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Muhammad Ramzan * | Maria Sultana † | Muhammad Imran ‡

Relevance of Leverage and Profitability in Risk-Return Paradox: A Study from Pakistan Stock Exchange

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Abstract *The purpose of this investigation has to investigate the degree of relevance of these components in the domain of asset pricing by augmenting the basic FF-5 factor model with leverage and profitability that whether leverage-profitability dumping portfolios capturing the return by this model. We performed the five-factor model of Fama-French to capture the joint effect of variables and augmented it with leverage and profitability for the Pakistani market utilizing current periodic month-to-month data from the year 1998 to the year 2019. Construction of factors (MKT, SMB, HML, HLMLL, and RMW) is done for the PSX market and scrutinize that how much this five-factor augmented model detentions the returns premium in the Pakistani equity market. To analyze the model experimentally that consolidate subgroups of its factors that explain the portfolio's normal returns are outlined to make tremendous spreads in size, B/M, leverage and profitability and to capture the pattern for observing their imperativeness, 2X2X2X2 sorted version is adopted to construct the factors. Investigation documents the significant evidence on the leverage and profitability premium. Taking a glimpse at the variables alone, the recently presented leverage and profitability factors show alluring, measurably critical returns for a long/short basis for the Pakistani equity market.*

Key Words: Asset Pricing, Leverage Premium, Profitability Premium

Introduction

The importance of Capital structure theories always remained expedient while explaining the relationship of debts on firm's value or how profitability affects the firm's performance, and literature is equipped with a number of philosophies, for example (pecking order theory, trade-off theory, market timing theory, irrelevance theory, free cash-flows theory, agency cost theory, and signalling theory because they enable the researchers, academicians to inspect the relationship of debt and equity financing.

SINCE Miller and Modigliani publicize the work of their article on "Irrelevance Theory," numerous investigations have condemned and starts the work for capital structure. Some give the favor to debt, and others say that nope the capital structure gets affected. Dawar, a specialist who explored organizations in a few areas on the Indian Stock Exchange, tracked down an adverse consequence of capital structure on profitability. As such, an expansion owing debtors will bring about a diminishing in organization benefits or firm's profitability (Dawar, 2014). Actually, Gill et al. (2011), who analyzed the firms for the manufacturing and service sector listed on the New York Stock Exchange, tracked down a beneficial (+ve) outcome of capital structure of firm on firm's profitability. What's more, Yang et al. (2010), in their exploration of listed organizations of the Taiwan Stock Exchange, tracked down an adverse (-ve) consequence of capital structure on firms stock returns in the year 2005. Interestingly, for investigation in the years 2003 and year 2004, they also tracked down a beneficial (+ve) outcome of capital structure on stock returns. In the study led

* MPhil Scholar, Department of Business Administration, Lahore Leads University, Lahore, Punjab, Pakistan.
† Assistant Professor, Department of Business Administration, Lahore Leads University, Lahore, Punjab, Pakistan.
Email: dr.maria.bussadmin@leads.edu.pk
‡ Assistant Professor, Department of Business Administration, Qurtaba University, Dera Ismail Khan, KP, Pakistan.

by Ahmad et al. (2013), they tracked down a constructive (+ve) outcome of a firm's profitability on stock returns.

Current investigation plans to inspect the dynamics that stimulus the leverage on firm's capital structure, firm's profitability and stock returns of the firms, just as the connection between leverage, profitability and stock returns in firms in Pakistan equity market.

For instance, the emphasis of the current analysis is on the factors in the domain of asset pricing that becomes the reason for mispricing, and trading techniques circled on such characteristics that might fetch additional returns for investors, so the present investigation additionally hypothesizes that excess returns are productively related to risk components being observed as there is a need of concordance among various explanations of additional returns. The purpose of this investigation has to investigate the degree of relevance of these components in the domain of asset pricing by augmenting the basic FF-5 factor model with leverage and profitability that whether leverage-profitability dumping portfolios capturing the return by this model in this way the illustrative power of model will be supplied and their pricing in the equity market of Pakistan

Literature Review

Financial Management

Each organization should consider the advantages gained, as well as investors who need to benefit from the capital that they grow in the organization. An organization can be supposed to be remembered for the organization an appealing one from the organization's capacity create a benefit or to generate a positive profit, yet additionally ready to keep up and increment this profits or benefits. This benefit is known as corporate profit. The management of the organization accepts and is certain that consistent profits draw in and hold investors to put resources into the organization for investment, which thus will build Firm Value. Investors are more interested in an organization that can create benefits or profits consistently as opposed to organizations without income earnings.

sources of funds for financing the organization. The utilization of inward funds will decrease organization costs which lead to agency problems, with the goal that the organization's profitability will increment. Dawar (2014), in an investigation directed on organizations recorded on the Bombay an Indian Stock Exchange, tracked down an adverse consequence of capital structure on profitability. The consequences of this exploration are in accordance with the examination led by Chen et al. (2009), Quang and Xin (2014), Isik (2017), Basit and Hassan (2017) and Odusanya et al. (2018). In Contrast, Adewale and Ajibola (2013), in their examination of the manufacturing sector's organizations in-country Nigeria and tracked down a positive outcome of capital structure on profitability. The consequences of this examination are also in accordance with Miller and Modigliani (1963), which expressed that the utilization of debt financing will decrease the cost of using debt because of tax shield from the cost of interest, so the profitability of firms will increment. Other studies that tracked down a constructive (+ve) outcome of capital structure design on profitability are Gill et al. (2011), Chisti et al. (2013), and Goyal (2013).

