum and minimum value for BC is 0.244505 and -0.38596. BHFB outperforms SHFB. BLFB outperforms SLFB. Maximum and minimum value of BHFB and SHFB is 0.385625, 0.200316, -0.45041 and -0.35182 respectively. BR outperforms SR. Mean worth of BR 0.005245 along deviation 0.09828. BR outperforms SR with elevated return and minimal peril portfolio. Maximum and minimum value of BR is 0.370877 and -0.46516. Similarly, BW outperform SW. Maximum and minimum values for BW and SW is 0.220434, -0.27865, 0.217881 and -0.2614.

Skewness is negative for B (-0.5091), BC (-1.23644), BHFB (-0.79166), BR (-0.13497), BW (-0.53034), S (-0.43247), SA (-0.54876), SC (-0.39897), SLFB (-0.8275), SR (-0.1434) and SW (-0.19009) while skewness is positive for BA

(0.274948), BLFB (0.047418) and SHFB (0.373719) negative skewness to say left sided of graph elongated in comparison with side of right. Kurtosis result is greater than 3 relatively for all the portfolios which mean data distribution is peaked.

4.1 (c) Descriptive Statistics Size Sorted Portfolios. (India)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.007	0.014	0.233	-0.26	0.07	-0.756	5.582
BA	0.001	0.005	0.288	-0.375	0.08	-0.569	6.435
BC	0.003	0.006	0.221	-0.322	0.07	-0.96	6.298
BHFB	0.003	0.008	0.178	-0.259	0.064	-0.914	5.434
BLFB	-0.003	0.003	0.353	-0.441	0.094	-0.621	6.806
BR	0.001	0.005	0.296	-0.355	0.081	-0.734	6.645
BW	-0.001	0.002	0.235	-0.345	0.078	-0.816	5.821
S	0.003	0.005	0.255	-0.349	0.071	-0.753	7.269
SA	0.007	0.022	0.285	-0.368	0.084	-0.872	6.187
SC	0.009	0.012	0.181	-0.298	0.068	-1.151	6.456
SHFB	0.01	0.016	0.231	-0.26	0.07	-0.683	4.938
SLFB	0.01	0.021	0.213	-0.305	0.08	-0.734	4.779
SR	0.012	0.023	0.193	-0.3	0.074	-0.995	5.481
SW	0.008	0.019	0.25	-0.298	0.072	-0.739	5.507

Statistical characteristics of portfolios arranged on magnitude of India shown in table no. 4.1 (c). Outcomes depicted that B outperforms S. value of Mean of B & S 0.007338, 0.002938 having deviation of 0.069635 and 0.070833 respectively. Thorough going value for S and B is 0.232499, 0.254662 and least values are -0.2598 and -0.34855. BA outperforms the SA with highest value 0.288044 and 0.284513. The slightest value regarding BA and SA is -0.37477 and -0.36802. SC outperforms BC with high return and low risk associated with maximum value 0.180485, 0.221281 respectively. Minimum value of SC and BC is -0.29773 and -0.32234. SHFB outperforms BHFB. Value of Mean of SLFB is 0.010423 with deviation 0.079616. SLFB outperforms BLFB. Highest value pertaining SLFB refer to 0.212457 and BLFB 0.353054.

Slightest value in respect SLFB and BLFB is -0.30462 and -0.4405 respectively. SR outperforms BR. Maximum and minimum values for SR and BR are 0.193102, 0.295883, -0.30009 and -0.35502 respectively. SW outperforms BW. Maximum value of SW is 0.250212 and 0.235125 for BW.

4.1 (d) Descriptive Statistics Size Sorted Portfolios. (CHINA)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.0086	0.0123	0.2312	-0.2552	0.091	-0.5022	3.6025
BA	0.0103	0.0137	0.2775	-0.2842	0.0977	-0.4002	3.7488
BC	0.0068	0.0123	0.2643	-0.2484	0.0905	-0.4229	3.402
BHFB	0.0136	0.0184	0.3079	-0.2542	0.0976	-0.2511	3.6456
BLFB	0.005	0.0105	0.2629	-0.2858	0.1024	-0.376	3.4386
BR	0.01	0.0152	0.2611	-0.2876	0.0974	-0.478	3.9113
BW	0.0435	0.0226	0.6603	-0.2261	0.1467	1.5939	6.7769
S	0.0132	0.0103	0.3176	-0.3295	0.101	-0.2965	4.0369
SA	0.0115	0.0135	0.3071	-0.3007	0.1032	-0.3008	3.6083
SC	0.0148	0.0173	0.3281	-0.3584	0.1032	-0.2776	4.2115
SHFB	0.0121	0.019	0.2047	-0.2589	0.0928	-0.5366	3.4333
SLFB	0.0079	0.0134	0.3256	-0.3258	0.1037	-0.2235	4.0801
SR	0.0079	0.0107	0.2974	-0.3096	0.1026	-0.3876	3.9023
SW	0.0122	0.0158	0.233	-0.2614	0.0941	-0.3885	3.6837

Statistical characteristics of portfolios classified on China's size are stated in table no. 4.1 (d). Calculations show up that S outperforms B with mean value and deviation 0.0132, 0.1010. Upper Limit and lowest amount for S is 0.3176 and -0.3296. SA outperforms BA with mean 0.0115 and standard deviation pertaining 0.1032. SC outperforms BC. Maximum value of SC and BC is 0.3281 and 0.2643 and minimum value of SC and BC is -0.3584 and -0.2484. BHFB outperforms SHFB. BLFB outperforms SHFB as SHFB extraordinary return and minimal risk investments.BR outperforms SR with mean of 0.0100 and deviation of 0.974. Maximum and minimum value of BR and SR are given respectively 0.2611, -0.2876 and 0.2974 and -0.3096. BW outperforms SW.

4.1 (e) Descriptive Statistics Size Sorted Portfolios. (S.AFRICA)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.0075	0.0074	0.2657	-0.2845	0.0529	-0.3403	11.4295
BA	0.0068	0.0058	0.2611	-0.1535	0.0508	0.468	6.413
BC	0.0081	0.0121	0.4998	-0.5102	0.0703	-0.4459	35.1883
BHFB	0.0145	0.0161	0.558	-0.557	0.0751	-0.4207	39.8088
BLFB	0.0094	0.0096	0.2041	-0.1304	0.0445	0.2201	5.0446
BR	0.0086	0.0075	0.3354	-0.1651	0.054	1.2476	11.3317
BW	0.0064	0.0105	0.3654	-0.4039	0.0611	-0.726	21.7572
S	0.0007	0.0082	0.0934	-0.8593	0.0796	-8.271	89.0269
SA	0.0009	0.0101	0.1068	-0.8679	0.0868	-6.5818	65.6646
SC	0.0003	0.0056	0.0997	-0.8508	0.0794	-7.9621	85.9661
SHFB	-0.0001	0.0133	0.1091	-1.3708	0.118	-10.147	118.414
SLFB	0.0011	0.0045	0.1024	-0.3479	0.0555	-2.1911	13.5532
SR	0.0025	0.0105	0.1464	-0.8672	0.0858	-6.8438	69.2123
SW	-0.0011	0.0087	0.0889	-0.8515	0.0805	-7.7932	81.6462

Statistical characteristics of portfolios organized on S. Africa's size are told in table no. 4.1 (e). Results show that B outperforms S with mean of 0.0075 and deviation of B reports 0.0529 which illustrate as B is elevated return and low-slung risk portfolios in comparison with S.BA outperforms SA with mean value of BA (0.0068) and SA (0.0009) and deviation of 00.0508, 0.0868 respectively. Thorough going value and bare minimum value of BA is 0.2611 and -0.1535. BC outperforms SC with high return and low risk association. Maximum and minimum value of BC (is 0.4998, -0.5102) and SC 0.0997 and (-0.8508). BHFB outperforms SHFB. BLFB outperforms SLFB with high mean value which means high return and low risk or low standard deviation value as comparison to SLFB. BR outperforms SR with mean 0.0086 and deviation of 0.0540. Maximum value regarding BR and SR reported as 0.3354 and 0.1464 while minimum value of BR and SR is -0.1651 and -0.8672. BW outperforms SW.

4.1 (f) Descriptive Statistics Size Sorted Portfolios. (PAKISTAN)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
B	0.003	0.0037	0.1261	-0.3261	0.0638	-1.2596	7.1031
BA	0.0025	0.0061	0.2327	-0.4121	0.0735	-1.2165	9.6707
BC	0.0033	0.0092	0.1433	-0.2641	0.0661	-0.9025	5.1673
BHFB	0.0091	0.0151	0.1155	-0.2766	0.0602	-1.3802	6.7703
BLFB	0.0039	0.0061	0.2168	-0.336	0.0716	-0.799	6.0074
BR	0.0045	0.0095	0.1401	-0.3352	0.0691	-1.1123	6.4549
BW	0.0084	0.0142	0.2023	-0.2773	0.0629	-0.7606	5.6324
S	0.0121	0.013	0.1444	-0.1745	0.062	-0.4457	2.9679
SA	0.0113	0.0121	0.1721	-0.1797	0.0708	-0.2705	3.1449
SC	0.0131	0.0169	0.2044	-0.1902	0.0627	-0.207	3.7649
SHFB	0.0091	0.0103	0.1432	-0.1916	0.0636	-0.513	3.4695
SLFB	0.0077	0.0122	0.2131	-0.1974	0.0713	-0.164	3.5768
SR	0.0083	0.0109	0.1578	-0.1833	0.0654	-0.4522	3.3564
SW	0.0142	0.0158	0.1808	-0.1634	0.0666	-0.2052	3.2229

Statistical characteristics of portfolios arranged on Pakistan's size are disclosed in the table 4.1 no. (f). outcomes show off S outperforms B. value of means of S as 0.0121 with deviation as 0.0620. Maximum and tiniest worth of S reports as 0.1444, -0.1745. SA outperforms BA with value of mean as 0.0113 the deviation as 0.0708 which shows that SA elevated return and short risk portfolios in comparison with BA. SC outperforms BC with high ranking return and at a low level risk portfolio. Maximum value of SC and BC is 0.2044 and 0.1433 while minimum value for SC and BC is -0.1902 and -0.2641. BHFB outperforms SHFB with maximum value of 0.1155, 0.1432 while, minimum value of BHFB and SHFB is -0.2766 and -0.1916. SLFB outperforms BLFB. SR outperforms BR as SR is soaring return (0.0077) and low down risk (0.0654). SW outperforms BW. Value of Mean pertaining to SW 0.0142 along deviation as 0.0666. All-out value of SW and BW as 0.1808 and 0.2023 and minimal value of SW and BW as -0.1634 and -0.2773. Skewness scores demonstrate relatively all factors skewed negatively. Great than 3 values of Kurtosis relatively for all factors which showing data peaked dissemination fashion.

Table 4.2 (a) Descriptive Statistics: Fama and French Proposed Five Factor Model. (Brazil)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
MKT	0.86155	-0.02200	15.42070	-0.84960	3.16122	3.24294	12.17780
SMB	0.36486	-0.00120	5.06490	-0.15040	1.04729	3.06948	11.38350
RMW	0.87795	-0.00930	15.40020	-0.74850	3.15993	3.23987	12.13890
CMA	0.17843	0.01695	3.11092	-0.16310	0.58437	3.43937	13.89310
FB	0.01640	0.01728	0.19690	-0.21330	0.05080	-0.34250	5.83604

Table 4.2 (a) illustrates the statistical norms of variables construction which incorporates Market premium (MKT), Size premium (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). Main purpose the descriptive statistic serve is to identify or explore the behavior of the under study data and to make a decision regarding normality notions. MKT containing mean as to 0.86155 along deviation 3.16122. Value of Mean size as to 0.36486 with deviation depicts 1.04729. The value of mean furthermore, RMW as 0.87795 along with deviation as to 3.15993. Value of Mean regarding CMA is to 0.17843 along with deviation as to 0.58437. The value of Mean pertaining FB as to 0.164 along deviation depicted as 0.0508. Consequences reveal that for MKT, SIZE, RMW, FB and CMA all reported as positive.

Maximum value for MKT, RMW, SIZE, CMA and FB is 15.4207, 5.0649, 15.4002, 3.11092 and 0.1969 depicting maximum MKT and premiums of Size, Profitability, investment pattern and bankruptcy in term of financial demanded by the investors for accepting the risk. Though, least premium demanded by stake holders in response to MKT, SIZE, RMW, FB and CMA, reports -0.8496, -0.1504, -0.7485, -0.1631 and -0.2133.

Skewness outputs are positive in case SIZE, MKT, RMW, and CMA which enumerates data founds skewed positively while FB is negatively skewed -0.3425. Value greater than 3 in case of Kurtosis for all factors (SIZE, MKT, RMW, CMA, FB) show that the data distribution is peaked.

4.2 (b) Descriptive Statistics: Fama and French Proposed Five Factor Model. (Russia)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
MKT	-0.00334	-0.00473	0.26408	-0.30976	0.08125	0.18938	4.86951
SMB	-0.00996	-0.00776	0.18713	-0.23410	0.06235	-0.00702	4.36039
CMA	-0.00142	0.00251	0.15833	-0.24877	0.05526	-0.92065	6.18962
RMW	-0.00647	-0.00502	0.23175	-0.18721	0.05076	0.07986	7.10343
FB	-0.00313	-0.00189	0.13564	-0.21908	0.05573	-0.67226	4.63225

Table no. 4.2 (b) enumerate outputs of the attributes made which includes premium of market (MKT), premium of Size (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). Mean pertaining to MKT as to -0.00334 along with deviation 0.081254. Thorough going and minimal value of MKT as to 0.264076 and -0.30976. Value of Mean relevant to factor SMB reports -0.00996. Highest and minimal numbers regarding SMB reported as 0.18713 and -0.2341. Mean of CMA (-0.00142) and RMW (-0.00502) and the standard deviation is 0.055262 and 0.050755 respectively. Value of CMA reports 0.158332 and minimal value as -0.24877. Maximum holding values of RMW as to 0.231754 and the minimum quantified as -0.18721. FB contains -0.00313 along with deviation 0.055728. Maximum & minimum value of FB is 0.135638 and -0.21908.

Skewness for some factors is positive and some factors are negatively skewed. Skewness is positive for MKT (0.189383) and RMW (0.07986) while SMB, CMA and FB are negatively skewed (-0.00702), (-0.92065) and (-0.67226). Kurtosis results are greater than 3 relatively for all the portfolios mean data distribution is peaked.

