

# Return Reversal Effect: Risk Adjusted Contrarian Profits from India & Pakistan Markets

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**Abstract:** This study evaluates long run reversal effect in India and Pakistan stock markets. The study compared contrarian mean test methodology with risk driving cross-sectional analysis to examine either presence of long run contrarian profits is result of overreaction behavior of investors or are mere just manifestation of risk associated with returns over long investment periods. Both Pakistan and India stock markets holds long term reversal effect with formation and holding period of 36 to 60 months. The highest reversal results are depicted where portfolios are sorted based on size factor and loser minus winner (reversal) factor. Size (SMB) has an overall positive impact in India and a negative impact in Pakistan market. The six factor model with liquidity risk premium factor generates highest explanatory power results both in the India and the Pakistan. Further, results also revealed in Indian stock; the long run contrarian profits obtained are nothing but compensation for bearing high risk towards firm specific asset price risk factors of size, book to market equity, investment, profitability and liquidity risk premium factors. However, in Pakistan long run profits are the result of the overreaction effect of investors towards new information in the market.

**Keywords:** Return Reversal, Overreaction Effect, Emerging Markets, Contrarian Strategy

**JEL Classification:** G11, G12, G14

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## 1. Introduction:

Return reversal effect means a phenomenon where stock return undertakes a reversal factor in short-term or long-term horizon. The Winner Stocks (good performance stocks) in the past period tends to become Loser Stocks (poor performing stocks) in the forthcoming period. Similarly, Loser Stocks (deprived performance stocks) in the past tends to become Winner Stocks (good performing stocks) in the future. It is evident that return reversal effect takes place when investors sell (High demand) stocks and buy (Low

Demand) stocks holding for short- and long-term periods, reversing the stock price trends. Such a phenomenon is an irregularity or violation to efficient market hypothesis (Dimson & Mussavian, 2000).

The existence of return reversal effect as well as the driving factors of return reversal effect had been explored by financial theorists and academicians with the application of different tests and methodologies in different markets (Maheshwari & Dhankar, 2015; Bornholt et al., 2015; Locke & Gupta, 2009). Academicians portray the reason behind the occurrence of return reversal effect is due to investor's overreaction effect to the market new information. (Blitz et al., 2013; De Bondt & Thaler, 1985). Based on overreaction effect academicians also support liquidity to be the origin of return reversal effect where liquidity effect of certain stocks leads to high turnover rate demand exercising high volatility. High demand results in overvaluing of stocks and when demand reaches at a declined level with strong supply power, the prices of stocks make a reversion with come back to their fundamental values. The immediate purchase with high demand in trade would move market prices away from their actual values. (Da, Liu & Schaumburg, 2013; George & Hwang, 2007). Besides theories, another explanation for return reversal effect is risk-based explanation where return reversal occurs due to mispricing of risk amongst extreme and critical portfolios. Fama and French (1996) claimed the reason for long-term return reversal effects to be misspecification of portfolio risk.

In terms of study contribution, although academicians described enlightening conclusions of return reversal effect with application of contrarian strategies (Maheshwari & Dhankar, 2015; Bornholt et al., 2015; DeBondt & Thaler, 1985) and risk driving cross-sectional factors analysis of return reversal effect (Fama and French, 2015 and Carhart, 1997; 2015) but they all face typical problems with provision of multiple gaps. At first, the academicians (Fama & French, 2015; Malin & Bornholt, 2013) tested limited short number of driving factors where asset price driving factors are studied separately in three, four and five factor models of Fama and French (1992). Rare studies are found who attempted to work on multi-factor model theory of investment in comparison of emerging markets of India and Pakistan with inclusion of all factors in one equation especially for fresh sample test data till 2018. Second, existing literature brought testing of return reversal asset price risk driving factors in different markets with mean test methodologies; (Fama & French & Carhart Factors depends on mean test models). In terms of Market gap; there exists a research gap for examination of investor behavior with fresh recent sample data of testing an abnormal return in economically unstable and politically influenced market of India and Pakistan. Most studies on return reversal phenomenon are found in developed nations (Bornholt et al., 2015; Da, Liu & Schaumburg, 2013). Efforts have been done to analyze the importance of firm specific risk factors in various emerging markets, which is in contradiction with the findings of Fama and French (2015) five factor model that entirely deals with the rational behavior of asset pricing in developed nations. Their results didn't hold in emerging markets (Locke and Gupta, 2009; Hameed and Kusnadi, 2002). The emerging stock market of India and Pakistan could be considered different as compared to US stock market in terms of institutional structure, economic instability, political instability, liquidity and cultural background, etc. The Bombay Stock Exchange abbreviated as (BSE) is responsible for the large-scale trading of stocks in Indian market. It has a good historical background with largest stock exchange in the region of South Asia. It is ranked as the tenth largest stock exchange in the world. Similarly, the Pakistan Stock Exchange abbreviated as (PSX) is one of the oldest stock exchanges in emerging markets. With respect to the turnover ratio the market was ranked first and third in 2003 and 2006 respectively (Global Stock Markets Factbook, 2015). Considering the size and prospects of the market, there is no doubt that international investors would like to move their

investments in emerging market of India. The contribution of study lies to examine existence of return reversal effect and its leading significant key driving factors that originate return reversal anomaly in emerging market because of different firm specific characteristics. In emerging markets, investors of stock market are highly affected by political and economic conditions of the country and are sensitive to new market information. The new policies and regimes with new government bring much fluctuation in investor behavior pattern.

The objective of the study is two-fold. First, the study contributes with an examination of existence of return reversal effect with application of Contrarian methodology via building loser and winner portfolios based on past J-month lagged returns and holding them for K-months for identifying profitable contrarian strategies. Second, the study contributes with examination of asset price risk driving factors originating reversal effect in a multifactor asset pricing model most relevant to the characteristics of emerging markets. The study also fulfills the objective of adopting median based testing methodology which support strong unbiased results with application of quantile regression models rather than adopting mean test methodology of linear regression models.