Leverage

Miller and Modigliani (1958) provide an early phase for new researchers on capital structure. They gave the leverage irrelevance theory, communicating that in an ideal climate where no tax cost, transaction cost or no inflation, the capital structure don't have any influence on the firm's value but after critics by many researcher and academicians further leads to research and Modigliani and Miller (1963) was recognized MM II proposition which considers their effect that firm's capital structure has an influence on the value of the firm in the presence of taxes, cost etc. Bhandari (1988) inspected the role of financial leverage by investigating the impact of firm's capital structure on firm's stock returns for US market and discovered a positive connection between leverage and stock returns. The significance of organization's leverage and relative distress cost in the domain of asset pricing was portrayed by Ferguson and Shockley (2003) by contending the importance of proxy identification that CAPM was confirmed disappointing technique in capturing the market returns and investigated the illustrative power of single-factor model expanded by leverage and distress cost and this model also prove better than an original three-factor model of asset pricing.

Equally, the association of personal, corporate taxes and financial leverage for an investor with equity cost was analyzed by Dhaliwal, Heitzman and Zhen (2006) and discovered (+ve) connection between equity cost and firm's leverage that portray the organizations have a higher level of leverage demand for a higher risk premium. Penman, Richardson and Tuna (2007) further examined the firm's leverage relationship with stock returns and inspected by disintegrating the extent of B/M into two fragments: firm's B/P and next one leverage. They tracked down the positive association

between operational risk-returns and furthermore inspected (-ve) the association of leverage amongst stock returns. However, their outcome provided amazing final results of taking (-ve) connection among leverage and stock returns and perceived this shock of the tester sample-specific characteristics that allows various other control elements. Tian and Zeitun (2007) also provided a study having a negative association of leverage with company's performance by utilizing the accounting fundamentals and market measures, and these results are in accordance with Muradoglu & Sivaprasad (2008), George and Hwang (2010), Sivaprasad, &Muradoglu, (2012), Acheampong et al. (2014), Adami, Gough (2013), Muradoglu & Sivaprasad, (2015).

Further, in the domain of asset pricing, a study conducted by Mirza, Saeed and Rizvi (2013) to check the influence of leverage on a firm's stock returns and established that leverage amplified model has greater descriptive control above the 3-factor original model and also found a significant premium of leverage for selected firms in the sample. Certain other studies also display constructive connection contingent to many other diverse elements such as Badi and Minoei (2015), Cheng and Tzeng (2014), Ramadan and Ramadan (2015), Habib, Khan & Wazir (2016), Mirza, Rahat and Reddy (2016).

Profitability

The relationship between a firm's profitability and stock returns was conducted by Ahmad et al. (2013) on non-financial
organizations on the Karachi Stock Exchange and tracked down a constructive, positive outcome. For instance, high profitability is considered the major indicator of a company's financial fundamentals, and the outcomes of their study also endorse this. Taking solid business financial fundamentals gives confidence to investors by encouraging them to own shares of an organization, and this behavior will increase trading as stock prices of the shares will increase, and this increase will be reflected in stock returns. Their outcomes are also in accordance with the study led by Hermuningsih (2013). Though a study directed by Yang et al. (2010) for listed organizations in Taiwan tracked down a beneficial (+ve) outcome of a firm's profitability on stock returns. Though, in 2005 as a reflection year, they tracked down an adverse (-ve) consequence of profitability on stock returns.

Chapter 3

Data Description and Research Methodology

Population, Sample and Time Period

The whole Pakistan stock exchange constitutes the total population of this study. Among them, the Non-financial sector of the Pakistan stock market is selected for sample share same accounting year. The criterion for the selected sample follows the same pattern in harmony with the approach of Fama and French 2015.

Data and Sources of Data

All related data for financial analysis, such as stock prices, index data, and market capitalization, are accessible and available for the sample firms.

For Pakistan's data, the official database sites are used, which are considered authentic and reliable sources of information as easily available in digital form and also been used by the researchers in previous research such as the business recorder site is used to get the monthly stock price data. Monthly index data is obtained from the yahoo finance site, while the IFS database is used to get the data for a risk-free rate. All data of Fundamental variables is collected, extracted from annual reports, websites and cleaned, filtered and assembled in Ms Excel. All are working for analysis such as portfolio construction, factors construction, and multivariate regressions are done by using MS Excel using its tool named "Data Analysis".

Methodology

The present study performed the five-factor model of Fama and French and augmented it with leverage and profitability to capture the joint effect of variables for the Pakistani market utilizing the current month-to-month data from 1998 to 2019. Construction of elements (MKT, SMB, HML, HLMLL, and RMW) is done for PSX market and market, accounting and firm-specific attributes are used for sorting. The accentuation of the present examination is to scrutinize that how much this five-factor augmented model caches the returns premium.