4.2 (c) Descriptive Statistics: Fama and French Proposed Five Factor Model. (India)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
MKT	0.00013	-0.00519	0.25404	-0.327	0.07608	0.07224	5.94648
SMB	0.0087	0.00832	0.13274	-0.1047	0.03546	-0.13996	3.96523
CMA	0.00197	0.00319	0.12392	-0.0986	0.04171	0.18294	3.3296
RMW	0.003	0.00284	0.16718	-0.1867	0.0444	-0.07372	6.47352
FB	0.00288	0.00419	0.14031	-0.1215	0.04636	-0.09602	3.45703

Table no. 4.2 (c) demonstrate variables construction which consist of premiums of Market (MKT), premiums of Size (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). MKT value for mean reports as 0.000129 along with deviation of 0.076084. SMB value for mean along deviation enumerates 0.008701 and 0.008701. CMA holdings 0.001971, deviation as to 0.041713. Value of Mean regarding RMW founds 0.003004 along deviation depicted as 0.044403. FB contains 0.002876 along deviation of 0.046358.

Value in maximized case in term of MKT, SIZE, RMW, CMA and FB is 0.254039, 0.132743, 0.123917, 0.167181 and 0.140314 showing the maximum premium demanding by the investors for take over the danger. Though, minimal premium demanded by the stockholders for SIZE, MKT, RMW, CMA, FB depicts-0.32699, -0.10466, -0.09857, -0.18668 and -0.1215.

Skewness results are relatively negatively skewed for SMB, RMW and FB (-0.13996, -0.07372 and -0.09602) while MKT and CMA are positive skewed. Kurtosis founds more than three for all portfolios which mean data peakedness.

4.2 (d) Descriptive Statistics: Fama and French Proposed Five Factor Model. (CHINA)

	Mean	***Median***	***Maximum***	***Minimum***	***Std. Dev.***	***Skewness***	***Kurtosis***
MKT	0.0121	0.0245	0.2533	-0.2725	0.0906	-0.6293	4.2142
SMB	-0.0038	0.0009	0.125	-0.2371	0.0493	-1.0494	7.4041
CMA	-0.0001	0.001	0.1218	-0.0926	0.0357	0.285	3.9085
RMW	-0.0189	-0.0041	0.1001	-0.3105	0.0639	-2.1016	8.3019
FB	0.0064	0.0063	0.1342	-0.0986	0.0384	0.2933	3.8435

Table no. 4.2 (d) confirms the statistical characteristics of variables construction those consist of premiums of Market (MKT), premiums of Size (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). Value of Mean regarding MKT founds0.0121 along deviation as to 0.0906, SMB value of mean as to -0.0038 along with deviation as 0.0493, value of mean pertaining CMA founds -0.0001 with deviation of 0.0357, RMW holding mean (-0.0189) along devotion as to (0.0639) and FB contains 0.0064 by standard deviation of 0.0384.

Maximized value for RMW, MKT, SIZE, CMA and FB is 0.2533, 0.1250, 0.1218, 0.1001 and 0.1342 while, minimum value is -0.2725, -0.2371, -0.0926, -0.3105 and -0.0986 respectively. While, minimum value of MKT, SIZE, RMW, CMA and FB is -0.2725, -0.2371, -0.0926, -0.3105 and -0.0986. Skewness results are positively skewed for CMA and FB while MKT, SMB and RMW are skewed negatively. For all variables Kurtosis founder beyond the 3 which show that data is peaked.

4.2 (e) Descriptive Statistics: Fama and French Proposed Five Factor Model. (S.AFRICA)

	Mean	***Median***	***Maximum***	***Minimum***	***Std. Dev.***	***Skewness***	***Kurtosis***
MKT	-0.0264	-0.0058	0.8891	-0.7932	0.2118	0.5351	6.3349
SMB	-0.0087	-0.0021	0.2392	-1.0228	0.092	-8.7231	97.7952
CMA	0.0003	-0.0019	0.2053	-0.2045	0.0386	0.0136	11.6479
RMW	0.0032	0.0007	0.1641	-0.1013	0.0328	0.8246	6.7188
FB	0.0018	0.0042	0.2743	-0.5521	0.0612	-4.8009	49.3314

Table no. 4.2 (e) illustrates statistical characteristics of attributes construction those comprise on premium of Market (MKT), premium of Size (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). The value of mean pertaining to MKT reports as -0.0264 along deviation to 0.2118, SMB mean holds -0.0087along with deviation as 0.0920, CMA and RMW has mean value of 0.0003 and 0.0032. Standard deviation of CMA and RMW is 0.0386 and 0.0328. FB mean quantity depicted as 0.0018 for deviation up to 0.0612.

Value in Maximized fashion for RMW, MKT, SIZE, CMA and FB is 0.8891, 0.2392, 0.2053, 0.1641 and 0.2743 which show the maximum premium demanding by the shareholders for captivating risk while tiniest value of MKT, SIZE, RMW, CMA and FB is -0.7932, -1.0228, -0.2045, -0.1013 and -0.5521. Skewness outputs demonstrate relatively positive skewness in all attributes. Kurtosis consequence higher than 3 for all the factors which show that data distribution is peaked.

4.2 (f) Descriptive Statistics: Fama and French Proposed Five Factor Model. (PAKISTAN)

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Skewness*	*Kurtosis*
MKT	-0.0002	-0.0076	0.1698	-0.4579	0.0657	-2.5273	17.9598
SMB	0.0053	0.0053	0.1784	-0.1001	0.0369	0.6054	6.2079
CMA	0.0013	0.0007	0.0871	-0.2048	0.0388	-1.0951	7.4416
RMW	-0.0049	-0.0046	0.0998	-0.0919	0.0353	0.1041	2.8291
FB	0.0034	0.0018	0.1002	-0.1398	0.036	-0.6044	4.8287

Table no. 4.2 (f) reveals statistical characteristics of attributes construction those refer to premiums of Market (MKT), premium of Size (SMB), Profitability (RMW), investment pattern (CMA) and financial bankruptcy (FB). Value of mean regarding MKT reports -0.0002 along deviation digitized with 0.0657. SMB holds value as 0.0053 along deviation is 0.0369. CMA hold mean as to 0.0013 along deviation 0.0388. RMW and FB has mean value of -0.0049 and 0.0034 while standard deviation for RMW and FB is 0.0353 and 0.0360.

Maximum value for MKT, SIZE, RMW, CMA and FB is 0.1698, 0.1784, 0.0871, 0.0998 and 0.1002 which show the maximum premium demanded by investors for taking risk while minimum value of MKT, SIZE, RMW, CMA and FB is -0.4579, -0.1001, -0.2048, -0.0919 and -0.1398.

Skewness results are negatively skewed for MKT (-2.5273), CMA (-1.0951) and FB (-0.6044) while SMB (0.6054) and RMW (0.1041) are positively skewed.

Kurtosis show peaked distribution relatively for each of the attributes rather than RMW.

Table 4.3 (a) Correlation of Size sorted Fama & French Proposed Five Factor Model (Brazil)

	MKT	*SMB*	*RMW*	*CMA*	*FB*
MKT	1	0.97987	0.99987	-0.0864	-0.0334
SMB	0.97987	1	0.97971	0.08927	-0.0345
RMW	0.99987	0.97971	1	-0.0862	-0.0174
CMA	-0.0864	0.08927	-0.0862	1	0.01105
FB	-0.0334	-0.0345	-0.0174	0.01105	1

Correlation mean association between two variables, specifically it is a measure that express to which extent the variables are related. Correlation may be positive or negative. Positive correlation means the association between two variables in which the increase in one variable other does so while correlation negativity refer to elevation in one attribute result in to diminish the value of other attribute(s). In case of Brazil, result have been reported in table 4.3 (a) result show the MKT has Positive correlation with SMB (0.97987) and RMW (0.99987) while it is negatively correlated with CMA and FB. SMB is positively correlated with RMW (0.97971) and CMA (0.08927) and it has negative correlation with FB (-0.0345). RMW has negative correlation with CMA (-0.0862) and FB (0.0174). CMA has positive correlation with FB (0.01105).

Table 4.3 (b) Correlation of Size sorted Fama & French Proposed Five Factor Model (Russia)

	MKT	***SMB***	***CMA***	***RMW***	***FB***
MKT	1	-0.3173	-0.45202	0.736247	-0.78749
SMB	-0.3173	1	0.352201	-0.10032	0.371269
CMA	-0.45202	0.352201	1	-0.03649	0.62582
RMW	0.736247	-0.10032	-0.03649	1	-0.16271
FB	-0.78749	0.371269	0.62582	-0.16271	1

Correlation results for Russia on size sorted portfolios are stated in table no. 4.3 (b). In the case of Russia results which have been reported in table 4.2 (b) show that MKT is negatively correlated with SMB (-0.3173), CMA (-0.45202) and FB (-0.78749) and MKT has positive correlation with RMW (0.736247). SMB is positively correlated with CMA and FB while, it's correlation is negative when compare with RMW (-0.10032). CMA is depressingly correlated with RMW (-0.03649), and positive associated FB (0.62582). RMW has negative correlated with FB.

Table 4.3 (c) Correlation of Size sorted Fama & French Proposed Five Factor Model (India)

	MKT	***SMB***	***CMA***	***RMW***	***FB***
MKT	1	-0.06009	-0.28283	0.830488	-0.84577
SMB	-0.06009	1	0.223719	-0.0253	0.074385
CMA	-0.28283	0.223719	1	-0.18227	0.289609
RMW	0.830488	-0.0253	-0.18227	1	-0.4052
FB	-0.84577	0.074385	0.289609	-0.4052	1

In case of India, results show the MKT has negative correlation with SMB (-0.06009), CMA (-0.28283), and FB (-0.84577) while, it is positively correlated with RMW (0.830488). SMB optimistically associated to CMA and FB while, there exist negative correlation between SMB and RMW (-0.0253). CMA has positive association with FB (0.289609) and negatively correlated with RMW (-0.18227). While, RMW is negatively correlated with FB (-0.4052).

Table 4.3 (d) Correlation of Size sorted Fama & French Proposed Five Factor Model (CHINA)

	MKT	*SMB*	*CMA*	*RMW*	*FB*
MKT	1	0.27377	-0.0578	0.06143	-0.2667
SMB	0.27377	1	0.07845	0.22679	-0.0836
CMA	-0.0578	0.07845	1	-0.259	0.52335
RMW	0.06143	0.22679	-0.259	1	-0.3083
FB	-0.2667	-0.0836	0.52335	-0.3083	1

In the case of China, MKT has positive correlation with SMB (0.27377), RMW (0.06143) and negatively correlated with CMA (-0.0578) and FB (-0.2667). SMB positively linked to CMA (0.07845), RMW (0.22679) negative associated with FB (-0.0836). CMA has encouraging connection with RMW (0.22679) and negative correspondence with FB (-0.0836). RMW association is find negative with FB (-0.3083).

Table 4.3 (e) Correlation of Size sorted Fama & French Proposed Five Factor Model (S. AFRICA)

	MKT	*SMB*	*CMA*	*RMW*	*FB*
MKT	1	0.04863	0.06654	-0.1592	0.11955
SMB	0.04863	1	-0.0565	-0.2851	0.47909
CMA	0.06654	-0.0565	1	-0.3163	0.60506
RMW	-0.1592	-0.2851	-0.3163	1	-0.4013
FB	0.11955	0.47909	0.60506	-0.4013	1

In the case of S. Africa, outcomes showing positive link amongst SMB and MKT and (0.04863), MKT and CMA (0.06654) and between MKT and FB (0.11955). While, MKT and RMW (-0.1592) are negatively correlated. SMB is positively correlated with FB (0.47909) while it is negatively correlated with CMA (-0.0565) and RMW (-0.2851). CMA and FB

(0.60506) is positively correlated while, there is negative correlation between CMA and RMW (-0.3163). RMW is negatively Correlated with FB (-0.4013).

Table 4.3 (f) Correlation of Size sorted Fama & French Proposed Five Factor Model (PAKISTAN)

	MKT	*SMB*	*CMA*	*RMW*	*FB*
MKT	1	-0.0198	-0.0828	-0.1453	-0.0163
SMB	-0.0198	1	0.24808	0.08549	-0.1597
CMA	-0.0828	0.24808	1	-0.0693	0.35727
RMW	-0.1453	0.08549	-0.0693	1	-0.0314
FB	-0.0163	-0.1597	0.35727	-0.0314	1

The scenario of Pakistan, output reveals MKT hold negative association with SMB, CMA, RMW and FB (-0.0198, -0.0828, -0.1453 and -0.0163) respectively. SMB has positive correlation with CMA and RMW while, it is negatively correlated with FB (-0.1597). CMA has negative correlation with RMW (-0.0693) and positive correlation exist between CMA and FB (0.35727). RMW is also negatively correlated with FB (-0.0314).

4.4.1.1(a) Augmented Five Factor Model (Brazil)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
P	0.0394	0.1425					0.9532	2916.4760
T Stat	4.5784	54.0044						
P Value	0.0000	0.0000						
P	0.0099	0.0051	0.4126	-0.0128	0.0026	-0.1791	0.9836	1712.9230
T Stat	1.7176	0.3094	8.4661	1.3304	-0.7318	-1.8366		
P Value	0.0881	0.7575	0.0000	0.1856	0.4655	0.0684		

Study's factor FB (financial bankruptcy) has studied with respect to premium of Market (MKT), premium of Size (SMB), Profitability (RMW), Investment pattern (CMA). For sake of finding, the descriptive authority regarding CAPM and financial bankruptcy augmented five factor model, analysis of multivariate regression performs to explore relationship amongst premiums of market, premium of size, profitability, investment pattern and financial bankruptcy, results depicted in table no. 4.4.1.1 (a):

When P (averaged stocks in all) alone regressed to MKT, found significant and associated positively with value "t'' as 54.0044 and adj. R^2 value is 0.9532 which means 95 .32% of fluctuations in P (dependent variable) explained by MKT (independent variable).

When SMB, RMW, CMA, FB additional then SMB (0.0000) and FB (0.0684) are found significant and negative while MKT (0.7575), RMW (0.1856) and CMA (0.4655) are found to be insignificant. Adj. R^2 is 0.9836, which means 98.36% change in P is described by independent attributes. F statistic shows that model is good.