## 2. Literature Review:

### *A. Empirical Evidence of Reversal Effect (Contrarian Strategies)*

De Bondt and Thaler (1985) were pioneers in building Contrarian Strategies. Contrarian investor intrigue that undervaluing the earnings of distressed stocks is due to the overreaction in the market. These stocks are below their real value in the market and contrarian works on the factor where prices will move to their actual value in the forthcoming period. This is also commonly called 'Overreaction Effect'. De Bondt and Thaler (1985) worked on monthly data of US stock market from 1926 to 1982. The observations were exciting because the past stocks with worst performance depicts better returns than the stocks having good performance in the past leading to return reversal effect. Motivated by their study, academicians re-worked on contrarian strategies in different stock markets. The results in favor of contrarian strategies arising long run reversal profits are reported by Hsieh and Hodnett (2011) for South Africa; Chou et al. (2007) for Japan and Bildik and Gulay (2007) for Turkey. In contrast Chouuachi and Douagi (2014) reported denial of presence of long run reversal profits in Canadian, Australian and Tunisian stock markets.

The emerging market of India and Pakistan reports different and mixed results. Hunjra et al. (2020) analyzed contrarian profitability in three South Asian Markets (Bangladesh, India and Pakistan). They report positive results with existence of reversal profits if portfolio formation is based on size and high credit risk. Prabhakar (2018) performed sectorial analysis with daily closing prices of ten sectors of Bombay Stock Exchange (BSE) for the time period of six years. Their results report major sectors to follow contrarian profits existence. Mehta & Sharma (2016) conducted contrarian strategy on 700 stocks of National Stock Exchange of India and reported persistence of momentum profits which are in contradiction with contrarian results. Mohapatra & Misra (2019) examined short term and long-run loser and winner portfolios returns and found portfolios generated based on price to earnings ratio depicted strongest reversal results in Indian stock market. Sehgal & Balakrishnan (2002) using sample data comprising of 364 firms for timeframe of July 1989-March 1999 examined stock returns of India Market and demonstrate weak long run reversal profits if one-year gap is maintained in formation period and holding periods and reasoned overreaction of investors to be the cause of reversal effect. Locke and Gupta (2009) report that contrarian strategy is highly profitable in the Bombay Stock Exchange for the sample

period 1991- 2004. They reasoned firm specific information (size, valuation, profitability and investment) to be the main source for generation of reversal profit. However, McInish, Ding and Pyun (2008) and Chowdhury et al. (2015) document insignificant negative results of contrarian approach in Indian market. They reported negative return reversal existence in Indian stock market for sample period of 1991 to 2006.

***B. Risk-Adjusted Explanation of Long-Run Reversal Effect***

The 'Overreaction Effect' or Contrarian Strategy is labeled as behavioral based explanation of long-run return reversal effect. Another explanation is risk based explanation which occurs due to mispricing of risks among extreme portfolios. It has been argued in the literature that it is the instability of risk among past winner and loser portfolios generates reversal profits in the long run(Liammukda et. al., 2020). Banz (1981) uncovered that among other variables that contribute to the difference in returns; Size is a vital factor that influences variation in stock returns and initiate return reversal effect. The findings of study indicate small size firms are at innovation stage and in growth phase therefore make higher returns by doing their best. Second, the firms having poor prospects with low share prices and high book to market equity value are penalized with higher costs of capital than the firms with robust prospects. However, the proponents of EMH have proposed that stock market anomaly such as long run reversal effect may be interpreted as shortcomings of underlying asset pricing model. Fama and French (1992; 1996; 2012) claimed that long run reversal profitability can be captured by their three factor asset pricing model. They document size and book to market Equity to be the more powerful measures of asset price risk factors in cross sectional variation of average returns in addition to market risk premium. Their results were consistent with risk based explanation, suggesting contrarian profits can be explained under framework of multifactor asset pricing model.

The failure of Fama and French model in clarifying the pervasiveness of stock returns in stock markets excluding US invited researchers and academicians to investigate all the possible reasons behind this in the context of emerging markets. Chiao et al., (2005) uncovered that Fama and French risk factors only explains the reversal effects in U.S market. Chang et al., (2011) reported insignificance of value factor and size factor in the cross-sectional regressions of portfolio returns in Asian markets. Carhart (1997) worked further on Fama French model and introduced the momentum factor in the framework of three factor model. The study uncovered that higher past returns are responsible to give more than regular returns in the preceding years such rise give rise to leading role of momentum factor (MOM). Similarly, Shoaib and Siddiqui (2017) examined the long-term relationship of return reversal factors in growing stock market of Pakistan, India and China. They revealed liquidity factor (UMD) to be a significant contributor of return reversal effect. They further revealed growth stocks outperform value stocks in the long run in emerging economies. However, their study was limited to robustness check of Fama French five factor model. The failure of three factor model in emerging markets requires further study on the competency of the multivariable asset pricing model due to distinctive characteristics of emerging markets compared to developed markets (Clements et al. 2009). This study bridges the gap with the aim to identify profitability of long-run reversal effect after controlling for multiple risk factors in the emerging markets of India and Pakistan.

### 3. Methodology

#### A. Data Description

This study utilizes the data on monthly closing stock returns for the sample 273 non-financial companies of BSE-500 Sensex and 277 non-financial companies of PSX. The sample period of the study consists of 14 years from January-2005 to December-2018. Monthly closing stock prices are obtained from the official website of PSX and Business Recorder. Moreover, data used for the calculations are obtained from the annual financial reports of the companies. Monthly risk-free rates of the Pakistan market are obtained from the website of the State Bank of Pakistan. The BSE-500 Sensex data is obtained from Thomson Reuters data.

#### B. Contrarian Strategy: Loser, Winner and Arbitrage (LMW) Portfolios Construction

The dependent variables of the study are Weighted Average Excess Returns of Loser Portfolio (L), Winner Portfolio (W) and Arbitrage Loser Minus Winner portfolio (LMW) Operationalization and construction of Loser, Winner and Arbitrage Portfolios are summarized below.

- A simple return on stock investment is defined as;

$$R_{it} = \frac{P_{it} - P_{i,t-1}}{P_{i,t-1}} * 100\%$$

Where  $R_{it}$ , is the monthly return,  $P_{it}$  is the price on month t, and  $P_{i,t-1}$  is the price on month t-1.