Portfolio Creation

Table 1. Illustration of Portfolios

2X2X2X2							
SIZE-B/M-LEV-RMW							
SMALL				BIG			
SIZE	SIZE-B/M	SIZE-B/M-LEV	SIZE-B/M-LEV-PROF.	SIZE	SIZE-B/M	SIZE-B/M-LEV	SIZE-B/M-LEV-PROF.
SMALL	SH	SH-HLEV	SH-HLEV-R	BIG	BH	BH-HLEV	BH-HLEV-R
			SH-HLEV-W				BH-HLEV-W
		SH-LLEV	SH-LLEV-R			BH-LLEV	BH-LLEV-R
			SH-LLEV-W				BH-LLEV-W
	SL	SL-HLEV	SL-HLEV-R		BL	BL-HLEV	BL-HLEV-R
			SL-HLEV-W				BL-HLEV-W
		SL-LLEV	SL-LLEV-R			BL-LLEV	BL-LLEV-R
			SL-LLEV-W				BL-LLEV-W

Factors Creation

Table 2. Illustrations of Factors Creation

2X2X2X2 (SIZE-B/M-LEV-RMW)		
sorts		Factors and their components
2X2X2X2 sorts on size, B/M, Lev, RMW	Size: PSX median	SMB=(SHHL-R+SHHL-W+SHLL-R+SHLL-W+SLHL.R+SLHL.W+SLLL.R+SL.LL.W)/8-(BHHL-R+BHHL.W+BHLL-R+BHLL-W+BLHL-R+BLHL-W+BLLL.R+BLLL.W)/8
	B/M: PSX median	HML=(SHHL.R+SHHL.W+SHLL.R+SHLL.W+BHHL.R+BHHL.W+BHLL.R+BHLL.W)/8-(SLHL.R+SLHL.W+SLLL.R+SLLL.W+BLHL.R+BLHL.W+BLLL.R+BLLL.W)/8
	LEV: PSX median	HLMLL=(SHHL.R+SHHL.W+BHHL.R+BHHL.W+SLHL.R+SLHL.W+BLHL.R+BLHL.W)/8-(SHLL.R+SHLL.W+BHLL.R+BHLL.W+SLLL.R+SLLL.W+BLLL.R+BLLL.W)/8
	RMW: PSX median	RMW=(SHHL.R+SHLL.R+SLHL.R+SLLL.R+ BHHL.R + BHLL.R +BLHL.R +BLLL.R)/8-(SHHL.W+ SHLLL.W+ SLHLL.W+ SLLLL.W+ BHHLL.W+ BHLLL.W+ BLHLL.W+ BLLL.W)/8

Variable Description

Table Error! No text of specified style in document.. Variable Description

VARIABLES	ABBREVIATIONS	DESCRIPTIONS
INDEPENDENT VARIABLE		
Portfolio Return	R_p	Excess portfolio's returns at time t
DEPENDENT VARIABLE		
Market Premium	*MKT*	Difference between market returns to risk free rate at t
Size premium	*SMB*	Difference between returns of small firms to large firms at t
value premium	*HML*	Difference between high B/M and low B/M of firms at t

Leverage premium	*HLMLL*	Difference between high leveraged and low leveraged firms at *t*
Operating Profitability premium	*RMW*	Difference between Robust and weak firms at *t*

Experimental and Extended Framework

The following model is projected to examine the asset pricing mechanism in the asset pricing domain for the capital market of Pakistan. The analysis makes an honest effort to recognize factors that will be important in growing novel archetypal models. Following is the rudimentary econometric arrangement of the three-factor model of Fama and French.

The Five Factors Augmented Model

$R_{pt} - R_{ft} = \alpha + \beta_1 MKT_t + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 HLMLL_t + \beta_5 RMW_t + e_t$

Wherever;

R_{pt} = projected Portfolio's returns '*i*' for period't',

R_{ft} = Risk free Rate,

MKT_T = Market Premium

SMB_t = Size premium

HML_t = Value premium

$HLMLL_t$ = Leverage premium

RMW_t = profitability premium

α = The organization's effect (Alpha),

β = Factor's beta or factors loading,

e = Random error term

Measurement of Two Pass Regressions

The two-pass regression technique is utilized by this investigation to additionally analyze the connection between portfolio returns and risk factors as The examination of Fama and French (1992, 2014) is constrained merely to the time-series regression.

Regression is applied via two steps which are also part of this approach: time series regression is applied as a first major step in this process where excess returns of portfolios are dependent and regressed against each factor than; in this way, betas of factor's loading are obtained. And the same process is repeated in the next step for betas obtained in the first step but in a cross-sectional way. As per Black, Jensen and Scholes (1972) and Fama and Macbeth (1973), second pass regression intrinsically comprises "errors in variables (EIV)" issue as informative or descriptive factors are estimates of major steps from time series analysis. The issue can be relieved by means of utilizing the portfolio returns, which are efficiently diversified as opposed to utilizing individual stocks with the goal that residual errors averages and betas assessed in such way are slightest influenced by eccentric risk (issue is completely disposed of when (N→ ∞). In this manner, our model is additionally stretched out by applying Fama and Macbeth regressions (1973). Besides, to beat the cross-connection issue in regression residuals, Fama and Mac Beth (1973) recommend that in "second pass regression", running regressions on a monthly basis as opposed to taking normal returns for their betas for whole sample period that will enable betas to move after some time (moving or rolling betas got in the first pass). The betas acquired in such a manner are utilized to clarify the stock returns for the next time-period. Where betas, average excess returns, and remaining differences (distinctive risks) are gotten from the regression of the first step.

$R_{pt} - R_{ft} = \alpha_t + \gamma_{mkt,t}\hat{\beta}_{mkt} + \gamma_{SMB,t}\hat{\beta}_{SMB} + \gamma_{HML,t}\hat{\beta}_{HML} + \gamma_{HLMLL,t}\hat{\beta}_{HLMLL} + \gamma_{HWMLW,t}\hat{\beta}_{RMW} + \varepsilon_{it}$

Wherever

$R_{pt} - R_{ft}$ = portfolio's excess return *"p"* at a time *"t".*

$\hat{\beta}_{mktit}$ = projected market factor's loadings

$\hat{\beta}_{SMBit}$ = projected size factor loadings

$\hat{\beta}_{HMLit}$ = projected value factor loadings

$\hat{\beta}_{HLMLL\,it}$ =projected leverage factor loadings

$\hat{\beta}_{RMW\,it}$ = projected profitability factor loadings

The regression coefficients γ_{mkt}, $\gamma_{\text{SMB},}$, $\gamma_{HML,t}$, $\gamma_{\text{HLMLL},t}$, and $\gamma_{\text{RMW},t}$ signify the risks premiums related to the projected factor's loadings.