Table 4.4.1.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	0.0047	0.0032					0.0182	3.6456
T Stat	0.8717	1.9093						
P Value	0.3849	0.0582						
B	0.0118	0.0035	-0.0125	0.0027	-0.0143	-0.1884	0.0571	2.7320
T Stat	1.9723	0.2087	-0.2462	1.3386	-0.7828	-1.8575		
P Value	0.0506	0.8350	0.8059	0.1829	0.4351	0.0654		

When B (big portfolios return) regressed with MKT alone it found significant positive (0.0582) value pertaining to "t" as 1.9093. Adj. R^2 found 0.0182 that refer to value as 1.82% changing in dependent variable is based to independent variable (MKT). F statistic show model is good.

When SMB, RMW, CMA and FB comprised then FB found to be significant negative while, MKT, SMB, RMW and CMA found to be insignificant. T value of MKT, SMB, RMW, CMA and FB is 0.2087, -0.2462, 1.3386, -0.7828 and -1.8575 respectively. F statistic show model is good.

Table 4.4.1.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	-0.0015	0.0039					0.0212	4.0999
T Stat	-0.2406	2.0248						
P Value	0.8102	0.0448						
BA	0.0127	0.0088	-0.0255	0.0023	-0.0139	-0.5495	0.1832	7.4136
T Stat	1.9534	0.4766	-0.4637	1.0623	-0.7051	-4.9908		
P Value	0.0528	0.6344	0.6436	0.2899	0.4819	0.0000		

When BA regressed through MKT, it originates significant positive with value of "t" as 2.0248 with adj. R^2 value 0.0212 that indicate 2.12% variability within BA caused by MKT..

When SMB, RMW, CMA and FB comprised then FB found significant negative although MKT, RMW, SMB, CMA found insignificant with t value of MKT (0.4766), SMB (-0.4637), RMW (1.0623), CMA (-0.7051) and FB (-4.9908). Adjusted R2value is 0.1832 which indicate that 18.32% change in BA caused by independent attributes (SMB, MKT, CMA, RMW, FB). F statistic shows that model is good.

Table 4.4.1.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	0.0104	0.0025					0.0062	1.8916
T Stat	1.7743	1.3754						
P Value	0.0782	0.1712						
BC	0.0107	-0.0021	0.0017	0.0031	-0.0170	0.1725	0.0273	1.8019
T Stat	1.6415	-0.1109	0.0309	1.3909	-0.8561	1.5566		
P Value	0.1030	0.9119	0.9754	0.1665	0.3934	0.1219		

When BC regression run with respect to MKT, result shows insignificant along value of "t" as 1.3754, adj. R^2 as to 0.0062 that relates 0.62% changing in BC in due to MKT. F statistic show that model is not good.

When SMB, RMW, CMA and FB regressed then all the factors found to be insignificant. T value pertaining to MKT is -0.1109, SMB 0.0309, RMW 1.3909, CMA -0.8561 and FB is 1.5566. Adjusted R2value as to 0.0273 which means that 2.73% variability in dependent attribute is elaborate by independent attributes. When all independent variables are regressed with BC. F statistic show that model is not good.

Table 4.4.1.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0119	0.0028					0.0102	2.4691
T Stat	2.0105	1.5713						
P Value	0.0463	0.1183						
BHFB	0.0095	-0.0062	0.0153	0.0031	-0.0210	0.3104	0.0665	3.0361
T Stat	1.4664	-0.3358	0.2788	1.4416	-1.0639	2.8287		
P Value	0.1448	0.7375	0.7808	0.1517	0.2892	0.0054		

When BHFB regression ran with respect to MKT alone it found to be insignificant. T value of MKT is 0.1183 while Adjusted R2value is 0.0102 which expresses 1.10% change in BHFB capable of explaining with the help of market premium.

When SMB, RMW, CMA and FB inclusively regressed, then FB found significant and positive, while all the other factors are insignificant. Adj. R^2 finds 0.0665 which means 6.65% variation in BHFB is explained by MKT, SMB, RMW, CMA and FB. F statistics show that model is good.

Table 4.4.1.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BLFB	-0.0034	0.0037					0.0187	3.7274
T Stat	-0.5392	1.9306						
P Value	0.5906	0.0555						
BLFB	0.0118	0.0236	-0.0710	0.0023	0.0040	-0.5806	0.2009	8.1921
T Stat	1.8596	1.3080	-1.3216	1.0991	0.2083	-5.4020		
P Value	0.0651	0.1930	0.1885	0.2736	0.8353	0.0000		

When BLFB regression ran against MKT, it found positive and significant. Adjusted R2reports 0.0187 implies that 1.87% change in return occurs due to MKT.

When SMB, RMW, CMA and FB are comprised then FB found to be significant and negative while rest of the variables found to be insignificant. Adj. R^2 depicts 0.2009 implies as 20.09% fluctuations in BLFB described by the independent attributes. F statistic shows that model is good.

Table 4.4.1.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BR	0.0011	0.0050					0.0427	7.3822
T Stat	0.1763	2.7170						
P Value	0.8603	0.0074						
BR	0.0079	0.0156	-0.0485	0.0040	-0.0038	-0.1078	0.0748	3.3110
T Stat	1.1846	0.8276	-0.8621	1.8009	-0.1885	-0.9568		
P Value	0.2382	0.4093	0.3901	0.0739	0.8507	0.3404		

When BR regression ran against MKT that got to positively significant. Value for adj. R^2 refers 0.0427 that indicate 4.27% fluctuation in BR caused by premium of market.

SMB, RMW, CMA, FB are included RMW is proved to be significant and positive while rest of the variables is insignificant. Adj. R^2 implies 0.0748 refers to 7.48% fluctuation in BR caused by independent attributes (MKT SMB, RMW, CMA and FB). F statistic shows that model is good as value of F statistic is greater than 2.

Table 4.4.1.8

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BW	0.0076	0.0016					-0.0021	0.7013
T Stat	1.2270	0.8374						
P Value	0.2218	0.4038						
BW	0.0151	-0.0085	0.0243	0.0013	-0.0246	-0.2838	0.0365	2.0843
T Stat	2.2125	-0.4388	0.4197	0.5877	-1.1866	-2.4536		
P Value	0.0286	0.6615	0.6754	0.5577	0.2374	0.0154		

When BW regression ran against MKT, results depict insignificant with adj. R^2 value of -0.0021 which shows very low explanatory power of the MKT towards BW. F statistic shows that model is not good.

When SMB, RMW, CMA and FB then FB is found to be significant and negative. Although, MKT, SMB, RMW, CMA prove to be insignificant. Adj. R^2 implies 0.0365 or 3.65% fluctuation in return described by MKT, SMB, RMW and FB, CMA. When BW regression ran against all the independent variables F statistics show that model is good.

Table 4.4.1.9

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
S	-0.0156	0.0048					0.0474	8.1078
T Stat	-2.8436	2.8474						
P Value	0.0051	0.0051						
S	-0.0088	0.0048	-0.0043	0.0009	-0.0124	-0.2422	0.0745	3.3016
T Stat	-1.4398	0.2745	-0.0826	0.4270	-0.6684	-2.3401		
P Value	0.1522	0.7841	0.9343	0.6700	0.5050	0.0207		

When S regression run against MKT, outcomes are positively significant. Adj. R^2 refers 0.0474 implies that 4.74% change in return is caused by MKT.

When SMB, RMW, CMA and FB are regressed combinely then FB is found to be significant and negative however, remaining variables found insignificant. Adj. R^2 show 0.0745 implies 7.45% fluctuation in return is described by independent attributes. F statistic shows that model is good.

Table 4.4.1.10

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SA	-0.0140	0.0045					0.0200	3.9254
T Stat	-1.8972	1.9813						
P Value	0.0598	0.0495						
SA	-0.0063	-0.1099	0.3303	0.0038	-0.1260	-0.6795	0.3673	17.6058
T Stat	-0.9491	-5.8048	5.8542	1.7135	-6.2173	-6.0169		
P Value	0.3442	0.0000	0.0000	0.0889	0.0000	0.0000		

When SA regressed against MKT, then found positively significant. Adjusted R^2 implies 0.0200 that refer 2.00% vacillation in SA caused to MKT.

When SMB, RMW, CMA and FB are comprised then all the under study independent variables are found to be significant and positive. Adjusted R^2 is 0.3673 which means 36.73% fluctuations in return is being captured by MKT, SMB, RMW, CMA and FB. F statistic shows that model is good.

Table 4.4.1.11

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SC	0.3585	-0.0260					-0.0019	0.7227
T Stat	3.5863	-0.8501						
P Value	0.0005	0.3967						
SC	-0.0044	-0.0990	0.3031	0.0031	1.8771	-1.4016	0.9954	6124.9570
T Stat	-0.5696	-4.5444	4.6663	1.2022	80.4766	-10.7809		
P Value	0.5699	0.0000	0.0000	0.2313	0.0000	0.0000		

When SC is regressed alone against MKT, results implies insignificant. Adjusted R^2 is -0.0019 which indicate that explanatory power of MKT towards SC is very low as other factors may affect. F statistics show that model is not good.

When SMB, RMW, CMA and FB included then except RMW all the independent variables are found to be significant. Adjusted R^2 refer 0.9954 that indicate 99.54% fluctuation of return being enumerated by independent attributes. When CMA, SMB, RMW, MKT, and FB regressed with SC F statistic show that model is good.

Table 4.4.1.12

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SHFB	0.0024	0.0035					0.0286	5.2083
T Stat	0.4738	2.2822						
P Value	0.6364	0.0240						
SHFB	-0.0003	-0.0596	0.1884	0.0006	-0.0795	0.1180	0.1571	6.3303
T Stat	-0.0632	-3.9466	4.1848	0.3585	-4.9189	1.3101		
P Value	0.9497	0.0001	0.0001	0.7205	0.0000	0.1923		

When SHFB regression ran against MKT, findings depict positively significant. Adjusted R^2 implies 0.0286 which means that 2.86% change in return is due to MKT.

When SMB, RMW, CMA and FB included then MKT, SMB, CMA report positively significant rather than SMB which is significant but negative while, RMW and FB are prove to be insignificant. Adjusted R^2 refer 0.1571 that shows 15.71% change in return elaborated by independent attributes. F statistics show that model is good.

Table 4.4.1.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SLFB	-0.0161	0.0038					0.0121	2.7570
T Stat	-2.1651	1.6604						
P Value	0.0321	0.0990						
SLFB	-0.0026	-0.0894	0.2746	0.0014	-0.1045	-0.9910	0.4755	26.9311
T Stat	-0.4321	-5.1600	5.3213	0.7007	-5.6374	-9.5934		
P Value	0.6664	0.0000	0.0000	0.4847	0.0000	0.0000		

When SLFB regression ran against MKT, outcome shows positively significant pattern. T value is 1.6604 with value of Adjusted R2is 0.0121 which means 1.21% change in SLFB is due to MKT.

When SMB, RMW, CMA and FB are comprised then except RMW all the other independent variables found to be significant. Adjusted R^2 implies 0.4755 which relates 47.55%

fluctuations enumerated by MKT, SMB, RMW, CMA and FB. Value of F statistic show that model is good.

Table 4.4.1.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SR	0.1233	1.9885					0.9978	65403.5700
T Stat	4.8546	255.7412						
P Value	0.0000	0.0000						
SR	0.0442	1.1825	2.4363	0.0023	-0.8321	1.8697	0.9996	69624.4000
T Stat	3.5680	33.5315	23.1817	0.5442	-22.0477	8.8878		
P Value	0.0005	0.0000	0.0000	0.5872	0.0000	0.0000		

When SR regressions ran against MKT, find positively significant. Adjusted R^2 is 0.9978 refer 99.78% fluctuation toward SR caused by mean of MKT. F statistic value show that model is good.

When SMB, RMW, CMA, FB after inclusion MKT, SMB, CMA and FB depicts positively significant except CMA which is negatively significant. Though, RMW is found to be insignificant. Adjusted R^2 is 0.9996 which means 99.96% change in SR is being explained by MKT, SMB, RMW, CMA and FB. Value of F statistic show that model is good.

Table 4.4.1.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SW	0.0830	-0.0070					-0.0004	0.9462
T Stat	3.5225	-0.9727						
P Value	0.0006	0.3323						
SW	0.0370	-0.7934	2.3636	0.0049	-0.8113	0.0456	0.7960	112.5834
T Stat	3.0907	-23.2844	23.2768	1.2272	-22.2491	0.2244		
P Value	0.0024	0.0000	0.0000	0.2219	0.0000	0.8228		

When SW regression ran against MKT, found insignificant. T-value about -0.9727 and that of Adjusted R^2 implies -0.0004 which expresses MKT has very low explanatory power in order to explain SW. F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then RMW and FB are found to be insignificant while MKT, SMB and CMA are found to be significant where MKT and CMA are significant and negative while SMB found positive and significant in nature. Adjusted R^2

found 0.7960 that means 79.60% fluctuations in return caused by independent attributes. Value of F statistic show model is good of fitness perspective.

4.4.2.1 (b) Augmented Five Factor Model (Russia)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
P	0.0036	0.2806					0.1284	22.0601
T Stat	0.7337	4.6968						
P Value	0.4643	0.0000						
P	0.0030	0.2215	-0.0819	-0.0389	0.1722	-0.2128	0.1376	5.5628
T Stat	0.6111	2.2565	-0.9659	-1.4121	1.5086	-1.3116		
P Value	0.5422	0.0256	0.3358	0.1602	0.1337	0.1918		

When P (mean of portfolios) regressed against MKT, found positively significant. T value is 4.6968 and Adjusted R^2 reported 0.1284 that implies 12.84% fluctuation in return caused by MKT. F statistic value is 22.0601 which indicate model is good.

When P regression ran against MKT, SMB, RMW, CMA and FB then MKT show positively significant though, SMB, RMW, CMA and FB depicts insignificantly. Adjusted R^2 is 0.1376 that implies 13.76% fluctuations in return in being caused by independent variables. F statistic is 5.5628 which indicate good fit of model.

Table 4.4.2.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	0.0177	0.3763					0.1387	24.0287
T Stat	2.8424	4.9019						
P Value	0.0051	0.0000						
B	0.0120	0.2194	-0.5979	-0.0450	0.2112	-0.1902	0.3214	14.5461
T Stat	2.0991	1.9488	-6.1522	-1.4251	1.6142	-1.0225		
P Value	0.0376	0.0533	0.0000	0.1564	0.1088	0.3083		

When B (mean of big portfolios) regressed against MKT, prove significant and positive. Adjusted R^2 is 0.1387 which indicate that 13.87% change in return in due to MKT.

When SMB, RMW, CMA and FB included though MKT and SMB reports significant. RMW, CMA and FB depicts insignificant. Adjusted R^2 implies 0.3214 that meanings

32.14% fluctuations are caused by the said attributes. F statistic refers 14.5461 which mean model is good.