- At the beginning of each month January 2005 to December 2018, for each stock (i), the cumulative returns (CU) are calculated over the 60 month's formation period (J).

$$CU = \sum_{t=1}^{60} U_{i,t}$$

- Based on  $CR_i$ , all stocks are ranked in ascending order. Based on the rankings, the bottom 20% stocks are referred as the winner (W) and the top 20% stocks are referred as the loser (L) stocks. This cut of 20% is widely adopted in emerging and developed market studies in literature (Sehgal & Balakrishnan, 2002; Bildik & Gulay, 2007; Maheshwari and Dhankar; 2015 and Fama and French, 2015).
- Both loser (L) and winner (W) portfolios are held for 60 months (K) holding period, each month average returns (AR) are calculated with 60 months holding time for each of the 14 overlapping periods. The Weighted Average Cumulative (CAR) for both winner and loser portfolios are calculated for each of 60 months with 14 overlapping periods. The  $CAR_{W,O,t}$  represent as dependent variable of winner portfolio. The  $CAR_{L,O,t}$  represents dependent variable of loser portfolio. Here O, represent years and t represent months. W and L stands for loser and winner portfolios.

$$CAR_{W,O,t} = \sum_{m=1}^t AR_{W,m} ; O = 1,2,\dots,14; t = 1,2,3,\dots,60 \text{ months}$$

$$CAR_{L,O,t} = \sum_{m=1}^t AR_{L,m} ; O = 1,2,\dots,14; t = 1,2,3,\dots,60 \text{ months}$$

- For example, for each month the loser portfolio monthly return for three months holding period is expressed as an equal weighted average of (CAR) for the current month, the last month, and the portfolio returns from two months ago. Hence, the overlapping portfolios confirm that subsequent monthly returns are non-overlapping in nature that allows us to use for t-statistics. This popular method given by Jegadeesh and Titman (2006) which increased the test power.

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- With equal weight mean returns of loser and winner portfolios, we obtain a spread of loser minus winner portfolio (LMW) The contrarian arbitrage portfolio called loser minus winner portfolio (LMW) spreads are generated. If the spread (LMW) depicts negative excess returns, this indicates that loser remain loser and winner remain winner, no reversal effect is originated. But if the spread (LMW) depicts positive excess returns, this indicates loser had become winner and winner becomes loser giving return reversal excess returns.

$$CAR_{LMW} = CAR_{L,O,t} - CAR_{W,O,t}$$

$$CAR_{LMW} > 0, \text{Reversal Effect}$$

$$CAR_{LMW} < 0, \text{Momentum Effect Effect}$$

- For Risk Adjusted Models, the Equal Weighted Excess Returns for All portfolios and each of Loser, winner and Arbitrage Portfolios are calculated as individual portfolio cumulative abnormal weighted average returns minus risk free rate of returns. The risk free rate is weighted average of Treasury Bill rate.

Dependent Variable:  $R_{it} - R_f$  , All portfolios excess returns

Dependent Variable:  $R_{wt} - R_f$  , Winner portfolio excess returns

Dependent Variable:  $R_{Lt} - R_f$  , Loser portfolio excess returns

Dependent Variable:  $(R_{wt} - R_f) - (R_{Lt} - R_f)$ , Arbitrage Loser minus Winner portfolio excess returns

### C. Risk Adjusted Contrarian Profits

Following and adopting Fama and French (1996) and Reddy et. al., (2019) traditional risk return factors and portfolio establishment methodology, we examined asset price risk factors utilized in different studies of one, three, five and six multifactor models with application of Quantile Regression Models. All the additional risk factors: market risk (MKT), size (SMB), value (HML), profitability (RMW), investment (CMA) and liquidity (UMD) are computed using the Fama and French (2015) 5x5=25 sort method (See table 1 for operationalization of independent variables).

The one factor model implies that excess return on a portfolio should be fully explained by excess market return. If long-run contrarian profits are consistent with the risk explanation, then there will be significant  $\beta$  and insignificant  $\alpha$ . Conversely, a positive and significant  $\alpha$  of the arbitrage portfolio (L-W) supports the existence of long-run contrarian profits even after risk adjustments. Utilizing, Loser, Winner and Loser Minus Winner Arbitrage portfolios as dependent variables, the returns of extreme portfolios are regressed utilizing Fama and French (2015) one, three and five factor model and six factor model with liquidity risk premium relevant to weak efficient form of emerging markets.

**One Factor:**  $R_{pt} - R_{ft} = \alpha_1 + \beta_1^{(p)}(MKT)_{it} + E_{it}$ ,

**Three factor:**  $R_{pt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_s^{(p)}(SMB)_{it} + \beta_h^{(p)}(HML)_{it} + E_{it}$ ,

**Five factor:**  $R_{pt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + E_{it}$ ,

**Six factor:**  $R_{pt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + \beta_{TR}^{(p)}(UMD)_{it} + E_{it}$ ,

Where,  $R_{pt}$  represent excess returns,  $R_{ft}$  is the risk free rate of return in time t., , Each of these portfolios would be regressed individually on  $R_{Lt}$ : excess returns of loser (L) portfolio,  $R_{Wt}$ : excess returns of winner (W) portfolio and  $R_{LMW}$ : excess returns of arbitrage (Loser minus Winner) portfolios. MKT is Market Risk Premium Returns, SMB is Size Risk Premium Returns, HML is Book to Market Equity Risk Premium Returns, RMW is Profitability Risk Premium Returns, CMA is Investment Risk Premium Returns and UMD is Liquidity Risk Premium Returns. The period analyzed is from January 2005 to December 2018.