Result Analysis

Descriptive Statistics for Factors Returns

Table 4. Descriptive or summary statistics for the month to month factors returns. July 1998-December-2019.portfolios is built by utilizing independent arrangement to frame 2-size groups than 2-leverage and 2-Profitability weighted portfolios.

	MKT	SMB	HML	HLMLL	RMW
Mean	0.0179	0.0000	0.0041	-0.0030	0.0010
Standard Deviation	0.0794	0.0532	0.0724	0.0304	0.0210
Sample Variance	0.0063	0.0028	0.0052	0.0009	0.0004
Kurtosis	5.4846	22.3813	70.9441	9.8835	1.3283
Skewness	-0.9587	-2.0783	3.4630	0.0075	0.4594
Range	0.6900	0.6493	1.3215	0.3435	0.1480
Minimum	-0.4489	-0.4564	-0.5181	-0.1776	-0.0570
Maximum	0.2411	0.1928	0.8035	0.1659	0.0910

Interpretation

For the 2x2x2x2 version, joint controls make a noteworthy reviving outcome, and the situational examination affirms the statistical theories which direct that a rise in mean results in growth in standard deviation and the other way around. Consequently, joint control affirms the profitability premium, and its average value is too bigger than the value and leverage factor; however, not bigger than the market factor. Results show the positive **Skew-ness** of 2x2x2x2 version of components aside from MKT and SMB where it is negative. Positives slanted data implies that when contrasted with extraordinary values on the correct side, the greater part of the values are focused on the left side of the average value and distribution of data is "bell-molded". Negative Skew-ness for market factor and size factor predicts that the left tail of graph is longer than the right side. Explained subtleties reveal as well as guarantee the (-ve) Skew-ness for MKT and SMB in the 2x2x2x2 version. Similarly, aftereffects of **Kurtosis** affirm that the data circulation is moderately peaked or (excessively tall) called leptokurtic distribution for entirely components as all values are greater ≥ than three, indicating that the data is sharpened than ordinary dissemination except profitability factor where its value is lower than 3.

Table 5. Correlation Matrix Between Different Factors

	MKT	SMB	HML	HLMLL	RMW
MKT	1				
SMB	0.258214	1			
HML	0.15204	0.320472	1		
HLMLL	0.066112	0.260869	-0.03819	1	
RMW	0.037694	0.074615	0.22886	-0.08951	1

Interpretation

Correlation analysis decides the level and level of the relationship between at least two quantifiable factors. Results are stunning since the elements from these sorts don't attempt to invalidate the impact of different factors. Negative and contrary relationship of value with leverage is because of versatile operational outcomes and horrible situation of factors affecting at both the micro and macro level. Anyway, value has a positive, constructive connection with factors size and profitability in a similar category because of the incomparability of compelling administrative control. Value has a positive correlation with profitability. Equally, this is maybe not surprising given that high B/M value firms tend to have high profitability. Stream down impacts uncovered that this joint arranging positively influenced market and size; however, leverage contrarily corresponds with value and profitability; such kind of results shows the boom market activity and good corporate administration.

Results of 5 Factors Model for all Portfolios

Regression Outcomes for five-Factor Augmented Model

Table 6 shows the regression results of five factors model. Fama and French three factors model basically augmented with leverage and profitability variables. At the end of June each year factors updated to explain the returns of portfolios and monthly stock returns are used to estimate the regression for the July through the following June. Market factor or *MKT* for all sample stock is calculated by taking the difference of market portfolio returns and monthly T-bills rate. By using PSX median breakpoints, the stocks are allocated independently to two size groups at the end of each June. These size sorted portfolios are further categorized on two group base on the book to market ratio. Further these size and B/M sorted portfolio further categorized on leverage than on profitability. The 2x2x2x2 factors use the 2x2x2x2=16 portfolios to capture the joint control for size, B/M, Lev and RMW. *SMB* is the size factor (small minus big), *HML* is the value factor (high minus low B/M), *HLMLL* is the leverage factor (high minus low leverage), and *RMW* is the profitability factor (robust minus Weak). Portfolios are labeled with two, four or six letters such as *P* specifies the average returns for all portfolios of sample companies used in analysis. The first is small(s) and second is big (B). S represents the portfolios of small market capitalization firms and *B* is the portfolios of large market capitalization firms. in the same way other portfolios are labeled by the way of their construction *high B/M* and *low B/M* ratio are the portfolio have high and low book to market ratio respectively. Similarly, *HLEV* and *LLEV* are the portfolios have high leverage and low leverage respectively. Further *R* and *W* are the portfolios of firms having high to low profitability. For each corresponding regressions the t value and p value are shown in second and third block of the table and the last three columns of the tables shows the values of adjusted R^2, F-stat and F significance