Table 4.4.2.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	0.0107	0.5786					0.2714	54.2787
T Stat	1.6749	7.3674						
P Value	0.0961	0.0000						
BA	0.0020	0.1335	-0.5676	-0.0064	-0.3119	-0.3976	0.5353	33.9424
T Stat	0.3780	1.2884	-6.3445	-0.2186	-2.5899	-2.3223		
P Value	0.7060	0.1998	0.0000	0.8273	0.0106	0.0217		

When BA regressed separately in accordance to MKT, found positively significant. T value refers 7.3674 and adj. R^2 shows 0.2714 accompanied 27.14% fluctuation in returns caused by MKT.

When CMA, SMB, RMW, FB included then SMB, and FBCMA reports negative and significant. MKT and RMW insignificantly observed. Adj. R^2 is 0.5353 relates 53.53% changing in return described by independent attributes. F statistic is 33.9424 which mean model is good.

Table 4.4.2.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	0.0039	0.1509					0.0169	3.4582
T Stat	0.5907	1.8596						
P Value	0.5556	0.0650						
BC	0.0009	0.2290	-0.5571	-0.0648	0.6701	-0.0561	0.2718	11.6723
T Stat	0.1559	1.9853	-5.5933	-2.0037	4.9969	-0.2943		
P Value	0.8763	0.0491	0.0000	0.0471	0.0000	0.7690		

When BC regressed against MKT, the output found positively significant. Adjusted R2 is 0.0169 that implies 1.69% changing in return caused by MKT. F statistic is 3.4582 which indicate that model is good.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW, and CMA are noticed significant. Adj. R^2 0.2718 that refer 27.18% fluctuations in return described and enumerated by independent attributes. F statistic is 11.6723 which indicate that model is good.

Table 4.4.2.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0036	0.0238					-0.0063	0.1094
T Stat	0.6127	0.3308						
P Value	0.5410	0.7413						
BHFB	0.0015	0.1612	-0.5300	-0.0633	0.2727	0.2692	0.2098	8.5946
T Stat	0.2791	1.5294	-5.8249	-2.1433	2.2259	1.5456		
P Value	0.7806	0.1285	0.0000	0.0338	0.0276	0.1245		

When BLFB regression ran against MKT, found insignificant. T-value shows 0.3308 and adj. R^2 is -0.0063 which indicate that MKT has very low explanatory power towards BHFB as there may be other factor affected.

When SMB, RMW, CMA and FB are comprised then SMB, RMW and CMA found significant and negative except CMA. Although, other attributes found insignificant. Adjusted R^2 is 0.2098 that indicates 20.98% fluctuations in respect to return caused by independent attributes. F statistic is 8.5946, which mean that model is good.

Table 4.4.2.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BLFB	0.0133	0.8198					0.4138	101.9304
T Stat	2.0160	10.0961						
P Value	0.0457	0.0000						
BLFB	0.0034	0.3108	-0.6485	-0.0147	0.0499	-0.6945	0.6232	48.2987
T Stat	0.6150	2.8900	-6.9844	-0.4876	0.3993	-3.9081		
P Value	0.5395	0.0045	0.0000	0.6266	0.6903	0.0001		

When BLFB regression ran against MKT, results found positively significant. T value is 10.0961 and Adjusted R^2 refers 0.4138 depicts that 41.38% changing in returns caused by the MKT. F statistic is 101.9304 which indicate that model is good.

When SMB, RMW, CMA and FB included to MKT, FB and SMB found significant although RMW and CMA insignificantly reported. Adjusted R^2 is 0.6232 implies 62.32% change in return in BLFB describing by wholly independent attributes. F statistic is 48.2987 which indicate that model is good fit.

Table 4.4.2.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BR	0.0078	0.7501					0.3802	88.7210
T Stat	1.2011	9.4192						
P Value	0.2317	0.0000						
BR	0.0044	0.7831	-0.6337	-0.0914	0.2729	0.0921	0.5303	33.2960
T Stat	0.7579	6.8388	-6.4104	-2.8484	2.0500	0.4865		
P Value	0.4498	0.0000	0.0000	0.0051	0.0423	0.6274		

When BR regression ran against MKT, results found positively significant. Adj. R^2 refers 0.3802 which depicts 38.02% fluctuations in return in due to MKT.

When SMB, RMW, CMA and FB included then MKT and CMA found positive and significant but SMB and RMW significant negative. Adjusted R^2 is 0.5303 which indicates 53.03% fluctuations in return belong and caused by independent attributes. F statistic is 33.2960 which show that model is good.

Table 4.4.2.8

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BW	0.0104	0.0950					0.0048	1.6946
T Stat	1.7570	1.3018						
P Value	0.0811	0.1951						
BW	0.0019	-0.2989	-0.5423	0.0106	0.0724	-0.5144	0.2792	12.0770
T Stat	0.3678	-2.9135	-6.1227	0.3684	0.6068	-3.0347		

P Value	0.7136	0.0042	0.0000	0.7131	0.5450	0.0029		

When BW regressed against the MKT, the findings reveals insignificant. T value refers to 1.3018 and Adjusted R^2 implies 0.0048 which depicts and convey 0.48% fluctuations in return in captured by MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, and FB resulting insignificant. Adjusted R^2 is 0.2792 who indicates 27.92% discrepancy in return is described by independent attributes. F statistic is 12.0770 which shows model is good.

Table 4.4.2.9

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
S	-0.0024	0.1769					0.0429	7.4158
T Stat	-0.4510	2.7232						
P Value	0.6527	0.0073						
S	0.0025	0.2446	0.4099	-0.0391	0.1470	-0.1857	0.1939	7.8796
T Stat	0.4985	2.4833	4.8206	-1.4153	1.2843	-1.1411		
P Value	0.6189	0.0142	0.0000	0.1592	0.2012	0.2558		

When S regression ran against MKT, the outputs show positively significant fashion. T-value is 2.7232 and adj. R^2 expresses 0.0429 that means 4.29% fluctuation of return described by MKT. F statistic is 7.4158 which shows that model is good.

When SMB, RMW, CMA and FB are comprised along with MKT, MKT and SMB reports significantly positive. Adjusted R^2 enumerates 0.1939 refers in form of 19.39% changes in return is due to independent attributes. F statistic is 7.8796 which show that model is good.

Table 4.4.2.10

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SA	-0.0035	0.2700					0.0761	12.7831
T Stat	-0.5698	3.5753						
P Value	0.5697	0.0005						

SA	0.0018	0.2899	0.4202	-0.0681	-0.3552	-0.0246	0.2038	8.3189
T Stat	0.3073	2.5032	4.2024	-2.0991	-2.6378	-0.1286		
P Value	0.7591	0.0135	0.0000	0.0376	0.0093	0.8979		

When SA regression ran against MKT, results found positively significant. T-value is 3.5753 and Adjusted R^2 is 0.0761 which indicates 7.61% change in SA is due to MKT. F statistic value show that model is good.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW and CMA show significantly results. Adjusted R^2 implies 0.2038 that show 20.38% fluctuations in return being described by independent attributes. F statistic shows that model is good.

Table 4.4.2.11

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SC	-0.0016	0.0829					0.0019	1.2739
T Stat	-0.2683	1.1287						
P Value	0.7889	0.2609						
SC	0.0029	0.1944	0.4098	-0.0097	0.6628	-0.3661	0.3144	14.1151
T Stat	0.5645	1.9329	4.7196	-0.3443	5.6694	-2.2031		
P Value	0.5734	0.0553	0.0000	0.7311	0.0000	0.0292		

When SC regression ran against MKT, results are insignificant. T-value 1.1287 refer to Adjusted R^2 is 0.0019 which indicate that 0.19% change in return is due to MKT. F statistic shows that model is not good as the value belongs to F statistic is not greater than 2.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, CMA and FB termed positively significant except FB. Adjusted R^2 is 0.3144 which indicate that 31.44% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.2.12

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SHFB	-0.0026	0.0110					-0.0069	0.0240
T Stat	-0.4483	0.1550						
P Value	0.6546	0.8771						
SHFB	0.0032	0.2821	0.3612	-0.0128	0.0610	0.2905	0.1226	4.9976
T Stat	0.5812	2.5778	3.8220	-0.4182	0.4791	1.6064		
P Value	0.5621	0.0110	0.0002	0.6764	0.6326	0.1105		

When SHFB regression ran against MKT it is found insignificant and positive. Adjusted R^2 is -0.0069 which show that MKT has very low explanatory power towards SHFB as there may be other factors affected. F statistic shows that model is not good.

When MKT, SMB, RMW, CMA and FB are regressed with SHFB, it is found that MKT and SMB are significant and positive while RMW, CMA and FB are found insignificant. Adjusted R^2 is 0.1226 which show that 12.26% fluctuations in return is being explained by independent variables. When SHFB regressed with all independent variables and F statistic shows that model is good.

Table 4.4.2.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SLFB	-0.0024	0.2952					0.0931	15.6856
T Stat	-0.3967	3.9605						
P Value	0.6922	0.0001						
SLFB	0.0014	0.1325	0.4796	-0.0614	0.2837	-0.7458	0.3066	13.6464
T Stat	0.2497	1.2309	5.1599	-2.0359	2.2668	-4.1916		
P Value	0.8032	0.2205	0.0000	0.0437	0.0250	0.0000		

When SLFB regression ran against MKT, it is found significant and positive. T value is 3.9605 and Adjusted R^2 is 0.0931 which show that 9.31% change in return is being explained by MKT.

When SMB, RMW, CMA and FB are comprised and regressed with SLFB then SMB, RMW, CMA and FB found significant. Adjusted R^2 is 0.3066 which show that 30.66% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.2.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SR	-0.0061	0.2814					0.0911	15.3327
T Stat	-1.0539	3.9157						
P Value	0.2937	0.0001						
SR	0.0011	0.6689	0.4708	0.0121	0.0866	0.4690	0.3283	14.9776
T Stat	0.2220	6.5541	5.3429	0.4224	0.7299	2.7811		
P Value	0.8246	0.0000	0.0000	0.6734	0.4667	0.0062		

When SR regression ran against MKT it found significant and positive. Adjusted R^2 value is 0.0911 which shows that 9.11% change in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and FB found significant and positive. Adjusted R^2 is 0.3283 which indicate that 32.83% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.2.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SW	0.0011	0.0167					-0.0067	0.0465
T Stat	0.1751	0.2157						
P Value	0.8612	0.8296						
SW	0.0036	-0.2492	0.3793	-0.0899	0.2871	-0.9245	0.2238	9.2484
T Stat	0.6391	-2.2206	3.9151	-2.8592	2.2010	-4.9856		
P Value	0.5238	0.0280	0.0001	0.0049	0.0294	0.0000		

When SW regression ran against MKT it is found insignificant. Adj. R^2 is -0.0067 which indicate that MKT has very low power to explain the return in SW. F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then all the independent variables found significant. Adjusted R^2 is 0.2238 which show that 22.38% fluctuations in return is being described by independent variables. When SW is regressed with independent variables F statistic shows that model is good.

4.4.3.1 (c) Augmented Five Factor Model (India)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
P	0.0051	0.3021					0.1124	19.1069
T Stat	0.9783	4.3711						
P Value	0.3296	0.0000						
P	0.0100	0.1510	-0.1552	-0.3500	-0.2608	-0.5304	0.2452	10.2888
T Stat	1.9835	0.2551	-1.1014	-0.5864	-2.0721	-0.8702		
P Value	0.0493	0.7990	0.2726	0.5586	0.0401	0.3857		

When P (average return of all portfolios) regression ran against MKT, it found to be significant and positive. Adjusted R^2 is 0.1124 which means that one unit change in MKT brings 11.24% change in P. F statistic is 19.1069 which means that model is good.

When SMB, RMW, CMA and FB are comprised then CMA is found to be significant and negative while, MKT, SMB, RMW and FB is found to be insignificant. Adjusted R^2 is 0.2452 which means that 24.52% change or fluctuations in return is being explained by independent variables. F stat. is 10.2888 which indicate that model is good.

Table 4.4.3.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	0.0073	0.2766					0.0849	14.2702
T Stat	1.3154	3.7776						
P Value	0.1905	0.0002						
B	0.0114	0.3939	-0.0430	-0.5676	-0.4106	-0.1720	0.2000	8.1486
T Stat	2.0983	0.6195	-0.2845	-0.8852	-3.0371	-0.2628		
P Value	0.0377	0.5366	0.7765	0.3776	0.0029	0.7931		

When B (average return of big portfolios) regression ran against MKT, it is found to be significant and positive. T value is 3.7776 while Adjusted R^2 is 0.0849 which means that 8.49% fluctuations in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then CMA is found to be significant and negative while, MKT, SMB, RMW and FB are found to be insignificant. Adjusted R^2 is 0.2000 which indicate that 20.00% fluctuations in return is captured by independent variables. F stat value is 8.1486 which show that model is good.

Table 4.4.3.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	0.0011	0.4316					0.1620	28.6425
T Stat	0.1859	5.3519						
P Value	0.8528	0.0000						
BA	0.0115	0.3369	-0.6961	-0.4906	-0.4474	-0.4656	0.4278	22.3857
T Stat	2.1799	0.5443	-4.7263	-0.7860	-3.3997	-0.7307		
P Value	0.0310	0.5871	0.0000	0.4332	0.0009	0.4662		

When BA regression ran against MKT, it is found to be significant and positive. Adjusted R^2 is 0.1620 which means that 16.20% change in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then SMB and CMA are found to be significant negative while, MKT, RMW and FB is found to be insignificant. Adjusted R^2 is 0.4278 which means that 42.78% fluctuations in return is being explained by MKT, SMB, RMW, CMA and FB. F statistic is 22.3857 which indicate that model is good.

Table 4.4.3.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	0.0028	0.2608					0.0732	12.2903
T Stat	0.4994	3.5057						
P Value	0.6182	0.0006						
BC	0.0086	0.1099	-0.4390	-0.2052	0.2786	-0.5429	0.1767	7.1372
T Stat	1.5353	0.1687	-2.8328	-0.3125	2.0118	-0.8096		

P Value	0.1270	0.8663	0.0053	0.7551	0.0462	0.4195

When BC regression ran against MKT, it is found significant and positive. T value is 3.5057 Adjusted R^2 is 0.0732 which show that 7.32% change in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then SMB and CMA are found significant where SMB is positive and CMA is negative while, MKT, RMW and FB found to be insignificant. Adjusted R2is 0.1767 which indicate 17.67% fluctuations in return is being captured by MKT, SMB, RMW, CMA and FB. F statistic value is 7.1372 which indicate the model is good.