**Table 1.** Potential Driving Factors Portfolios Construction (Independent Variables)

Sr.	Factors	Name	Description
1	Market Factor	MKT	Returns of loser portfolio - Returns of winner portfolio
2	SIZE Factor	SMB	Returns of small size portfolio - Returns of big size portfolio
3	Valuation Factor	HML	Returns of high book to market equity portfolio - Returns of low book to market equity portfolio
4	Profitability Factor	RMW	Returns of high profitability portfolio - Returns of low profitability portfolio
5	Investment Factor	CMA	Returns of high investment portfolio - Returns of low investment portfolio
6	Liquidity Factor	UMD	Returns of high liquidity risk portfolio - Returns of low liquidity risk portfolio
7	Reversal Factor	LMW	Returns of loser portfolio - Returns of winner portfolio based on (t-60,t-2)

'The Author Work'

#### 4. Results and Discussion

##### A. Contrarian Strategy: Statistics of Loser Winner and Arbitrage Portfolios

At first, contrarian mean t-tests results of reversal portfolios with J=60 month's formation period and K=60 month's holding period for 273 stocks of India and 277 stocks of Pakistan market are illustrated (see table 2). Table 2 is a clear demonstration of segregation between loser and winner portfolios. In order to construct reversal strategy, we partitioned the long run portfolio returns of all stocks based on cumulative abnormal returns of past 60 month's formation period into 5 quintiles for each month in ascending order. The loser portfolio is composed of stocks which fall in 1<sup>st</sup> quintile representing 20% stocks with worst performance. The winner portfolio is composed of stocks which fall in 5<sup>th</sup> quintile representing 20% stocks

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with best performance. The arbitrage portfolio loser minus winner is constructed for both countries. The reversal strategy goes long in loser portfolio and goes short in winner portfolio by 60 months holding period returns. In India loser portfolio demonstrate mean return of 30% and P25 winner portfolio demonstrate mean return of 18% providing reversal contrarian arbitrage long run profits of 11% in the long run with span of 60 month's formation periods. Similarly, in Pakistan loser portfolio demonstrate mean return of 34% and P25 winner portfolio demonstrate mean return of 23% providing reversal contrarian arbitrage long run profits of 11% in the long run with span of 60 month's formation periods. This is interesting to note that both India and Pakistan earns approximately 11% contrarian profits each month in the long run. The one sample t-statistics is positive and significant for both countries. The t-statistics is higher for India compared to Pakistan. The attractiveness of reversal occurrence is also shown with positive skewness such that larger positive returns are more probable than negative returns in both Pakistan and India Market. The maximum return is as high as 43% for India and 28% for Pakistan. The minimum returns are as low as -0.057% for India and -0.03% for Pakistan. Further, the median value is 3% and 1 percent for India and Pakistan indicating 50% times the reversal profits are greater than 3% and 1% on monthly basis. 5% of the total observations are having profits lower than -3.5% in India and -12.4% in Pakistan. 95% of the total observations are having profits higher than 4.8% in India and 13.4% in Pakistan. These results build impression of lower downside risk associated with reversal profits in the long run in both countries.

**Table 2. Long-Run Contrarian Portfolios**  
(60 month's formation period and 60 month's holding period)

Long Run Portfolios with 60 month's formation and 60 month's holding period													
	Mean	t- stats	SD	Variance	skewness	Kurtosis	Min	5%	25%	Median	75%	95%	Max
<b>India</b>													
Loser	0.030	6.02	0.06	0.004	5.693	41.763	0.029	8	0	2	2	4	0.437
Winner	0.018	9.28	0.02	0.001	0.070	3.507	0.042	6	3	9	3	8	0.086
LMW	0.011	2.35	0.06	0.004	5.627	38.794	0.057	5	9	3	9	8	0.435
<b>Pakistan</b>													
Loser	0.034	3.66	0.15	0.024	7.843	83.311	0.115	8	0	2	5	5	0.390
Winner	0.023	2.82	0.08	0.006	1.694	9.616	0.122	5	1	6	6	2	0.351
LMW	0.011	3.99	0.15	0.024	7.018	77.846	0.309	4	0	1	8	4	0.284



'The Author', where LMW means Loser minus winner portfolio.

**B. Risk Adjusted Long Run Contrarian Profits**

The stock market portfolio cumulative abnormal returns study is incomplete without examination of risk premium associated with investment in loser/winner portfolios. In application of multi-factor Quantile Regressions models, if alpha is insignificant and lower than beta values, the presence of reversal anomaly is not due to overreaction effect tested through (CAR) strategy but are manifestations of risk associated with firm specific asset price risk factors. But if alpha is significantly higher than beta values, then presence of long run reversal effect is merely due to overreaction of investors to market information and not manifestation of risk associated with firm specific asset price risk factors. The objective of this study is to examine relationship between long run risk adjusted excess returns and the fundamental driving factors risk premiums generating those returns. Chan (1996) argued Long run overreaction effect to be manifestation of risk among extreme portfolios. Further, Fama and French (1996) argued it is essential to test stock market anomalies, such as long run return reversal effect in context of asset pricing models as higher returns from these anomalies may be nothing but compensation for higher returns. (See Table 3A)

The study first controls for risk using capital asset pricing model in table 3A. The equation 1A, 1B and 1C represent excess portfolio returns of Loser, Winner and Arbitrage portfolios which are regressed on market risk premium, one factor capital asset pricing model. This one factor model implies that excess return on a portfolio should be fully explained by excess market return. If long run contrarian profits are consistent with risk explanation, then there will be significant Beta and insignificant alpha. Conversely, a positive and significant alpha of the arbitrage portfolio (LMW) supports the existence of long run contrarian profits even after market risk premium adjustment.

Table 3A present results where; Loser, Winner and Arbitrage portfolios excess returns are regressed on market excess returns using CAPM for both countries India and Pakistan. The CAPM model fails to explain risk adjusted behavior in Indian Stock Market. The alpha values of loser portfolio formed on the basis of past 60 month's formation period generates risk adjusted monthly return of 2 percent over the next 60 months as against the significant risk adjusted monthly return alpha values of 1.72 percent by the winner portfolios in the same period. The arbitrage portfolio risk adjusted return over the same contrarian strategy is found to be significantly positive with risk adjusted return alpha value of 0.03 percent in the Indian stock market, suggesting positive risk adjusted contrarian profits over the long run due to presence of overreaction effect in the market. Similar results are reported for Pakistan, however, all values are comparatively higher than Indian stock market. In Pakistan, the loser portfolio formed on past 60 months generates risk adjusted monthly returns of -0.57% (alpha) over the next 60 months against significant risk adjusted monthly return of 1.67% (alpha) by winner portfolios over the same period. The reversal profits are also not depicted in Pakistan market with one factor model, in fact it generates momentum return of 2.25% in arbitrage portfolio alpha values risk adjusted returns. The results and findings supports the results of De Bondt and Thaler (1985), Zarowin (1990), Goel et al., (2020) and Imran et al., (2020) who explains that beta risks alone cannot explain the long run reversal effect. The value of beta is significant and less than 1 nearly zero in India market whereas the value of beta is greater than 1 in Pakistan market for winner portfolio. This suggest overall performance of Pakistan market securities are aggressive generating

momentum returns based on CAPM-beta value of winner portfolio greater than 1 whereas, overall Indian market securities depict defensive behavior as CAPM-beta value is less than 1. (See Table 3B, 3C, 3D)