Table 6. Regressions Results for five Factors Models

DEPENDANT VARIABLE/SUB PROTFOLIOS	α intercept	β MKT	β SMB	β HML	β HLMLL	β HWMLW	T (α)	t MKT	t SMB	t HML	t HLMLL	t HWMLW	P (α)	P MKT	P SMB	P HML	P HLMLL	P HWMLW	adj.R2	F Stat.	F Sign.
P	-0.09	6.12	-13.47	15.43	5.40	1.01	-2.64	14.78	-20.03	32.31	4.93	0.65	0.01	0.00	0.00	0.00	0.00	0.52	0.85	286.63	0.00
S	0.00	0.37	-0.85	1.02	0.20	0.00	-2.17	13.89	-19.71	33.37	2.83	-0.01	0.03	0.00	0.00	0.00	0.00	0.99	0.85	294.78	0.00
SH	0.00	0.30	-0.93	1.27	0.18	0.03	-2.62	16.60	-31.67	61.13	3.84	0.47	0.01	0.00	0.00	0.00	0.00	0.64	0.95	893.65	0.00
SL	-0.01	0.52	-0.86	0.78	0.56	0.10	-2.52	12.94	-13.09	16.70	5.23	0.68	0.01	0.00	0.00	0.00	0.00	0.50	0.67	104.74	0.00
SH-HLEV	0.00	0.27	-1.19	1.49	0.58	0.10	-1.71	9.87	-26.55	46.70	7.92	0.95	0.09	0.00	0.00	0.00	0.00	0.34	0.91	510.81	0.00
SH-LLEV	0.00	0.34	-0.68	1.07	-0.20	-0.07	-1.89	12.70	-15.60	34.45	-2.77	-0.69	0.06	0.00	0.00	0.00	0.01	0.49	0.86	306.59	0.00
SL-HLEV	-0.01	0.57	-1.15	0.76	1.09	0.14	-2.44	12.79	-16.02	14.83	9.27	0.87	0.02	0.00	0.00	0.00	0.00	0.39	0.68	105.75	0.00
SL-LLEV	-0.01	0.48	-0.67	0.83	0.09	0.14	-2.06	10.10	-8.72	15.15	0.71	0.75	0.04	0.00	0.00	0.00	0.48	0.45	0.60	75.58	0.00
SH-HLEV-R	0.00	0.22	-1.08	1.41	0.87	0.85	-0.60	5.73	-16.94	31.11	8.40	5.79	0.55	0.00	0.00	0.00	0.00	0.00	0.83	242.83	0.00
SH-HLEV-W	-0.01	0.32	-1.30	1.57	0.31	-0.61	-1.68	7.71	-19.39	32.94	2.81	-3.92	0.09	0.00	0.00	0.00	0.01	0.00	0.83	251.98	0.00
SH-LLEV-R	0.00	0.33	-0.75	1.14	-0.13	0.43	-0.77	8.56	-12.09	25.68	-1.31	2.95	0.44	0.00	0.00	0.00	0.19	0.00	0.78	175.49	0.00
SH-LLEV-W	-0.01	0.34	-0.60	1.02	-0.32	-0.66	-1.93	9.29	-10.01	23.95	-3.26	-4.73	0.05	0.00	0.00	0.00	0.00	0.00	0.74	147.50	0.00
SL-HLEV-R	-0.01	0.53	-1.06	0.69	1.04	0.55	-1.95	9.95	-12.29	11.35	7.41	2.73	0.05	0.00	0.00	0.00	0.00	0.01	0.56	65.86	0.00
SL-HLEV-W	-0.01	0.60	-1.22	0.81	1.12	-0.24	-2.34	12.54	-15.66	14.65	8.80	-1.32	0.02	0.00	0.00	0.00	0.00	0.19	0.66	100.05	0.00
SL-LLEV-R	-0.01	0.52	-0.70	0.81	0.08	0.61	-1.95	10.79	-8.93	14.56	0.59	3.35	0.05	0.00	0.00	0.00	0.55	0.00	0.61	80.80	0.00
SL-LLEV-W	-0.01	0.42	-0.42	0.77	-0.05	-0.42	-1.80	8.19	-5.10	13.08	-0.38	-2.20	0.07	0.00	0.00	0.00	0.70	0.03	0.50	52.03	0.00
B	0.00	0.33	0.02	1.05	0.35	0.04	-1.47	10.14	0.41	27.98	4.12	0.34	0.14	0.00	0.68	0.00	0.00	0.74	0.82	234.78	0.00
BH	0.00	0.21	0.08	1.48	0.37	0.10	-1.86	7.69	1.78	46.27	5.03	0.97	0.06	0.00	0.08	0.00	0.00	0.33	0.92	571.74	0.00
BL	-0.01	0.62	0.10	0.58	0.39	-0.02	-2.84	17.90	1.83	14.51	4.25	-0.14	0.00	0.00	0.07	0.00	0.00	0.89	0.75	152.06	0.00
BH-HLEV	0.00	0.19	0.02	1.41	1.07	0.00	-0.87	7.06	0.50	46.35	15.26	-0.01	0.39	0.00	0.62	0.00	0.00	0.99	0.92	591.83	0.00
BH-LLEV	-0.01	0.24	0.14	1.55	-0.33	0.21	-2.23	6.73	2.40	37.61	-3.46	1.52	0.03	0.00	0.02	0.00	0.00	0.13	0.89	392.71	0.00