Table 4.4.3.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0032	-0.0415					-0.0046	0.3454
T Stat	0.5895	-0.5877						
P Value	0.5565	0.5577						
BHFB	0.0112	0.1178	-0.5807	-0.5203	-0.3665	-0.0310	0.2226	9.1877
T Stat	2.2782	0.2042	-4.2306	-0.8944	-2.9877	-0.0521		
P Value	0.0242	0.8385	0.0000	0.3726	0.0033	0.9585		

When BHFB regression ran against MKT, it is found to be insignificant. T value is -0.5877 Adjusted R2is -0.0046 which show that MKT has very low explanatory power to explain the fluctuations in return on dependent variable BHFB. Model is not good as F statistic is 0.3454.

When SMB, RMW, CMA and FB are comprised then SMB and CMA are found to be significant and negative while all other variables are insignificant. Adjusted R^2 is 0.2226 which indicate that 22.26% change in return in dependent variable is due to MKT, SMB, RMW, CMA and FB. Value of F statistic is greater than 2 which show that model is good when regressed with other factor comprised.

Table 4.4.3.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BLFB	-0.0031	0.6468					0.2670	53.0883
T Stat	-0.4645	7.2862						
P Value	0.6430	0.0000						
BLFB	0.0083	0.0138	-0.8059	-0.0836	-0.3330	-1.1618	0.5087	30.6120
T Stat	1.4416	0.0205	-5.0170	-0.1229	-2.3200	-1.6715		
P Value	0.1517	0.9837	0.0000	0.9024	0.0218	0.0969		

When BLFB regression ran against MKT, it is found to be significant and positive. Adjusted R^2 is 0.2670 which mean that 26.70% fluctuations in return is due to MKT. Value of F statistic is greater than 2 which indicate model is good.

When SMB, RMW, CMA and FB are comprised with MKT, then SMB, CMA and FB found significant and negative. While, MKT and RMW found insignificant. Adjusted R^2 is 0.5087 which indicate that 50.87% fluctuations in return is being explained by independent variables. Model is good as F statistic is greater than 2.

Table 4.4.3.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BR	0.0012	0.5868					0.3018	62.8124
T Stat	0.2081	7.9254						
P Value	0.8354	0.0000						
BR	0.0095	0.3278	-0.7271	-0.0612	-0.1768	-0.4664	0.4424	23.6887
T Stat	1.8036	0.5334	-4.9721	-0.0987	-1.3528	-0.7372		
P Value	0.0735	0.5946	0.0000	0.9215	0.1783	0.4623		

When BR regression ran against MKT, it is found to be significant along with positive. T value is 7.9254 with Adjusted R^2 of 0.3018 which means 30.18% change in BR is due to MKT. Model is good as value of F statistic is 62.8124.

When SMB, RMW, CMA and FB are comprised then SMB prove to be significant and negative while, RMW, CMA and FB is found to be insignificant. F statistic is greater than 23.6887 which mean model is good.

Table 4.4.3.8

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BW	-0.0005	0.0134					-0.0069	0.0247
T Stat	-0.0734	0.1571						
P Value	0.9416	0.8754						
BW	0.0108	-0.1868	-0.6663	-0.5491	-0.5199	-0.7045	0.3658	17.4934
T Stat	1.9972	-0.2965	-4.4434	-0.8642	-3.8800	-1.0859		
P Value	0.0478	0.7673	0.0000	0.3890	0.0002	0.2794		

When BW regression ran against MKT, it is found insignificant. Adjusted R^2 is -0.0069 which indicate that MKT has very low explanatory power towards BW as other factors may effect on it. F statistic is 0.0247 which indicate model is not good.

When SMB, RMW, CMA and FB are comprised then SMB and CMA prove to be significant and negative while, MKT, RMW and FB found to be insignificant. Adjusted R^2 is 0.3658 which means that 36.58% fluctuations in return is being explained by independent variables. When independent variables are regressed with BW model found good as value of F statistic is greater than 2.

Table 4.4.3.9

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
S	0.0029	0.3252					0.1158	19.7314
T Stat	0.5217	4.4420						
P Value	0.6027	0.0000						
S	0.0094	0.2818	-0.2990	-0.5128	-0.1111	-0.5094	0.2618	11.1437
T Stat	1.7683	0.4535	-2.0228	-0.8185	-0.8407	-0.7964		
P Value	0.0792	0.6509	0.0450	0.4145	0.4020	0.4272		

When S regression ran against MKT, it is found significant and positive. Value of T is 4.4420 and Adjusted R^2 value is 0.1158 which mean that 11.58% change in S is due to MKT. F statistic shows that model is good as F statistic value is greater than 2.

When SMB, RMW, CMA and FB then SMB found significant and negative while, MKT, RMW, CMA and FB found to be insignificant. F statistic is 11.1437 which show that model is good.

Table 4.4.3.10

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SA	0.0071	0.3250					0.0793	13.3181
T Stat	1.0540	3.6494						
P Value	0.2937	0.0004						
SA	0.0093	0.3403	0.3565	-0.5906	-1.0737	-0.2137	0.3799	18.5247
T Stat	1.5999	0.5012	2.2072	-0.8628	-7.4391	-0.3057		
P Value	0.1119	0.6170	0.0290	0.3898	0.0000	0.7603		

When SA is regressed with MKT alone it is found significant and positive too. Adjusted R^2 is 0.0793 which mean that 7.93% change in return is due to MKT. when SA is regressed with MKT F statistic value show that model is good.

When SMB, RMW, CMA and FB are comprised then SMB and CMA are found significant. Although, MKT, RMW and FB found to be insignificant. Adjusted R^2 is 0.3799 which indicate that 37.99% fluctuations in return is being explained by independent variables. F stat. is 18.524 which show that model is good.

Table 4.4.3.11

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SC	0.0094	0.1857					0.0370	6.4999
T Stat	1.7057	2.5495						
P Value	0.0903	0.0118						
SC	0.0123	0.5673	0.0994	-0.8759	0.2003	-0.1365	0.1667	6.7210
T Stat	2.2811	0.9014	0.6640	-1.3803	1.4973	-0.2106		

P Value	0.0241	0.3690	0.5078	0.1697	0.1366	0.8335

When Sc is regressed along MKT factor, it found significant and positive. Value of Adjusted R^2 is 0.0370 which indicate 3.70% fluctuations in return is due to MKT.

When SC is regressed with MKT, SMB, RMW, CMA and FB then all the independent variables found insignificant. Adjusted R^2 is 0.1667 which indicate that 16.67% fluctuations in return is being explained by independent variables. F statistic is 6.7210 which indicate that model is good.

Table 4.4.3.12

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SHFB	0.0100	0.1377					0.0156	3.2597
T Stat	1.7231	1.8055						
P Value	0.0870	0.0731						
SHFB	0.0069	-0.7582	0.3424	0.7795	-0.1505	-0.9899	0.0393	2.1705
T Stat	1.1497	-1.0835	2.0562	1.1047	-1.0112	-1.3740		
P Value	0.2523	0.2805	0.0416	0.2712	0.3137	0.1717		

When SHFB is regressed by MKT alone, it is found significant and positive t value is 1.8055 Adjusted R^2 is 0.0156 which mean that 1.56% change in return in due to MKT. F stat. value show good fit of model.

When SC is regressed with MKT, SMB, RMW, CMA and FB then SMB is found significant and positive while, SMB, RMW, CMA and FB found insignificant. Adjusted R^2 is 0.0393 which indicate that 3.93% fluctuations in return is being explained by independent variables. F stat. is 2.1705 which indicate that model is good.

Table 4.4.3.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SLFB	0.0104	0.4800					0.2048	37.8389
T Stat	1.7513	6.1513						

P Value	0.0820	0.0000						
SLFB	0.0098	-0.6543	0.5676	0.3428	-0.1839	-1.8591	0.4812	27.5235
T Stat	1.9567	-1.1175	4.0741	0.5807	-1.4774	-3.0842		
P Value	0.0524	0.2657	0.0001	0.5624	0.1419	0.0025		

When SLFB regression ran against MKT it is found significant and positive. Adjusted R^2 is 0.2048 which indicate that 20.48% change in return in due to MKT.

When SMB, RMW, CMA and FB are comprised then SMB and FB found significant while, MKT, RMW, and CMA found insignificant. Adjusted R^2 is 0.4812 which show that 48.12% fluctuations in return is being explained by independent variables. F statistic is 25.5235 which indicate that model is good.

Table 4.4.3.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SR	0.0121	0.4988					0.2547	49.8673
T Stat	2.2671	7.0617						
P Value	0.0249	0.0000						
SR	0.0115	1.3549	0.3899	-1.0269	-0.3502	0.7944	0.3009	13.3092
T Stat	2.1106	2.1324	2.5792	-1.6028	-2.5919	1.2144		
P Value	0.0366	0.0347	0.0109	0.1113	0.0106	0.2267		

When SR is regressed with MKT it is found significant and positive. Adjusted R^2 is 0.2547 which indicate that 25.47% fluctuations in return is captured by MKT. F stat. is 49.8673 which show good fit of model.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA are found significant and positive rather than CMA which is significant and negative. Adjusted R^2 is 0.3009 which indicate that 30.09% change in SR is being explained by independent variables. F statistic is 13.3092 which show that model is good.

Table 4.4.3.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SW	0.0079	0.1028					0.0048	1.6926
T Stat	1.3194	1.3010						
P Value	0.1892	0.1954						
SW	0.0102	-0.1305	0.3291	-0.5389	-0.0071	-0.9675	0.2683	11.4856
T Stat	1.8932	-0.2074	2.1988	-0.8497	-0.0528	-1.4939		
P Value	0.0604	0.8360	0.0296	0.3970	0.9580	0.1375		

When SW is regressed with MKT, it is found insignificant. T value is 1.3010 and Adjusted R^2 is 0.0048 which show that 0.48% change in return is captured in SW due to MKT. F statistic value is 1.6926 which show that model is not good as F stat. value is lesser than 2.

When SMB, RMW, CMA and FB are comprised then SMB found significant and positive while all other independent variables found insignificant. Adjusted R^2 is 0.2683 which show that 26.83% fluctuations in return is being explained by independent variables. F statistic value is 11.4856 which indicate that model is good.

4.4.4.1 (d) Augmented Five Factor Model (China)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
P	0.0031	0.7958					0.6324	267.6560
T Stat	0.6912	16.3602						
P Value	0.4905	0.0000						
P	0.0009	0.8114	-0.0650	-0.0597	-0.3110	0.0924	0.6373	55.4816
T Stat	0.1884	15.5466	-0.6778	-0.7981	-2.1099	0.6496		
P Value	0.8508	0.0000	0.4990	0.4261	0.0365	0.5170		

When P (average return of all the portfolios) is regressed with MKT alone it is found significant and positive. T value 16.3602. Adjusted R^2 is 0.6324 which show that 63.24% fluctuations in return in due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT and CMA are found significant. Adjusted R^2 is 0.6373 which show that 63.73% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.4.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	-0.0008	0.7787					0.5993	232.7929
T Stat	-0.1807	15.2576						
P Value	0.8568	0.0000						
B	-0.0022	0.8312	-0.3381	0.0574	-0.2118	0.0830	0.6285	53.4371
T Stat	-0.4655	15.6561	-3.4671	0.7544	-1.4126	0.5736		
P Value	0.6422	0.0000	0.0007	0.4518	0.1599	0.5671		

When B (average return of big portfolios) regressed with MKT it is found significant and positive. Adjusted R^2 is 0.5993 which show that 59.93% fluctuations in return is due to MKT. F statistic show that model is good.

When SMB, RMW, CMA and FB are comprised then MKT and SMB are found significant while RMW, CMA and FB are found insignificant. Adjusted R^2 is 0.6285 which show that 62.85% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.4.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	0.0004	0.8185					0.5742	210.0209
T Stat	0.0777	14.4921						
P Value	0.9382	0.0000						
BA	-0.0005	0.8395	-0.2494	0.0225	-0.7484	0.0162	0.6616	61.6007
T Stat	-0.1114	15.4331	-2.4957	-4.8713	0.2883	0.1093		
P Value	0.9114	0.0000	0.0137	0.7735	0.0000	0.9131		

When BA is regressed with MKT alone it is found significant and positive with t value of 14.4921. Adjusted R^2 is 0.5742 which show that 57.42% fluctuations in return is captured by MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA found significant. Adjusted R^2 is 0.6616 which show that 66.16% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.4.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	-0.0021	0.7359					0.5404	183.2724
T Stat	-0.4270	13.5378						
P Value	0.6700	0.0000						
BC	-0.0039	0.8190	-0.4265	0.0923	0.3185	0.1440	0.5935	46.2620
T Stat	-0.7828	14.8291	-4.2038	1.1650	2.0421	0.9564		
P Value	0.4350	0.0000	0.0000	0.2459	0.0429	0.3404		

When BC regression ran against MKT it is found significant and positive. Adjusted R^2 is 0.5404 which show that 54.04% fluctuations in return is captured by MKT. MKT has t value of 13.5378 and F statistic show that model is good.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA found significant and positive except SMB which is significant and negative. Adjusted R^2 is 0.5935 which show that fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.4.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0073	0.5214					0.2294	47.1452
T Stat	1.0548	6.8662						
P Value	0.2932	0.0000						
BHFB	0.0042	0.7354	-1.0381	0.4154	-0.0669	0.6962	0.5161	34.0626
T Stat	0.7164	11.3111	-8.6923	4.4556	-0.3643	3.9285		

P Value	0.4749	0.0000	0.0000	0.0000	0.7162	0.0001

When BHFB is regressed with MKT alone it is found significant and positive. Adjusted R^2 is 0.2294 which show that 22.94% fluctuations in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW and FB are found significant positive. Adjusted R^2 is 0.5161 which show that 51.61% fluctuations in return is being captured by independent variables. Value of F statistic show that model is good.

Table 4.4.4.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BLFB	-0.0022	0.5988					0.2762	60.1345
T Stat	-0.3158	7.7546						
P Value	0.7526	0.0000						
BLFB	0.0032	0.6782	-0.9373	0.4104	-0.1339	-0.3491	0.5236	35.0674
T Stat	0.5342	10.0210	-7.5390	4.2290	-0.7004	-1.8924		
P Value	0.5940	0.0000	0.0000	0.0000	0.4848	0.0604		

When BLFB regression ran against MKT it is found significant and positive with t value of 7.7546. Adjusted R^2 is 0.2762 which show that 27.625% change in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW and FB are found significant. Adjusted R^2 is 0.5236 which show that 52.36% fluctuations in return is being explained by independent variables. Value of F statistic is 35.0674 which show that model is good.