In addition to one factor model (CAPM), the study also tests three and five factor model of Fama and French (2015). The long run risk adjusted contrarian profits are found if there is significant reduction in alpha of arbitrage portfolio (LMW) with three and five factor models mentioned (see table 3B and table 3C). Table 3B controls for market risk, size risk and book to market equity risks utilizing Fama & French three factor model. Fama and French three factor model does an excellent job in explaining risk adjusted returns in Indian Stock Market. The alpha values are lower than beta values. Market risk premium still does not depict significant value of beta. However, size risk premium and book to market risk premium beta values are large and significant capturing most of the firm specific risk as compared to merely overreaction effect identified by alpha lower values. The long run loser portfolio loads heavily and positively on size and value factors, while the long run winner portfolio loads lightly and positively on size and value factors. This generates an extra risk adjusted abnormal reversal profits of 37% and 21% of arbitrage portfolio in Indian Stock Market. This value of SMB-beta positive and HML-beta positive result reveals smaller firms with value risk premium accruing better risk bearing reward than the bigger ones in India supporting the results of (Shoaib and Siddiqui, 2017). These findings suggest that long run loser portfolio consists of small and distressed stocks which are comparatively riskier than long run past winner stocks, and hence generates excess higher returns (Da et.al., 2013; Chiao et al., 2005; Dimson & Mussavian, 2000). In Pakistan the three factor model also failed to explain risk adjusted returns as alpha values are higher than beta values of market (MKT), size (SMB) and value risk premiums (HML). The negative value of SMB-beta depicts bigger firms to earn better risk premium than smaller ones in Pakistan. The HML-beta also depicts negative sign. Big firms have growth factor and during the growth of firm's excess returns are negatively affected. During the growth of firm's risk premium is negatively affected. Higher the HML- growth factor lower would be the excess returns. Similar results are reported by Malin and Veeraraghavan (2004); Chang et al., (2011) and Shoaib and Siddiqui, (2017) and found insignificance of value factor and size factor in the cross-sectional regressions of portfolio returns who documents big forms with growth stocks to be a more prevalent factor of return reversal than value stocks.

Table 3C evaluates Fama & French five factor model. The five factor model also performs excellent job in Indian Stock market with lower alpha values. Profitability risk premium generates positive reversal profit in arbitrage portfolio whereas Investment risk arbitrage portfolio generates significant negative returns -0.43. This depicts aggressive investment firms with robust profits perform better than conservative in investments and with robust profitable firms. The Size factor SMB-beta becomes significantly negative with inclusion of RMW and CMA factor. This represents bigger firms to outperform more than smaller ones due to aggressive investment and weak profitability of the firms. High beta values are indicated with size risk premium, value risk premium and investment risk premium. Analysis of five factor model revealed Indian stock with big size, high book to market equity, robust profitability and aggressive investment generates profits in the long run. However, in Pakistan the five factor model worked in generating positive and significant asset price risk bearing factor returns. The beta values are slightly higher than alpha values. The loser portfolio indicates market risk premium and profitability risk premium have highest beta values

of 0.79 and -0.74 than alpha values of 0.57. The arbitrage portfolio indicates reversal profits with high book to market equity factor and investment factor. Analysis of five factor model revealed Pakistan stock market with high book to market equity and high profitability generates reversal profits in the long run.

Investment factor (CMA) and profitability factor (RMW) results are consistent with results of Dewan et. al., (2007) who also demonstrated that firms who contribute maximum with high amount of fixed investments are found to have profitable long term returns. Similarly, Rensburg et. al., (2003) reported price to earnings ratio as a significant contributor in generating abnormal returns in the market. In Pakistan and India significant beta value of arbitrage portfolio of robust profitability factor and high investment factor demonstrate firms that substantially increase capital investments subsequently achieve negative benchmark adjusted returns. The negative abnormal capital investment/return relation is shown to be stronger for firms that have greater investment discretion, i.e., firms with higher cash flows and lower debt ratios, and long term reversal factor (Chui, Titman & Wei, 2003). These observations are consistent with the hypothesis that investors tend to under react to the empire building implications of increased investment expenditures.

Weak form efficient markets usually comprise higher volatility due to lower information asymmetry leading to high stock turnover rate in the market (Shahzad et. al., 2014). We also test six factor model (see table 3D) where loser, winner and loser minus winner (arbitrage) portfolio excess returns are regressed on Fama & French five factors and liquidity risk premium as the sixth factor. The market efficiency is controlled with liquidity risk premium which is calculated as stock turnover rate. Stock high turnover ratios leads to high liquidity; making stock prices and returns more volatile. The investor with high liquidity in markets bear high risk leading to higher return adjustments to reimburse them for substantial cost of trading these assets and vice versa (Ibbotson et al., 2013). If liquidity is high contrarian investor overreacts towards the new information, hence challenging market efficiency. The reversal profits are considered to be considered as the proxy for compensation of providing liquidity to the market as supported by (Nagel, 2012). Here UMD represents Liquidity risk premium based on high liquid returns minus low liquid returns of the market. In table 3D, the Liquidity risk premium factor generate exciting results for both countries India and Pakistan. Other remaining factors contributions get small whereas liquidity factor generates highest beta values amongst 6 factors regressed on loser, winner and arbitrage portfolio return. For Indian market, the liquidity risk premium generates long term loser excess returns with significant and positive values of 0.38 and long term winners indicate significant, positive returns of 0.29. This provide positive and significant reversal profits of 0.2529. Stock high turnover ratios leads to high liquidity; making stock prices and returns more volatile. The positive  $\text{Beta}_{\text{TR}}$  of Liquidity risk premium is consistent with supporting that investor with high liquidity in markets bear high risk leading to higher return adjustments to reimburse them for substantial cost of trading these assets and vice versa (Ibbotson et al., 2013). In the context of PSX and BSE Sensex where there are no officially designated market makers, liquidity provision increase is not just restricted to designated market makers. Even the individual investors also act as liquidity provider suggested by Kaniel, Saar and Titman (2008). If liquidity is high contrarian investor overreacts towards the new information, hence challenging market efficiency. The reversal profits are considered to be considered as the proxy for compensation of providing liquidity to the market as supported by (Nagel, 2012).