DEPENDANT VARIABLE/SUB PROTFOLIOS	α intercept	β MKT	β SMB	β HML	β HLMLL	β HWMLW	T (α)	t MKT	t SMB	t HML	t HLMLL	t HWMLW	P (α)	P MKT	P SMB	P HML	P HLMLL	P HWMLW	adj.R2	F Stat.	F Sign.
BL-HLEV	-0.01	0.67	0.14	0.49	0.50	-0.03	-3.24	16.27	2.11	10.31	4.63	-0.18	0.00	0.00	0.04	0.00	0.00	0.86	0.68	109.80	0.00
BL-LLEV	-0.01	0.57	0.10	0.68	0.24	0.01	-2.01	16.08	1.66	16.60	2.59	0.08	0.05	0.00	0.10	0.00	0.01	0.94	0.75	150.76	0.00
BH-HLEV-R	-0.01	0.20	0.09	1.61	0.51	0.73	-1.64	5.01	1.36	35.64	4.96	4.97	0.10	0.00	0.18	0.00	0.00	0.00	0.88	356.38	0.00
BH-HLEV-W	0.00	0.18	-0.04	1.23	1.59	-0.69	0.39	4.26	-0.55	25.70	14.45	-4.41	0.70	0.00	0.58	0.00	0.00	0.00	0.80	201.44	0.00
BH-LLEV-R	-0.01	0.21	0.23	1.64	-0.12	0.58	-1.52	4.73	3.15	32.24	-1.03	3.49	0.13	0.00	0.00	0.00	0.31	0.00	0.86	299.13	0.00
BH-LLEV-W	-0.01	0.27	0.06	1.47	-0.52	-0.15	-2.31	6.73	0.90	31.94	-4.96	-0.97	0.02	0.00	0.37	0.00	0.00	0.33	0.85	277.18	0.00
BL-HLEV-R	-0.01	0.72	-0.03	0.21	0.54	0.53	-3.42	18.11	-0.45	4.61	5.06	3.54	0.00	0.00	0.65	0.00	0.00	0.00	0.65	92.34	0.00
BL-HLEV-W	-0.01	0.60	0.29	0.75	0.47	-0.52	-2.09	9.97	3.01	10.90	2.98	-2.32	0.04	0.00	0.00	0.00	0.00	0.02	0.58	69.96	0.00
BL-LLEV-R	-0.01	0.55	0.17	0.71	0.12	0.23	-2.00	14.38	2.77	15.98	1.22	1.58	0.05	0.00	0.01	0.00	0.22	0.11	0.73	139.60	0.00
BL-LLEV-W	0.00	0.56	0.10	0.59	0.32	-0.21	-1.16	13.03	1.40	12.00	2.83	-1.32	0.25	0.00	0.16	0.00	0.01	0.19	0.63	88.33	0.00

Interpretation

This table shows the regression outcomes of the five-factor augmented model where market, size, value, leverage and profitability (RMW hereafter) elements are utilized to clarify the expected returns of portfolios. It is observed that when the RMW factor is added to the already sorted portfolio based on size to B/M to leverage, the explanatory power of the five-factor model improved; for instance, the suggested model has good explanatory power up to 85% for almost all the portfolios. Additionally, the five-factor model has higher adjusted R-Squared values for the larger firms when contrasted with smaller firms across all portfolios.

Similarly, results also show that portfolios capture the leverage and Profitability effect as coefficient shows that leverage has a significantly positive effect for both smaller and larger firms. Additionally, the high leverage dumping portfolios have statistically significant RMW coefficients. These outcomes uphold the proposition of (MM II) and, furthermore, in accordance with the proof of (Hutchinson, 1995) which suggested that financial leverage affirmatively affects organizational stock returns, offered that the company's income impact outperforms its interest cost of obligation. Besides, exact proof of (Hadlock and James, 2002) likewise proposes that the firm ought to invest in keeping up the degree of leverage is essentially relied upon the adaptability by the entire of which the firm can manage its obligation practice and its earning power ought to decrease underneath its normal interest cost. In addition, this aftermath is crafted by Mirza et al. (2013) and recommends a huge leverage premium in clarifying the portfolio's returns in the domain of asset pricing. Pakistani market also shows a high degree of variation in stock returns just like other developing or emerging nations, and this market also shows a strong impact of size, value, leverage and firm-specific financial risk, as evidenced provided by Mirza Rahat and Reddy (2016).

Similarly, the *profitability effect* also captured by these portfolios as coefficient results also show a significant effect of increase from high to low profitability and the same pattern of increase observed for both smaller and larger firms. Overall, the Total range exposed that ***profitability***

dumping portfolios of bigger firm's consequents the smaller firm's portfolios. It is additionally worth referencing that the illustrative intensity of the model is relatively higher for the portfolios with higher RMW when contrasted with the portfolios with lower RMW.

Results of Two-Pass-Regression for Five-Factor Model

Table 7. shows the results of two pass regression for the portfolios used in five factor augmented model comprising *MKT, SMB, HML,HLMLL,RMW* as explanatory factors in first regression. For each corresponding regressions table shows the value of coefficient, t value, p value adjusted r2, f stat and F significance.