Table 4.4.4.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BR	0.0001	0.8192					0.5787	213.8842
T Stat	0.0223	14.6248						
P Value	0.9822	0.0000						

BR	0.0019	0.8695	-0.3876	0.2456	-0.4302	0.1144	0.6527	59.2567
T Stat	0.3870	15.8255	-3.8402	3.1170	-2.7728	0.7638		
P Value	0.6993	0.0000	0.0002	0.0022	0.0063	0.4462		

When BR is regressed with MKT alone it is found significant and positive with t value of 14.6248. Adjusted R^2 is 0.5787 which show that 57.87% fluctuations in return is being explained by MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW and CMA are found significant while FB is found insignificant. Adjusted R^2 is 0.6527 which show that 65.27% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.4.8

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BW	0.0339	0.7944					0.2360	48.8923
T Stat	3.2767	6.9923						
P Value	0.0013	0.0000						
BW	0.0010	0.9042	-0.4665	-1.6086	-0.8270	-0.0932	0.7612	99.7950
T Stat	0.1595	13.1761	-3.7003	-16.3471	-4.2671	-0.4983		
P Value	0.8735	0.0000	0.0003	0.0000	0.0000	0.6190		

When BW is regressed with MKT alone it is found significant and positive. Adjusted R^2 is 0.2360 which show that 23.60% fluctuations in BW is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, RMW and CMA are found significant and negative rather than MKT which is significant and positive. Adjusted R^2 is 0.7612 which show that 76.12% fluctuations in return is being explained by independent variables. F statistic value shows that model is good.

Table 4.4.4.9

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
S	0.0024	0.8916					0.6383	274.4730
T Stat	0.4920	16.5672						
P Value	0.6234	0.0000						
S	0.0028	0.8374	0.4390	-0.0486	-0.3666	0.1539	0.6766	65.8670
T Stat	0.5662	15.2331	4.3475	-0.6165	-2.3616	1.0271		
P Value	0.5721	0.0000	0.0000	0.5385	0.0195	0.3060		

When S is regressed with MKT alone it is found significant and positive with t value of 16.5672. Adjusted R^2 is 0.6383 which show that 63.83% fluctuations in return is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA are found significant while RMW and FB found insignificant. Adjusted R^2 is 0.6766 which show that 67.66% fluctuations in return is being explained by independent variables.

Table 4.4.4.10

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SA	0.0010	0.8725					0.5841	218.6851
T Stat	0.1780	14.7880						
P Value	0.8590	0.0000						
SA	0.0011	0.8269	0.3492	-0.0115	-0.8393	0.2213	0.6569	60.3599
T Stat	0.2154	14.2838	3.2833	-0.1388	-5.1337	1.4026		
P Value	0.8298	0.0000	0.0013	0.8898	0.0000	0.1628		

When SA is regressed with MKT alone it is found significant and positive. Adjusted R^2 is 0.5841 which show that 58.41% change in SA is due to MKT. value of F statistic shows that model is good.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA is found significant and positive except CMA. Adjusted R^2 is 0.6569 which show that 65.69%

variables in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.4.11

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SC	0.0038	0.9096					0.6352	270.8657
T Stat	0.7621	16.4580						
P Value	0.4472	0.0000						
SC	0.0045	0.8474	0.5263	-0.0813	0.0938	0.0936	0.6898	69.9285
T Stat	0.9016	15.3911	5.2035	-1.0297	0.6032	0.6234		
P Value	0.3687	0.0000	0.0000	0.3048	0.5473	0.5340		

When SC regression ran against MKT it is found significant and positive with t value of 16.4580. Adjusted R^2 is 0.6352 which show that 63.52% change in SC is due to MKT.

When SMB, RMW, CMA and FB are comprised then MKT and SMB are found significant and positive while RMW, CMA and FB are found insignificant. Adjusted R^2 is 0.6898 which show that 68.98% fluctuations in return is being explained by independent variables (MKT, SMB, RMW, CMA and FB).

Table 4.4.4.12

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SHFB	0.0027	0.7780					0.5747	210.4859
T Stat	0.5573	14.5081						
P Value	0.5781	0.0000						
SHFB	-0.0003	0.7639	0.4529	-0.0918	-0.2920	0.4954	0.6433	56.9012
T Stat	-0.0674	14.3963	4.6465	-1.2071	-1.9484	3.4251		
P Value	0.9464	0.0000	0.0000	0.2293	0.0532	0.0008		

When SHFB regression ran against MKT it is found significant and positive with the t value of 14.5081. Adjusted R^2 is 0.5747 which show that 57.47% fluctuations in SHFB is due to MKT factor.

When SMB, RMW, CMA and FB are comprised then MKT, SMB, CMA and FB found significant and positive except CMA which is significant and negative. Adjusted R^2 is 0.6433 which show that 64.33% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.4.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SLFB	-0.0033	0.9269					0.6543	294.3142
T Stat	-0.6640	17.1556						
P Value	0.5077	0.0000						
SLFB	0.0006	0.8211	0.3520	-0.0869	-0.2250	-0.4594	0.7092	76.6047
T Stat	0.1279	15.3395	3.5802	-1.1317	-1.4884	-3.1487		
P Value	0.8984	0.0000	0.0005	0.2596	0.1387	0.0020		

When SLFB regression ran against MKT it is found significant and positive. Adjusted R^2 is 0.6543 which show that 65.43% fluctuations in return is captured by MKT.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and FB are found significant while other factors found insignificant. Adjusted R^2 is 0.7092 which show that 70.92% fluctuations in return is due to independent. F statistics show that model is good.

Table 4.4.4.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SR	-0.0027	0.8786					0.6000	233.5237
T Stat	-0.5083	15.2815						
P Value	0.6120	0.0000						
SR	-0.0005	0.8106	0.3677	-0.0026	-0.5110	-0.0150	0.6466	57.7073
T Stat	-0.0862	13.8829	3.4279	-0.0306	-3.0990	-0.0943		
P Value	0.9314	0.0000	0.0008	0.9756	0.0023	0.9250		

When SR regression ran against MKT it is found significant and positive. Adjusted R^2 is 0.6000 which show that 60.00%.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and CMA is found significant. Adjusted R^2 is 0.6466 which show that 64.66% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.4.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SW	0.0023	0.8168					0.6160	249.6045
T Stat	0.4958	15.7989						
P Value	0.6207	0.0000						
SW	0.0005	0.7759	0.4466	-0.1485	-0.1143	0.1926	0.6627	61.9031
T Stat	0.1009	14.8222	4.6441	-1.9778	-0.7729	1.3497		
P Value	0.9197	0.0000	0.0000	0.0498	0.4408	0.1791		

When SW is regressed with MKT alone it is found significant and positive. T value of MKT is 15.7989. Adjusted R^2 is 0.6160 which mean 61.60% fluctuations in return is due to MKT. F statistic shows that model is good as its value is greater than 2.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and RMW is found significant while other factors found insignificant. Adjusted R^2 is 0.6627 which show that 66.27% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good as value of F statistic is 61.9031.

4.4.5.1 (e) Augmented Five Factor Model (South Africa)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
P	0.0051	0.0166					-0.0014	0.7884
T Stat	1.2755	0.8879						
P Value	0.2041	0.3760						
P	0.0041	0.0028	0.0613	0.0905	-0.2321	0.5083	0.3397	16.7431
T Stat	1.2463	0.1790	1.3139	0.8196	-1.8935	5.8478		
P Value	0.2146	0.8582	0.1909	0.4138	0.0602	0.0000		

When P (average return of all portfolios) is regressed with MKT alone it is found insignificant. Adjusted R^2 is -0.0014 which show that MKT has very low explaining power towards P. Value of F statistic (0.7884) show that model is not good.

When SMB, RMW, CMA and FB are comprised then CMA and FB is found significant. Adjusted R^2 is 0.3397 which show that 33.97% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good as the reported value is greater than 2 which shows good fit of model.

Table 4.4.5.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	0.0078	0.0087					-0.0054	0.1816
T Stat	1.8043	0.4262						
P Value	0.0732	0.6706						
B	0.0028	0.0053	-0.4376	0.0787	-0.2433	0.5061	0.3687	18.8696
T Stat	0.8063	0.3238	-8.8190	0.6707	-1.8681	5.4796		
P Value	0.4214	0.7465	0.0000	0.5035	0.0637	0.0000		

When B (average return of big portfolios) regressed with MKT alone it is found insignificant. Adjusted R^2 is -0.0054 which means that MKT has very low explaining power towards B as other factors may affected on it. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB found significant while MKT and RMW found to be insignificant. Adjusted R^2 is 0.3687 which show that 36.87% fluctuations in return is due to independent variables. When MKT, SMB, RMW, CMA and FB are regressed with B then value of F statistic show that model is good.

Table 4.4.5.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	0.0071	0.0033					-0.0064	0.0288
T Stat	1.7070	0.1696						
P Value	0.0899	0.8655						
BA	0.0033	0.0149	-0.3438	0.2497	-0.5714	0.2532	0.3577	18.0389

T Stat	0.9853	0.9400	-7.1524	2.1975	-4.5288	2.8294
P Value	0.3261	0.3488	0.0000	0.0295	0.0000	0.0053

When BA is regressed with MKT alone it is found insignificant. Value of Adjusted R^2 is -0.0064 which show that MKT has very low explaining power towards BA in explaining return fluctuations. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, RMW, CMA and FB found significant except MKT. Value of Adjusted R^2 is 0.3577 which show that 35.77% fluctuations in return being captured by independent variables. When all the independent variables are regressed with BA then the value of F statistic (18.0389) shows that model is good.

Table 4.4.5.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	0.0085	0.0140					-0.0048	0.2690
T Stat	1.4808	0.5186						
P Value	0.1407	0.6048						
BC	0.0023	-0.0043	-0.5313	-0.0924	0.0848	0.7590	0.5098	32.8264
T Stat	0.5616	-0.2246	-9.1407	-0.6724	0.5561	7.0148		
P Value	0.5752	0.8226	0.0000	0.5024	0.5790	0.0000		

When BC is regressed with MKT alone it is found insignificant with t value of -0.0048 Adjusted R^2 is -0.0048 which show that MKT has very low explaining power towards BC other factors may affected there. When BC is regressed with MKT F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB and FB found significant and all other independent variables found insignificant. Value of Adjusted R^2 is 0.5098 which show that 50.98% fluctuations in return is being explained by independent variables. When MKT, SMB, RMW, CMA and FB regressed with BC then value of F statistic (32.8264) shows that model is good fit.

Table 4.4.5.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0147	0.0075					-0.0061	0.0679
T Stat	2.3901	0.2606						
P Value	0.0181	0.7948						
BHFB	0.0067	-0.0127	-0.6819	-0.0867	-0.1263	0.9828	0.6185	50.6056
T Stat	1.7553	-0.6998	-12.4454	-0.6695	-0.8783	9.6358		
P Value	0.0813	0.4851	0.0000	0.5042	0.3812	0.0000		

When BHFB is regressed with MKT alone it is found insignificant with t value of 0.7948. Adjusted R^2 is -0.0061 which show that MKT has very low explaining power towards BHFB. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB and FB are found significant while MKT, RMW and CMA found insignificant. Value of Adjusted R^2 is 0.6185 which show that 61.85% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good when regressed with all independent variables.

Table 4.4.5.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BLFB	0.0094	-0.0078					-0.0052	0.2091
T Stat	2.5983	-0.4573						
P Value	0.0103	0.6481						
BLFB	0.0071	0.0062	-0.1988	0.3160	-0.2843	0.0403	0.2890	13.4394
T Stat	2.2835	0.4265	-4.4902	3.0205	-2.4473	0.4895		
P Value	0.0238	0.6703	0.0000	0.0030	0.0156	0.6252		

When BLFB regression ran against MKT it is found insignificant. Value of Adjusted R^2 is -0.0052 which means that MKT has very low responsive power towards BLFB. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, RMW and CMA found significant and negative except RMW which is significant and positive. MKT and FB

found insignificant and positive. Value of Adjusted R^2 is 0.2890 which show that 28.90% fluctuations in return is being explained by independent variables. When MKT, SMB, RMW, CMA and FB regressed with BLFB value of F statistic 13.4394 show that model is good.

Table 4.4.5.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BR	0.0086	-0.0090					-0.0053	0.1886
T Stat	1.9534	-0.4343						
P Value	0.0526	0.6647						
BR	0.0035	0.0027	-0.4199	0.4045	-0.2263	0.2867	0.4443	25.4689
T Stat	1.0563	0.1713	-8.8528	3.6073	-1.8176	3.2464		
P Value	0.2926	0.8642	0.0000	0.0004	0.0711	0.0014		

When BR is regressed with MKT alone it is found insignificant with t value of 0.6647. Adjusted R^2 is -0.0053 which show that MKT has very low responsive power towards BR. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, RMW, CMA and FB found significant. While MKT is found insignificant. Adjusted R^2 is 0.4443 which show that 44.43% fluctuations in return is being explained by independent variables. When MKT, SMB, RMW, CMA and FB is regressed with BR value of F statistic show that model is good.

Table 4.4.5.8

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
BW	0.0070	0.0263					0.0017	1.2613
T Stat	1.4032	1.1231						
P Value	0.1626	0.2632						
BW	0.0021	0.0079	-0.4552	-0.2472	-0.2602	0.7255	0.3996	21.3645
T Stat	0.5341	0.4288	-8.1299	-1.8677	-1.7710	6.9613		
P Value	0.5941	0.6687	0.0000	0.0638	0.0786	0.0000		

When BW is regressed with MKT alone it found insignificant with t value of 1.1231. Adjusted R^2 is 0.0017 which show that MKT is found not efficient is explaining the return fluctuations towards BW. Value of F statistic show that model is not good.

When MKT, SMB, RMW, CMA and FB are regressed with BW found that SMB, RMW, CMA and FB significant and negative except FB which is significant and positive. Value of Adjusted R^2 is 0.3996 which show that 39.96% fluctuations in return is being explained by independent variables. When BW is regressed with independent variables (MKT, SMB, RMW, CMA and FB) then value of F statistic show that model is good as reported value of F statistic is 21.3645 which is greater than 2.