In Pakistan, the five factor model overall indicate momentum return in the long run with negative beta values of arbitrage portfolios. The liquidity risk premium generates the most significant contribution from the remaining asset price factors. In Pakistan Liquidity factor depicts significant negative beta value of -0.82. This suggest low level of liquidity. In Pakistan negative relation of liquidity with stock returns are depicted. The results are consistent with Hongsakulvasu, and Liamukda (2020).The loser portfolio generates less returns in the long run compared to winner firms. This enlightens us to see the liquidity risk premium was the main contributor in generating overall momentum returns. Liquidity is considered as trading of large quantity of stocks purchased as low cost without lowering the prices. The results of negative impact of liquidity risk premium are supported by Akram (2014) and Chang et. al., (2011). The less liquid stocks cause the demand of rational investor to get higher in case of returns as sensitivity towards liquidity is considered as risk. Higher the risk associated, higher would be associated returns (Akram, 2014). With inclusion of liquidity factor, except profitability factor; other factors betas not only became significant, with high beta values but also positive contrarian profits are depicted in arbitrage portfolio betas of market risk premium, size risk premium, valuation risk premium and profitability risk premium. The analysis of six factor model revealed in Pakistan, to earn reversal profits in the long run, investors should build portfolio based on high market risk premium, small size, high book to market equity, weak profitability and high aggressive investments.

Results demonstrate how with inclusion of each factor in one factor model the R-square power increases. For India; The arbitrage one factor model only explains 46% of the model, where this power is increased to 62% where Size factor and HML factor are included in the model. The power further increased to 65% with inclusion of profitability and investment factor in the model. The power increased to 73% with inclusion of liquidity factor in the model. The highest R-square power is demonstrated in model seven (76%) where reversal factor is examined and explains reversal factor to be strong contributor in explaining abnormal stock excess returns. Similarly, for Pakistan; the arbitrage one factor model only explains 51% of the model, where this power is increased to 69% where Size factor and HML factor are included in the model. The power further increased to 72% with inclusion of profitability and investment factor in the model. The power increased to 78% with inclusion of liquidity factor in the model. The highest R-square power is demonstrated in model seven (81%) where reversal factor is examined and explains reversal factor to be strong contributor in explaining abnormal stock excess returns. This fulfills the contribution of our study that multifactor asset pricing models have more explanatory power to explain stock return anomalies.

Table 3A: Risk Adjusted Monthly Contrarian Profits With One-Factor CAPM

Portfolio	Constant	S.E	MKT		F-stats
			$\beta_M$	S.E	
<b>India Risk Adjusted Returns With One-Factor CAPM</b>					
Loser	0.0202*	0.002	0.0011*	0.000	0.56
Winner	0.0172*	0.002	0.0017*	0.000	0.53
Arbitrage (LMW)	0.003*	0.001	-0.0006*	0.000	0.46
<b>Pakistan Risk Adjusted Returns With One-Factor CAPM</b>					
Loser	-0.5799*	0.597	0.2437	0.591	0.64
Winner	1.6723*	0.411	1.2711	0.407	0.69
Arbitrage (LMW)	-2.2522*	0.797	-1.0274*	0.790	0.51

Statistically significant at 1% (\*\*\*), 5% (\*\*) and 10% (\*) level. The parenthesis are robust standard errors.

where,  $R_{Lt}$  represent excess returns of loser (L) portfolio,  $R_{Wt}$  are excess returns of winner (W) portfolio and  $R_{LMW}$  are excess returns of arbitrage (Loser minus Winner) portfolios. Each of these portfolios would be regressed individually.  $R_{ft}$  is the risk free rate of return in time t, MKT is market risk premium calculated as  $(R_{mt} - R_{ft})$  and  $E_{it}$  is the error term. The period analyzed is from January 2005 to December 2018. The returns of loser, winner and arbitrage portfolios (LMW) are regressed on the following regression:  
 Loser:  $R_{Lt} - R_{ft} = \alpha_1 + \beta_1^{(p)}(MKT)_{it} + E_{it}$ , Winner:  $R_{Wt} - R_{ft} = \alpha_1 + \beta_1^{(p)}(MKT)_{it} + E_{it}$ , LMW:  $R_{LMW} - R_{ft} = \alpha_1 + \beta_1^{(p)}(MKT)_{it} + E_{it}$ .

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Table 3B: Risk Adjusted Monthly Contrarian Profits with Three-Factor Model

Portfolio	Constant $\alpha$	MKT $\beta_M$	SMB $\beta_s$	HML $\beta_h$	Pseudo $R^2$
<b>India Risk Adjusted Returns With Three Factor Model</b>					
Loser	0.0178* (0.017)	0.0011* (0.000)	0.5265* (0.101)	0.236*** (0.83)	0.99
Winner	0.0146*** (0.002)	0.0018*** (0.000)	0.1537* (0.092)	0.0192* (0.076)	0.84
Arbitrage (LMW)	0.0032 (0.002)	-0.0007 (0.000)	0.3728*** (0.086)	0.2168 (0.070)	0.62
<b>Pakistan Risk Adjusted Returns With Three Factor Model</b>					

Return Reversal Effect: Risk Adjusted Contrarian Profits from India & Pakistan Markets

Loser	-0.5384 (0.482)	0.0465* (1.141)	0.0564 (0.547)	0.0492** (0.558)	0.70
Winner	1.9214*** (0.432)	1.5838* (1.022)	-0.1281 (0.490)	-0.0386* (0.500)	0.82
Arbitrage (LMW)	-2.6435 (0.872)	-1.55247 (2.063)	-0.1636 (0.988)	-0.0290** (1.009)	0.69

Statistically significant at 1% (\*\*\*), 5% (\*\*) and 10% (\*) level. The terms in parenthesis are robust standard errors. Details about  $R_{Lt}$ ,  $R_{Wt}$ , and  $R_{LMW}$ ,  $R_{ft}$ , MKT and  $E_{it}$  is in table 3A. SMB is Size Risk Premium Returns, HML is Book to Market Equity Risk Premium Returns. The following regression equations are estimated, Loser:  $R_{Lt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + E_{it}$ , Winner:  $R_{Wt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + E_{it}$ , LMW:  $R_{LMW} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + E_{it}$