DEPENDANT VARIABLE/SUB PROTFOLIOS	α	β MKT	βSMB	β HML	β HLMLL	β RMW	T (α)	t MKT	t SMB	t HML	t HLMLL	t RMW	P (α)	P MKT	P SMB	P HML	PHLMLL	P RMW	adj.R2	F Stat	F sign
P	7.34	-0.42	0.21	-0.16	0.31	0.04	2.44	-0.69	1.47	-1.12	2.24	0.39	0.02	0.49	0.14	0.27	0.03	0.69	0.01	1.54	0.18
S	0.62	0.29	0.57	-0.30	0.29	0.03	1.89	0.32	2.11	-2.15	2.22	0.19	0.06	0.75	0.04	0.03	0.03	0.85	0.02	1.82	0.11
SH	0.90	-0.18	0.29	-0.48	0.15	-0.12	1.51	-0.22	0.85	-1.10	0.87	-0.61	0.13	0.83	0.39	0.27	0.39	0.54	-0.01	0.46	0.80
SL	0.36	0.00	0.33	-0.24	0.18	0.01	2.00	0.01	2.42	-2.27	2.45	0.17	0.05	0.99	0.02	0.02	0.02	0.87	0.02	2.04	0.07
SH-HLEV	0.18	-0.74	0.06	0.02	0.18	-0.16	0.99	-0.61	0.18	0.32	1.05	-0.61	0.32	0.54	0.86	0.75	0.30	0.54	-0.01	0.39	0.85
SH-LLEV	-0.05	0.14	0.18	0.12	0.04	0.00	-0.12	0.16	0.69	0.56	0.18	0.03	0.90	0.87	0.49	0.58	0.86	0.98	-0.01	0.38	0.86
SL-HLEV	0.69	-0.59	0.46	-0.14	0.27	-0.13	2.38	-0.98	3.21	-1.71	2.64	-0.98	0.02	0.33	0.00	0.09	0.01	0.33	0.04	2.60	0.03
SL-LLEV	0.14	0.08	0.14	-0.12	0.10	0.03	0.96	0.16	1.11	-1.27	1.17	0.44	0.34	0.87	0.27	0.20	0.24	0.66	-0.01	0.73	0.60

DEPENDANT VARIABLE/SUB PROTFOLIOS	α	β MKT	βSMB	β HML	β HLMLL	β RMW	T (α)	t MKT	t SMB	t HML	t HLMLL	t RMW	P (α)	P MKT	P SMB	P HML	PHLMLL	P RMW	adj.R2	F Stat	F sign
SH-HLEV-R	-0.03	-0.06	-0.01	0.03	0.00	-0.01	-0.13	-0.14	-0.06	0.16	-0.03	-0.06	0.90	0.89	0.95	0.88	0.97	0.95	-0.02	0.10	0.99
SH-HLEV-W	0.08	-0.34	-0.13	-0.02	0.11	0.19	0.28	-0.26	-0.53	-0.23	0.78	1.31	0.78	0.79	0.60	0.82	0.43	0.19	-0.01	0.42	0.84
SH-LLEV-R	-0.12	0.77	0.19	0.00	-0.06	0.00	-0.41	0.88	0.70	0.02	-0.26	-0.02	0.68	0.38	0.49	0.99	0.79	0.98	-0.01	0.55	0.74
SH-LLEV-W	-0.26	-0.33	0.15	0.24	0.08	-0.36	-1.49	-0.81	2.25	2.80	1.17	-2.54	0.14	0.42	0.03	0.01	0.24	0.01	0.03	2.13	0.06
SL-HLEV-R	0.19	0.11	0.19	-0.15	0.04	-0.02	0.64	0.19	1.68	-2.20	0.89	-0.18	0.52	0.85	0.09	0.03	0.37	0.86	0.01	1.31	0.26
SL-HLEV-W	0.23	0.07	0.34	-0.02	0.15	0.05	1.56	0.26	1.44	-0.18	1.07	0.47	0.12	0.79	0.15	0.86	0.29	0.64	-0.01	0.73	0.60
SL-LLEV-R	0.17	-0.02	0.24	-0.02	0.10	0.00	0.92	-0.04	2.10	-0.48	1.73	0.03	0.36	0.97	0.04	0.63	0.09	0.97	0.02	1.84	0.11
SL-LLEV-W	-0.05	0.24	0.03	0.00	0.02	0.04	-0.36	0.61	0.50	-0.04	0.35	0.66	0.72	0.54	0.61	0.97	0.72	0.51	-0.02	0.14	0.98
B	0.18	-0.28	0.15	-0.12	0.08	0.00	1.07	-0.59	0.77	-1.83	1.09	0.02	0.28	0.55	0.44	0.07	0.28	0.98	0.00	1.04	0.40
BH	0.20	0.28	0.52	-0.27	0.20	0.07	0.86	0.31	1.76	-1.81	1.53	0.51	0.39	0.76	0.08	0.07	0.13	0.61	0.00	1.06	0.38
BL	0.63	-0.79	0.10	-0.31	0.11	-0.08	2.38	-2.22	0.89	-1.22	1.74	-0.87	0.02	0.03	0.38	0.22	0.08	0.38	0.01	1.23	0.30