Table 4.4.5.9

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
S	0.0012	0.0280					-0.0011	0.8379
T Stat	0.1846	0.9153						
P Value	0.8538	0.3615						
S	0.0042	0.0037	0.5579	0.0997	-0.2379	0.5146	0.7452	90.4913
T Stat	1.2659	0.2390	11.7518	0.8883	-1.9092	5.8222		
P Value	0.2075	0.8114	0.0000	0.3758	0.0582	0.0000		

When S is regressed with MKT alone it is found insignificant with t value of 0.9153. Adjusted R^2 is -0.0011 which show that MKT has very low explaining power in explaining the return fluctuations in S. value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB found significant and positive except CMA which is significant and negative. MKT and RMW found insignificant. Adjusted R^2 is 0.7452 which show that 74.52% fluctuations in return is being explained by independent variables. When MKT, SMB, RMW, CMA and FB regressed with S then value of F statistic show that model is good.

Table 4.4.5.10

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SA	0.0011	0.0174					-0.0048	0.2699
T Stat	0.1582	0.5195						
P Value	0.8745	0.6041						
SA	0.0038	-0.0102	0.4800	-0.1067	-0.8757	0.7340	0.7076	75.0460
T Stat	0.9830	-0.5545	8.6422	-0.8127	-6.0072	7.0996		
P Value	0.3272	0.5801	0.0000	0.4177	0.0000	0.0000		

When SA is regressed with MKT alone it is found insignificant with t value of 0.5195 Adjusted R^2 is -0.0048 which mean that MKT has very low explaining power towards SA. F statistic value (0.2699) shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB found significant while MKT and RMW found insignificant. Value of Adjusted R^2 is 0.7076 which show that 70.76% fluctuations in return is due to independent variables. Value of F statistic show that model is good when SA is regressed with independent variables.

Table 4.4.5.11

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SC	0.0010	0.0309					0.0002	1.0314
T Stat	0.1477	1.0156						
P Value	0.8828	0.3114						
SC	0.0049	0.0091	0.6675	0.2354	0.4681	0.2282	0.7679	102.2483
T Stat	1.5354	0.6078	14.7841	2.2056	3.9499	2.7152		
P Value	0.1268	0.5442	0.0000	0.0290	0.0001	0.0074		

When SC is regressed with MKT alone it is found insignificant with t value of 1.0156. Value of Adjusted R^2 is 0.0002 which show that MKT don't have enough explaining power to explain the return fluctuations in SC. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then except MKT all the other independent variables found significant and positive Adjusted R^2 is 0.7679 which show that

76.79% fluctuations in return is due to independent variables. When SC is regressed with all independent variables value of F statistic show that model is good fit.

Table 4.4.5.12

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SHFB	0.0012	0.0553					0.0032	1.4960
T Stat	0.1217	0.1217						
P Value	0.9033	0.2232						
SHFB	0.0041	0.0136	0.7945	0.3093	-0.3291	1.0568	0.8927	255.6260
T Stat	1.2916	0.9046	17.3849	2.8635	-2.7439	12.4223		
P Value	0.1985	0.3672	0.0000	0.0048	0.0068	0.0000		

When SHFB is regressed with MKT it is found insignificant with t value of 0.1217. Adjusted R^2 is 0.0032 which show that MKT has low explaining power towards SHFB. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then except MKT all the variables found significant. Adjusted R^2 is 0.8927 which show that 89.27% fluctuations in return is being explained by independent variables. When SHFB is regressed with MKT, SMB, RMW, CMA and FB value of F statistic 255.6260 show that model is good.

Table 4.4.5.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SLFB	0.0009	0.0015					-0.0065	0.0052
T Stat	0.2017	0.0723						
P Value	0.8404	0.9425						
SLFB	0.0038	-0.0052	0.3114	-0.0934	-0.1711	-0.0007	0.2755	12.6376
T Stat	0.9705	-0.2849	5.5850	-0.7088	-1.1692	-0.0069		
P Value	0.3334	0.7762	0.0000	0.4796	0.2442	0.9945		

When SLFB is regressed with MKT it is found insignificant. Value of Adjusted R^2 is -0.0065 which show that MKT has very low explaining power towards SLFB as other factors may effect on it. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then except SMB all the independent variables found insignificant. Value of Adjusted R^2 is 0.2755 which show that 27.55% fluctuations in return is due to independent variables. Value of F statistic show that model is good when it is regressed with all the independent variables.

Table 4.4.5.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SR	0.0030	0.0210					-0.0039	0.4032
T Stat	0.4200	0.6349						
P Value	0.6751	0.5264						
SR	0.0035	0.0064	0.5403	0.7739	-0.2549	0.7340	0.7184	79.0639
T Stat	0.9282	0.3581	10.0311	6.0777	-1.8028	7.3198		
P Value	0.3548	0.7208	0.0000	0.0000	0.0735	0.0000		

When SR is regressed with MKT it is found insignificant with t value of 0.6349. Adjusted R^2 is -0.0039 which show that MKT has very low explaining power towards SR. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then all the factors found significant except MKT. Adjusted R^2 is 0.7184 which show that 71.84% fluctuations in return is due to independent variables. Value of F statistic show that model is good.

Table 4.4.5.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
SW	-0.0006	0.0350					0.0019	1.2878
T Stat	-0.0840	1.1348						
P Value	0.9331	0.2582						
SW	0.0049	0.0011	0.5755	-0.5745	-0.2210	0.2952	0.7708	103.9274
T Stat	1.5438	0.0749	12.6564	-5.3443	-1.8511	3.4866		
P Value	0.1248	0.9404	0.0000	0.0000	0.0661	0.0006		

When SW is regressed with MKT alone it is found insignificant with t value of 1.1348. Adjusted R^2 is 0.0019 which show that MKT has low explaining power towards SW. F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then all the factors found significant except MKT which is insignificant. Adjusted R^2 is 0.7708 which show that 77.08% fluctuations in return is being captured by independent variables. When all independent variables (MKT, SMB, RMW, CMA and FB) regressed with SW then value of F statistic show that model is good.

4.4.6.1 (f) Augmented Five Factor Model (Pakistan)

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
P	0.0079	0.1021					0.0067	2.0404
T Stat	1.6944	1.4284						
P Value	0.0922	0.1552						
P	0.0107	0.1008	-0.1587	0.1218	-0.1187	-0.3552	0.0617	3.0377
T Stat	2.2840	1.4297	-1.1887	0.9249	-0.8832	-2.5163		
P Value	0.0238	0.1549	0.2365	0.3565	0.3785	0.0129		

When P (average of all the portfolios) is regressed with MKT alone, it is found MKT is insignificant. Adjusted R^2 value is 0.0067 which show that MKT has no explanatory power in order to explain the return in P. F statistic show that model is good.

When SMB, RMW, CMA and FB are comprised then FB found to be significant and negative and all the other factors found to be insignificant. Adjusted R^2 is 0.0617 which show that 6.17% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.6.2

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
B	0.0030	0.1107					0.0066	2.0231
T Stat	0.5978	1.4224						
P Value	0.5508	0.1569						
B	0.0084	0.1071	-0.6374	0.1237	-0.0542	-0.3913	0.1583	6.8291
T Stat	1.7410	1.4726	-4.6299	0.9103	-0.3912	-2.6877		
P Value	0.0837	0.1430	0.0000	0.3641	0.6962	0.0080		

When B (average return of big portfolios) regression ran against MKT, it is found to be insignificant with T value of 1.4224. Adjusted R^2 value is 0.0066 which show that MKT has not enough power to explain the return fluctuations in B. F statistic value show that model is good.

When SMB, RMW, CMA and FB are comprised then SMB and FB are found to be significant and negative while, MKT, RMW and CMA found to be insignificant. Adjusted R^2 value is 0.1583 which show that 15.83% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.6.3

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BA	0.0026	0.1312					0.0073	2.1458
T Stat	0.4368	1.4649						
P Value	0.6629	0.1450						
BA	0.0090	0.1000	-0.6985	0.0937	-0.5456	-0.4567	0.3201	15.5937
T Stat	1.7896	1.3278	-4.9021	0.6659	-3.8027	-3.0302		
P Value	0.0755	0.1863	0.0000	0.5065	0.0002	0.0029		

When BA ran against MKT it is found to be insignificant with t value of 1.4649. Adjusted R^2 value is 0.0073 which mean that explaining power of MKT towards BA is not enough as there may be other factors affected.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB are found significant and negative while MKT and FB are found insignificant. Adjusted R^2 value is 0.3201 which show that 32.01% change in return is being captured by independent variables. Value of F statistic show that model is good.

Table 4.4.6.4

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BC	0.0034	0.0984					0.0031	1.4856
T Stat	0.6354	1.2189						
P Value	0.5261	0.2248						
BC	0.0080	0.1224	-0.6173	0.1377	0.4782	-0.3794	0.1074	4.7293
T Stat	1.5461	1.5769	-4.2024	0.9497	3.2331	-2.4423		
P Value	0.1242	0.1169	0.0000	0.3438	0.0015	0.0158		

When BC regression ran against MKT, it is found insignificant. Adjusted R^2 is 0.0031 which show that MKT has low explaining power to explain the return fluctuations in BC. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB are found significant while, MKT and RMW found insignificant. Adjusted R^2 is 0.1074 which show that 10.74% change in return is being explained by independent variables. When BC is regresses with MKT, SMB, RMW, CMA and FB then F statistic show that model is good.

Table 4.4.6.5

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj R2*	*F Sta.*
BHFB	0.0092	0.1244					0.0121	2.8942
T Stat	1.9147	1.7012						
P Value	0.0574	0.0909						
BHFB	0.0123	0.1239	-0.5258	0.1505	-0.1640	0.1749	0.1403	6.0610
T Stat	2.6750	1.7878	-4.0095	1.1628	-1.2419	1.2609		
P Value	0.0083	0.0758	0.0001	0.2467	0.2162	0.2093		

When BHFB is regressed with MKT it is found that MKT is significant and positive. Adjusted R^2 is 0.0121 which show that 1.21% change in return in being captured by MKT. F statistic show that model is good.

When SMB, RMW, CMA and FB are comprised then MKT and SMB found significant while RMW, CMA and FB found insignificant. Adjusted R^2 is 0.1403 which show that 14.03% change in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.6.6

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
BLFB	0.0039	0.0827					-0.0007	0.8912
T Stat	0.6832	0.9440						
P Value	0.4955	0.3466						
BLFB	0.0110	0.0629	-0.7377	0.0574	-0.1872	-0.7793	0.2910	13.7211
T Stat	2.2041	0.8394	-5.2053	0.4101	-1.3120	-5.1987		
P Value	0.0290	0.4026	0.0000	0.6823	0.1915	0.0000		

When BLFB regression ran against MKT it is found insignificant with t value of 0.9440. Adjusted R^2 value is -0.007 which show MKT has very low explaining power in order to explain the return in BLFB. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB and FB are found significant and negative. Adjusted R^2 is 0.2910 which show that 29.10% change in return in captured by independent variables. When BLFB is regressed with MKT, SMB, RMW, CMA and FB are comprised. F statistic shows that model is good.

Table 4.4.6.7

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
BR	0.0045	0.0780					-0.0010	0.8496
T Stat	0.8187	0.9217						
P Value	0.4142	0.3581						
BR	0.0122	0.1014	-0.6786	0.5438	-0.1731	-0.3424	0.2285	10.1813
T Stat	2.4248	1.3441	-4.7524	3.8582	-1.2038	-2.2668		
P Value	0.0165	0.1809	0.0000	0.0002	0.2305	0.0248		

When BR is regressed with MKT alone it is found insignificant. Adjusted R^2 is -0.0010 which show that MKT has very low power to explain the return fluctuations in BR. F statistic show that model is not good.

When BLFB is regressed with MKT, SMB, RMW, CMA and FB are comprised then SMB, RMW and FB are found significant and negative except RMW which is significant and positive while MKT and CMA found insignificant. Adjusted R^2 is 0.2285 which show that 22.85% fluctuations in return is being described by the independent variables. After it, when BR is regressed to MKT, SMB, RMW, CMA and FB then it is found that model is good as F statistic value is 10.1813.

Table 4.4.6.8

Portfolios	***Intercept***	***MKT***	***SMB***	***RMW***	***CMA***	***FB***	***Adj. R2***	***F Sta.***
BW	0.0084	0.1273					0.0113	2.7713
T Stat	1.6844	1.6647						
P Value	0.0941	0.0980						
BW	0.0119	0.0899	-0.6569	-0.2728	-0.1163	-0.3448	0.2134	9.4106
T Stat	2.5851	1.2980	-5.0124	-2.1086	-0.8812	-2.4877		
P Value	0.0107	0.1963	0.0000	0.0366	0.3796	0.0140		

When BW is regressed to MKT alone it is found significant and positive in nature with t value of 1.6647. Adjusted R^2 is 0.0113 which indicate that 1.13% fluctuations in return is captured by MKT.

When SMB, RMW, CMA and FB are comprised then SMB, RMW and FB are found significant and negative while MKT and CMA are found insignificant. Adjusted R^2 is 0.2134 which show that 21.34% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good as F statistic value is 9.4106.

Table 4.4.6.9

Portfolios	***Intercept***	***MKT***	***SMB***	***RMW***	***CMA***	***FB***	***Adj. R2***	***F Sta.***
S	0.0121	0.1007					0.0050	1.7740
T Stat	2.4424	1.3319						
P Value	0.0157	0.1849						
S	0.0129	0.1038	0.2457	0.1617	-0.1917	-0.3266	0.0834	3.8211

T Stat	2.6361	1.4079	1.7609	1.1745	-1.3643	-2.2132
P Value	0.0093	0.1612	0.0803	0.2420	0.1745	0.0284

When S regression ran against MKT it is found insignificant with t value of 1.3319. Adjusted R^2 is 0.0050 which show that MKT don't have enough explaining power towards S. value of F statistic (1.7740) show that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, FB is found significant. Although, MKT, RMW and CMA found insignificant. Adjusted R^2 is 0.0834 which show that 8.34% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.4.6.10

Portfolios	***Intercept***	***MKT***	***SMB***	***RMW***	***CMA***	***FB***	***Adj. R2***	***F Sta.***
SA	0.0114	0.1326					0.0087	2.3675
T Stat	2.0146	1.5387						
P Value	0.0457	0.1259						
SA	0.0125	0.1136	0.2862	0.1772	-0.6829	-0.2892	0.2077	9.1259
T Stat	2.4127	1.4515	1.9316	1.2117	-4.5785	-1.8457		
P Value	0.0170	0.1487	0.0553	0.2275	0.0000	0.0669		

When SA is regressed with MKT alone it is found insignificant. Adjusted R^2 is 0.0087 which mean that MKT has no enough power to explain the fluctuations in return towards SA.