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Table 3C: Risk Adjusted Monthly Contrarian Profits with Five-Factor Model

Portfolio	Constant $\alpha$	MKT $\beta_M$	SMB $\beta_S$	HML $\beta_H$	RMW $\beta_P$	CMA $\beta_i$	pseudo $R^2$
<b>India Risk Adjusted Returns With Five Factor Model</b>							
Loser	0.0189* (0.002)	0.0008*** (0.000)	0.5131*** (0.159)	0.2988*** (0.095)	0.1441* (0.084)	-0.1754* (0.104)	0.75
Winner	0.0144*** (0.002)	0.00166*** (0.000)	0.5989*** (0.143)	0.0645* (0.085)	0.1439* (0.076)	0.2643*** (0.094)	0.68
Arbitrage (LMW)	0.0025* (0.002)	-0.0009 (0.000)	-0.0859*** (0.177)	0.2343* (0.106)	0.0002* (0.094)	-0.4397** (0.116)	0.65
<b>Pakistan Risk Adjusted Returns With Five Factor Model</b>							
Loser	-0.5719** (0.290)	0.7915* (0.691)	-0.5373** (0.368)	0.5607** (0.416)	-0.7458** (0.529)	-0.0883* (0.572)	0.87
Winner	1.6629* (0.267)	1.3581** (0.635)	0.7549* (0.338)	-1.2134 (0.382)	1.8015* (0.487)	-1.4311* (0.526)	0.76
Arbitrage (LMW)	-2.2348* (0.737)	-0.5666* (1.753)	-1.2922* (0.933)	1.7741* (1.056)	-2.5473** (1.343)	1.3429* (1.452)	0.72

Statistically significant at 1% (\*\*\*), 5% (\*\*) and 10% (\*) level. The terms in parenthesis are robust standard errors. Details about  $R_{Lt}$ ,  $R_{Wt}$ ,  $R_{LMW}$ ,  $R_{ft}$ , MKT is in table 3A. SMB is Size Risk Premium Returns, HML is Book to Market Equity Risk Premium Returns, RMW is Profitability Risk Premium Returns and CMA is Investment Risk Premium Returns. Following regressions are estimated: Loser:  $R_{Lt} - R_f = \alpha_1 +$

$$\beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + E_{it}, \quad \text{Winner: } R_{Wt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + E_{it},$$

$$\text{LMW: } R_{LMW} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + E_{it}$$

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Table 3D: Risk Adjusted Monthly Contrarian Profits With Six-Factor Model

Portfolio	Constan t $\alpha$	MKT $\beta_M$	SMB $\beta_S$	HML $\beta_H$	RMW $\beta_P$	CMA $\beta_I$	UMD $B_{TR}$	pseudo $R^2$
<b>India Risk Adjusted Returns With six Factor Model</b>								
Loser	0.0183** (0.003)	0.0007* (0.000)	1.4714** * (0.128)	0.3698* * (0.124)	0.2170** * (0.104)	0.1955** * (0.071)	0.3886** * (0.077)	0.83
Winner	0.0154** * (0.002)	0.0011** * (0.0000)	0.2481** * (0.088)	0.0316* (0.085)	-0.1378* (0.071)	0.0108** (0.048)	0.2927* (0.053)	0.88
Arbitrage (LMW)	0.0043** (0.002)	-0.0006* (0.000)	1.4872** * (0.097)	0.4478* (0.093)	0.4484* (0.078)	0.2030* (0.053)	0.2529** (0.058)	0.73
<b>Pakistan Risk Adjusted Returns With Five Factor Model</b>								
Loser	0.2307* (0.241)	1.8341** (0.38)	-0.2036* (0.241)	0.2590* (0.235)	-1.4507* (0.299)	0.2132* (0.360)	-0.8211 (0.220)	0.82
Winner	0.6838** * (0.198)	0.7443** * (0.313)	- 0.0838** (0.198)	0.3550* * (0.194)	1.9072** (0.246)	-2.0539 (0.297)	1.0835* (0.182)	0.76
Arbitrage (LMW)	- 0.5789** (0.593)	- 0.8534** (0.935)	- 0.2519* (0.593)	- 0.5009* (0.579)	- -2.9213* (0.736)	- 3.4186** (0.888)	- -2.1144* (0.543)	0.78

Statistically significant at 1% (\*\*\*), 5% (\*\*) and 10% (\*) level. The terms in parenthesis are robust standard errors. Details of  $R_{Lt}$ ,  $R_{Wt}$ ,  $R_{LMW}$ ,  $R_{ft}$  is in table 3A. MKT is Market Risk Premium Returns, SMB is Size Risk Premium Returns, HML is Book to Market Equity Risk Premium Returns, RMW is Profitability Risk Premium Returns and CMA is Investment Risk Premium Returns and UMD is Liquidity Risk Premium Returns. Following regression are estimated: Loser:  $R_{Lt} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + \beta_{TR}^{(p)}(UMD)_{it} + E_{it}$ , Winner:  $R_{Wt} - R_f = \alpha_1 +$

$$\beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} + \beta_I^{(p)}(CMA)_{it} + \beta_{TR}^{(p)}(UMD)_{it} + E_{it},$$

$$LMW:R_{LMW} - R_f = \alpha_1 + \beta_M^{(p)}(MKT)_{it} + \beta_S^{(p)}(SMB)_{it} + \beta_H^{(p)}(HML)_{it} + \beta_P^{(p)}(RMW)_{it} +$$

$$\beta_I^{(p)}(CMA)_{it} + \beta_{TR}^{(p)}(UMD)_{it} + E_{it}$$


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## 5. Conclusion

Loser, Winner and Arbitrage portfolios excess returns are studied for both countries at first with application of mean t-test methodology for identification of presence of reversal anomaly in the market. Positive mean t-test results indicate effect of overreaction of investors towards new information moving the prices away from fundamental values. Results indicate presence of overreaction effect for both markets Pakistan and India with average cumulative abnormal excess returns earnings of 11% in both countries. The maximum return is as high as 43% for India and 28% for Pakistan. The minimum returns are as low as -0.057% for India and -0.03% for Pakistan. Further, the median value is 3% and 1 percent for India and Pakistan indicating 50% times the reversal profits are greater than 3% and 1% on monthly basis. The examination of risk adjusted significant firm specific driving factors of reversal anomaly is studied with application of Quantile regression models. The CAPM model failed to exist both in Pakistan and India as alpha values are quite large than beta values. The results and findings support the results of De Bondt and Thaler (1987), Zarowin (1990), who explains that beta risks alone cannot explain the long run reversal effect. The value of beta is significant and less than 1 nearly zero in India market whereas the value of beta is greater than 1 in Pakistan market for winner portfolio. This suggests overall performance of Pakistan market securities are aggressive generating momentum returns whereas, overall Indian market securities depict defensive behavior generating reversal profits.