DEPENDANT VARIABLE/SUB PROTFOLIOS	α	β MKT	βSMB	β HML	β HLMLL	β RMW	T (α)	t MKT	t SMB	t HML	t HLMLL	t RMW	P (α)	P MKT	P SMB	P HML	PHLMLL	P RMW	adj.R2	F Stat	F sign
BH-HLEV	0.05	0.93	0.39	-0.44	0.38	0.10	0.21	1.10	1.76	-1.63	1.63	0.82	0.84	0.27	0.08	0.11	0.10	0.41	-0.01	0.71	0.62
BH-LLEV	1.08	-2.59	0.15	-0.20	0.28	-0.29	2.46	-2.04	0.74	-2.24	1.96	-1.39	0.01	0.04	0.46	0.03	0.05	0.17	0.02	1.85	0.11
BL-HLEV	0.70	-0.78	0.18	-0.54	0.14	-0.04	3.35	-2.97	1.63	-3.15	2.40	-0.59	0.00	0.00	0.11	0.00	0.02	0.56	0.04	2.85	0.02
BL-LLEV	0.34	-0.53	0.06	-0.08	0.07	-0.05	0.78	-0.84	0.54	-0.46	0.69	-0.35	0.44	0.40	0.59	0.64	0.49	0.73	-0.02	0.31	0.90
BH-HLEV-R	0.59	-2.38	-0.16	0.11	0.07	-0.44	2.41	-3.09	-0.76	0.94	0.67	-2.25	0.02	0.00	0.45	0.35	0.51	0.03	0.02	1.96	0.09
BH-HLEV-W	-0.63	1.44	0.47	0.07	0.15	-0.08	-2.75	2.94	3.05	0.97	2.65	-0.99	0.01	0.00	0.00	0.33	0.01	0.33	0.03	2.30	0.05
BH-LLEV-R	0.27	-0.41	0.07	-0.14	0.06	0.08	0.60	-0.42	0.34	-0.97	0.66	0.71	0.55	0.67	0.73	0.33	0.51	0.48	-0.01	0.41	0.84
BH-LLEV-W	0.07	-0.02	0.08	-0.04	-0.01	0.09	1.00	-0.04	0.36	-0.68	-0.11	0.46	0.32	0.96	0.72	0.50	0.91	0.65	-0.01	0.42	0.83
BL-HLEV-R	-0.96	1.14	-0.02	0.15	-0.22	0.34	-2.72	2.81	-0.16	1.15	-1.59	3.64	0.01	0.01	0.87	0.25	0.11	0.00	0.06	3.55	0.00
BL-HLEV-W	0.91	-1.14	0.17	-0.42	0.09	0.03	2.54	-2.96	1.92	-2.25	1.33	0.41	0.01	0.00	0.06	0.03	0.19	0.68	0.03	2.44	0.04
BL-LLEV-R	-0.13	0.27	0.22	-0.08	0.12	0.00	-1.00	1.08	1.58	-0.74	1.48	0.03	0.32	0.28	0.12	0.46	0.14	0.98	-0.01	0.77	0.57
BL-LLEV-W	0.19	-0.53	0.16	0.06	0.11	-0.12	0.59	-0.84	1.03	0.79	1.19	-0.82	0.56	0.40	0.30	0.43	0.24	0.41	-0.01	0.71	0.62

Interpretation

Table 7 specifies the upshots of two-pass regression for the portfolios utilized in the 5-factor model, which contained explanatory factors such as market, size, value, leverage and profitability in its first regression. Slopes or coefficients of *MKT, SMB, HML, HLMLL, and RMW* premiums are calculated, and new independent variables βMKT, βSMB, βHML, βHLMLL and βRMW are made to explore whether it forecasts the returns or not. Further betas are regressed against these portfolios to check whether we can forecast the future from past beta or not. These regressions are run at a 95% confidence interval, and results do not show a significant relationship with portfolio returns for the estimated betas of all premiums. Henceforth, it suggests that they don't essentially anticipate the prospected returns and the present information is assessed today yet not in future; in this way, the consistency force of beta in deciding future returns is incredibly weak.

Results confirmed that Future predictability is not cleared up to a satisfactory level because data is based on past history, so it has no impact on the future.

For almost all the portfolios, the regression coefficients for factor loadings are also found insignificant related to previously mentioned factors. Insignificant F value for all portfolios also confirms it. Moreover, Adjusted R-Square demonstrates the illustrative-ness of the model is feeble. Along these lines, it is reasoned that the five-factor augmented model does not prevail to build up a connection between risk premium and prospected returns of portfolio amid the investigation time frame. The aftereffect of table Cleary demonstrates that the five-factor augmented model neglects to clarify the connection between risk premium related to the market factor, size factor, value factor, leverage factor, Profitability factor and portfolio's future returns.

Conclusion

We performed the Fama-French five-factor augmented model by including leverage and profitability for the Pakistani market. Taking a glimpse at the variables alone, the recently presented leverage and profitability factors show alluring, measurably critical returns for a long/short reason for the Pakistani equity market.

To observe how much characteristics of factor production are critical and imperative in asset pricing, the 2x2x2x2 categorization is functioned for the nominee elements to check the combined influence of variables and also in lieu of improved seclusion of premium in normal returns accompanying to *SIZE, HML, HLMLL and RMW*. The Overall continuum exposed that "*profitability dumping portfolios"* of bigger firm's consequents the smaller firm's portfolios. Further, the descriptive strength of the model is higher for most of the huge size or bigger portfolios when contrasted with the little size portfolios, which are also confirmed by adj.R^2 results. Given the consequences of the five-factor model, the investigation proposes that organizations with low *RMW* are considered unsafe or risky firms when contrasted with the organizations with higher *RMW* firms. Accordingly, the findings recommend that *the RMW* risk factor is systematic in nature that is prized by the investors in the Pakistani equity market. The results of two-pass regression Cleary demonstrates that the five-factor augmented model neglects to clarify the connection between risk premia related to the market, size, value, leverage, profitability and portfolio's future returns.

Generally, the international proof regarding the significance of the recently presented factors, leverage and operating profitability, in clarifying assets returns, can be confirmed by testing this proposed model in various other equity markets that descriptive power of Fama French 3 factor is improved by adding two more factors leverage and profitability and augment the five-factor model. The focus of this study isn't just principally worried about disclosing the returns identified with various factors yet in addition on the development of factors. Further, in light of particular assessments, this investigation likewise reasons that leverage and profitability recommended the business organizations to their financial specialists/investors, which straightforwardly sway on stock returns. Anyways, this investigation opens another road for the researcher, academicians; thus, further upgrades in the examination should be possible to gauge their adequacy in the domain of asset pricing

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