When SMB, RMW, CMA and FB are comprised then SMB, CMA and FB found significant. Adjusted R^2 is 0.2077 which show that 20.77% fluctuations in return is being explained by independent variables. Value of F statistic show model is good.

Table 4.4.6.11

Portfolios	***Intercept***	***MKT***	***SMB***	***RMW***	***CMA***	***FB***	***Adj. R2***	***F Sta.***
SC	0.0131	0.0674					-0.0015	0.7721
T Stat	2.6112	0.8787						
P Value	0.0099	0.3809						
SC	0.0135	0.0912	0.2050	0.1331	0.2933	-0.3664	0.0640	3.1192

T Stat	2.7030	1.2107	1.4377	0.9462	2.0435	-2.4303
P Value	0.0077	0.2279	0.1526	0.3455	0.0428	0.0163

When SC regression ran against MKT it is found insignificant. Value of Adjusted R^2 is -0.0015 which indicate MKT has very low explaining power towards SC as there may be other factors affected.

When SMB, RMW, CMA and FB are comprised then CMA and FB are found significant. T value of MKT, SMB, RMW, CMA and FB is 1.2107, 1.4377, 0.9462, 2.0435 and -2.4303. Adjusted R^2 is 0.0640 which show that 6.40% fluctuations in return is being explained by independent variables. F statistic shows that model is good.

Table 4.4.6.12

Portfolios	***Intercept***	***MKT***	***SMB***	***RMW***	***CMA***	***FB***	***Adj. R2***	***F Sta.***
SHFB	0.0091	0.0740					-0.0006	0.9058
T Stat	1.7966	0.9517						
P Value	0.0744	0.3427						
SHFB	0.0087	0.0819	0.1386	0.1263	-0.1002	0.1480	-0.0118	0.6393
T Stat	1.6403	1.0303	0.9216	0.8509	-0.6620	0.9302		
P Value	0.1030	0.3045	0.3582	0.3962	0.5090	0.3537		

When SHFB regression ran against MKT it is found insignificant with t value of 0. 9517. Adjusted R^2 is -0.0006 which show that explaining power of MKT towards SHFB is very low. Value of F statistic show that model is not good.

When SMB, RMW, CMA and FB are comprised then relatively all the factors found insignificant. Value of Adjusted R^2 is -0.0118 which show very low explaining power of MKT towards SHFB. F statistic shows that model is not good.

Table 4.4.6.13

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
SLFB	0.0077	0.1336					0.0088	2.3704
T Stat	1.3542	1.5396						
P Value	0.1776	0.1257						
SLFB	0.0100	0.1429	0.3505	0.2194	-0.0770	-0.8979	0.2872	13.4929
T Stat	2.0150	1.9115	2.4777	1.5714	-0.5404	-6.0006		
P Value	0.0457	0.0578	0.0143	0.1182	0.5897	0.0000		

When SLFB regression ran against MKT it is found insignificant with t value of 1.5396. Adjusted R^2 value is 0.0088 which indicate so as to MKT has low explaining power towards SLFB is other factors may effect on it.

When SMB, RMW, CMA and FB are comprised then MKT, SMB and FB are found significant and positive rather than FB which is significant negative. Adjusted R^2 is 0.2872 which show that 28.72% fluctuations in return is being captured by independent variables. F statistic value shows that model is good.

Table 4.4.6.14

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
SR	0.0083	0.0303					-0.0056	0.1431
T Stat	1.5876	0.3782						
P Value	0.1144	0.7058						
SR	0.0096	0.0796	0.5634	0.6188	-0.0422	-0.3623	0.2714	12.5478
T Stat	2.0889	1.1484	4.2922	4.7768	-0.3191	-2.6099		
P Value	0.0384	0.2526	0.0000	0.0000	0.7501	0.0100		

When SR regression ran against MKT it is found insignificant. Value of Adjusted R^2 is -0.0056 which mean that MKT has very low responsive power towards SR in explaining the return fluctuations. F statistic shows that model is not good.

When SMB, RMW, CMA and FB are comprised then SMB, RMW and FB are found significant while MKT and CMA found insignificant. Adjusted R^2 is 0.2714 which show that 27.14% fluctuation in return is described by independent variables. After that all, when SR is regressed with MKT, SMB, RMW, CMA and FB value of F statistic show that model is good.

Table 4.4.6.15

Portfolios	*Intercept*	*MKT*	*SMB*	*RMW*	*CMA*	*FB*	*Adj. R2*	*F Sta.*
SW	0.0142	0.1373					0.0120	2.8776
T Stat	2.6762	1.6963						
P Value	0.0083	0.0918						
SW	0.0099	0.0912	0.5417	-0.5646	-0.0990	-0.3598	0.2083	9.1567
T Stat	2.0217	1.2388	3.8887	-4.1067	-0.7056	-2.4422		
P Value	0.0450	0.2174	0.0002	0.0001	0.4815	0.0158		

When SW regression ran against MKT it is found significant and positive. Adjusted R^2 is 0.0120 which show that 1.20% fluctuations in return is being explained by independent variable MKT. F statistic value shows that model is good.

When SMB, RMW, CMA and FB are comprised then SMB, RMW and FB are found significant and negative except SMB which is significant but positive. Value of Adjusted R^2 is 0.2083 which show that 20.83% fluctuations in return is being explained by independent variables. Value of F statistic show that model is good.

Table 4.5 Countries with Accepted Hypotheses

Countries	Hypothesis Accepted
Brazil	H1, H2, H4, H5
Russia	H1, H2, H3, H4, H5
India	H1, H2, H4
China	H1, H2, H4
South Africa	H2, H3, H4, H5
Pakistan	H1, H2, H4, H5

Table 4.5 provides detail view about the accepted hypothesis in BRICS countries and Pakistan. So, it is clear from the table that financial bankruptcy premium is only priced by Brazil, Russia, South Africa and Pakistan.

CHAPTER NO. 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The literature in the context of asset pricing and financial markets does not provide precise depiction in stock return and factors that are priced in financial markets, it is because every economy has its own financial markets complications and economic problems. Thus, there is a need to readdress the theoretical strands in order to provide more precise and accurate description of priced risk factors. This study particularly intakes the market premium, size premium, profitability, investment pattern and financial bankruptcy premium with an aim to address the risk return conundrum by providing more rational explanation. This study investigates the anomalies of asset pricing in BRICS (Brazil, Russia, India, China, South Africa) and Pakistan from 2005 to 2017 by taking under study 60 non-financial firms form each stock exchange.

From the empirical results, findings of the study affirm the presence of market premium, size premium, profitability, investment pattern and financial bankruptcy in the context of BRICS and Pakistan equity markets.

In the case of Brazil, results show that market premium is positive significant and size premium found positive significant for small size portfolios but it does not significantly influence the big size portfolios (Alvi & Ikram, 2015) Investment factor found to be negatively significant for portfolios return. While financial bankruptcy relatively found to be negatively significant to most of the portfolios which is similar to Li et al., 2017 which indicates that low bankrupt firms outperform than high bankrupt firms. However, for BHFB and SR, financial bankruptcy factor is significant and positive which shows high financial bankrupt firms outperform than low financial bankrupt so investors who invest in high financial bankrupt charge premiums to compensate this risk. Therefore, hypothesis 1, Hypothesis 2, Hypothesis 4 and Hypothesis 5 are accepted for Brazil.

In the case of Russia, results show that market premium found positively significant in explaining the portfolios return and it has power to capture or explain the portfolios return. Size premium found to be significant in capturing the portfolios return and size premium has the power to explain the equity return for various portfolios which is in line with Hassan & Javed, 2011. Although, profitability and investment factor found to be behaved differently in each portfolio return (Hakim et al., 2015) Profitability factor found relatively significant and Investment Pattern found significant. Financial bankruptcy as concerned, found to be partially significant. Overall, all hypothesis are accepted but for few portfolios in case of Russia.

In the case of India, results show that size premium found significantly related in defining the stock returns which is also similar to Hu et al., 2019. Size premium found to be negatively significant which shows that big size outperform than small size portfolios which is opposite to Hassan and Javed, 2011. Although, profitability found to be insignificant in explaining the stock returns which is similar to Cakici, 2015. Investment pattern found to be significant and negative (Charteris et al., 2018). Therefore, Indian stock market partially priced investment pattern and size premium and market premium. Other factors seem to be insignificant. Hypothesis 1, 2 and hypothesis 4 are accepted for India.

In the case of China, result show that market premium is significant positive but size premium is significant negative in most of the portfolios which indicate that big firms outperform than small (Hu et al., 2019). Impact of Profitability factor found marginal in explaining stock return (Leite et al., 2018). Investment pattern found significant negative(Chiah et al., 2016). Financial bankruptcy found to be insignificant (Idrees & Qayyum, 2018). Chinese stock market provides quite similar results to Indian stock market. Hypothesis 1, hypothesis 4 and hypothesis 2 are accepted.

In the case of South Africa, results indicate that Profitability found to be partially priced in both small and big size portfolios (Alvi & Ikram, 2015). Investment pattern found to be negatively significant along with financial bankruptcy which also found to be significant and positive in explaining the portfolios return (Li et al., 2017). Hypothesis 2,3,4,and 5 are accepted for most of the portfolios in South Africa.

In the case of Pakistan, results show that size premium has positive significant effect in explaining the stock return in the context of Pakistan (Hassan & Javed, 2011). Although profitability and investment pattern found to be behaved differently in capturing the portfolios return (Foye, 2018). Investment pattern found negatively significant in explaining stock return (Charteris et al., 2018). As far financial bankruptcy is concerned it is found to be significantly negative and priced in Pakistan stock exchange in explaining the portfolios return (Li et al., 2017). Market premium is only significant for few portfolios. So, hypothesis 1, 2,4 and 5 are accepted.

The findings of the study further disclose that throughout the complete study augmented five factor model found to have significantly higher explaining power as compare to conventional capital asset pricing model. In the context of Brazil, it ranges from 2% to 99% for assorted portfolios. In Russian market augmented five factor model has 12% to 62% explaining power which is higher than conventional capital asset pricing model which ranges from -0 to 41%. In Indian market explaining ratio of augmented five factors model ranges from 17% to 48% which is significantly higher than capital asset pricing model (-0 to 30%). In the case of china augmented model of five factors adds explaining power to explain the portfolios return. Same is in the South Africa market where augmented five factor model explains portfolios return significantly higher than capital asset pricing model which is 27% to 89% in comparison to -0 to 0. While we talk about Pakistan market augmented five factor model proves to be more powerful in order to capture the portfolios return which ranges from 6% to 32%. It is concluded that augmented five factor model has better and significant power to capture and explain the portfolios return in BRICS nation (Brazil, Russia, India, China and South Africa) and Pakistan as well.

Our study provides an insight by testing the multifactor asset pricing model. Findings show that each factor behave differently in each country as every country has its own financial market complications and economic problem (Hakim et al., 2015). In our study it is found that global and local markets are not fully integrated (Cakici, 2015) and other possible reason can be inefficacy of the market (Idrees & Qayyum, 2018). As such market premium found significant and priced in all markets except South Africa so, H1 is accepted for all markets except South Africa.. Although size premium is found significant and priced throughout the

study (Osamwonyi & Ajao, 2014) so H2 is strongly accepted here. As far the profitability and investment pattern is concerned inconsistency can be seen in pricing of Profitability factor (Leite et al., 2018) which is priced only in Russia and South Africa. So, H3 is accepted for Russia and South Africa only while H3 is rejected for Brazil, India, China and Pakistan. Investment pattern is priced in Brazil, Russia, South Africa and Pakistan and China so, H4 is accepted for Brazil, Russia, South Africa and Pakistan and China. Financial bankruptcy found significant throughout the study which show that Financial bankruptcy enhance explanation power (Li et al., 2017) except India and China so H5 is accepted for Brazil, Russia, South Africa and Pakistan and H5 is rejected for India and China.

Our study results are in line with (Hassan & Javed, 2011), (Lischewski & Voronkova, 2012), (Alvi & Ikram, 2015), (Osamwonyi & Ajao, 2014), (Hu et al., 2019) which addressed that market premium and size premium has notable and significant effect in explaining the portfolio return while, (Javid, 2008), (Van Dijk, 2011), (Eraslan, 2013) are in contrast to our results. As far Profitability and investment pattern is concerned our results are in line with (Nguyen, 2016), (Chiah et al., 2016), (Lin, 2017) (Huang, 2019) which states that additional two factors which are added in Fama and French three factor model has power to explain the return fluctuations in pertaining market, but it does not have competence to cover the entire market return fluctuations although profitability and investment pattern increase the explaining power of the model through the study. However, there are some studies which are opposed to our study results including (Cakici, 2015), (Singh & Yadav, 2015) and (Guo et al., 2017). As financial bankruptcy is concerned, our results are in line with (Li et al., 2017) and (Chava & Purnanandam, 2010), and in contrast with (Husein & Mahfud, 2015) and (Idrees & Qayyum, 2018).

5.2 Recommendations:

Investors should put into consideration these components (market premium, size premium, profitability, investment pattern and financial bankruptcy) while considering for investment and financing decisions. In this way investors can make stylized portfolios which can help them to estimate better returns. The significant and positive relationship of financial bankruptcy premium in the (Pakistan, South Africa and Brazil) stock returns explores the financial bankruptcy features while making the investment decision. Moreover, market, size, profitability and financial bankruptcy give new rationalization of multifactor asset pricing for

equity market of Brazil, Russia, India, China, South Africa and Pakistan. It is observed that the risk factors affect returns of portfolios with different investments styles. The study has implications for professionals, investors and managers as they can evaluate their performance relative to the benchmark specific to their investment style.

5.3 Limitations of Study:

This study doesn't examine the financial firms under the augmented five factor model only non financial firms has taken into consideration due to availability of data. However, a comparative study between financial and non-financial concerns may provide better understanding to investors that which sector they should choose while making financial decisions. Other most eminent limitation of the study is limited sample size.

5.4 Directions for Future Study:

The conclusions of the study come up with more debatable research options in asset pricing domain. Other firm specific and market based variables such as leverage, cash flow and corporate governance factors can also be used to provide further insight into asset pricing dynamics. Furthermore, a comparative study between developed and developing countries can provide exploratory insight into asset pricing mechanism in equity markets. There has always been a ceaseless debate over the factors, which are priced in determining the asset return in financial market. More and more empirical work is needed to identify country and economy specific risk proxies. There is also need to identify common risk factors which may be applied to explain equity returns universally. Moreover, such factors can also be tested by using different proxies to check the robustness and applicability of five factor augmented model.

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