The three factor model does an excellent job in explaining risk adjusted returns in India. Market risk premium is insignificant in arbitrage but size risk premium (37%) and book to market risk premium (21%) beta values are large and significant capturing most of the firm specific risk as compared to merely overreaction effect identified by alpha lower values. This value of SMB-beta positive and HML-beta positive result reveals smaller firms with value risk premium accruing better risk bearing reward than the bigger ones in India supporting the results of (Shoib and Siddiqui, 2017). This depicts smaller firms to become winner in the long run to generate higher excess returns as they have value premium supporting the results of (Da et.al., 2013; Chiao et al., 2005; Dimson & Mussavian, 2000). However, in Pakistan the three factor model also failed to explain risk adjusted returns as alpha values are quite higher (-2.64) than beta values of market (MKT; -1.55), size (SMB; -0.163) and value risk premiums (HML; -0.029). The negative value of SMB-beta depicts bigger firms to earn better risk premium than smaller ones in Pakistan. The HML-beta also depicts negative sign. This clearly indicates the growth of Pakistan markets. Big firms have growth factor and during the growth of firm's excess returns are negatively affected. Higher the HML- growth factor lower would be the excess returns. Similar, results are supported by Malin and Veeraraghavan (2004) and Shoib and Siddiqui, (2017) who found insignificance of value factor and size factor in the cross-sectional regressions of portfolio returns in Pakistan. However, they applied both simple linear regression models and quantile regression models. The results of SMB-beta in simple linear regression models depict positive SMB-beta and median based quantile regression models depict -SMB beta. This indicates presence of outliers in form of



high market capitalization of firms. In mean test high market capitalization firms are included deducing the fact, bigger firms are responsible for generating reversal profits in the market.

The five factor model also performs excellent job in Indian Stock market. Profitability risk premium generates positive reversal profit in arbitrage portfolio whereas Investment risk arbitrage portfolio generates significant negative returns -0.43. However, the value of beta is very low for profitability 0.0002. This depicts aggressive investment firms with robust profits perform better than conservative in investments and with robust profitable firms. However, in Pakistan the five factor model weakly worked in generating positive and significant asset price risk bearing factor returns. The arbitrage portfolio indicates reversal profits with high book to market equity factor and investment factor. The other factors betas are not significant and almost equal to alpha values. Analysis of five factor model revealed in Pakistan stock market investors should build portfolios with high book to market equity and high profitability generates reversal profits in the long run. Investment factor (CMA) and profitability factor (RMW) results are consistent with results of Shaharuddin et. al. (2018) and Dewan et.al. (2007) who also demonstrated that firms in India which contribute maximum with high amount of fixed investments are found to have profitable long term returns. Similarly, Rensburg et.al., (2003) reported price to earnings ratio as a significant contributor in generating abnormal returns in the market. In Pakistan and India significant beta value of arbitrage portfolio of robust profitability factor and high investment factor demonstrate firms that substantially increase capital investments subsequently achieve negative benchmark adjusted returns. The six factor model with liquidity risk premium factor generates exciting results for both countries in India and Pakistan. Other remaining factors contributions get small whereas liquidity factor generates highest beta values amongst 6 factors regressed on loser, winner and arbitrage portfolio returns. For Indian market, the liquidity risk premium generates positive and significant arbitrage reversal profits of 0.2529. The positive  $Beta_{TR}$  of Liquidity risk premium is consistent with supporting that investor with high liquidity in market bear high risk leading to higher return adjustments to reimburse them for substantial cost of trading these assets and vice versa (Ibbotson et al., 2013). In the context of PSX and BSE Sensex where there are no officially designated market makers, liquidity provision increase is not just restricted to designated market makers. Even the individual investors also act as liquidity provider suggested by Kaniel, Saar and Titman (2008).

In Pakistan Liquidity factor depicts significant negative beta value of -0.82. In Pakistan negative relation of liquidity with stock returns are depicted. The loser portfolio generates less returns in the long run compared to winner firms. This enlightens us to see the liquidity risk premium was the main contributor in generating overall momentum returns. If portfolios are established based on liquidity factor, in Pakistan liquidity risk premium generate momentum returns in the long run not reversal returns. The results of negative impact of liquidity risk premium are supported by Akram (2014) in Pakistan. The less liquid stocks cause the demand of rational investor to get higher in case of returns as sensitivity towards liquidity is considered as risk. Higher the risk associated, higher would be associated returns (Akram, 2014). With inclusion of liquidity factor, except profitability factor; other factors betas not only became significant, with high beta values but also positive contrarian profits are depicted in arbitrage portfolio betas of market risk premium, size risk premium, valuation risk premium and profitability risk premium. In terms of implications; the study has strong implications from theoretical as well as practical perspective. Institutional investors, portfolio managers, stock market analysts as well as retail investors should not

implement long run contrarian strategy in Indian stock. The long run contrarian profits obtained are nothing but compensation for bearing high risk towards firm specific asset price risk factors. In Pakistan, vice versa implications are depicted. Institutional investors, portfolio managers, stock market analysts should implement long run contrarian strategy in Pakistan stock market. The long run contrarian profits are not compensation for bearing high risk towards firm specific asset price risk factors but are result of overreaction of investors towards new information in the market which can be regarded as anomaly to EMH. The comparison of Pakistan and India stock markets results and findings are interesting for regional and international investors looking for diversification benefits of traditional asset classes.

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