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THE INFLUENCE OF FPI ON THE BEHAVIORAL BIASES OF DOMESTIC INSTITUTIONAL INVESTORS

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Abstract

The study is about the influence of foreign portfolio investment (FPI) on the investment decisions biases of the domestic institutional investors operating in Pakistan Stock Exchange (PSX). These biases include conservatism, overconfidence and herding effect. The influence of FPI flows on the investment decisions of domestic institutional investors is examined by analyzing the primary data, collected through questionnaire from all the Domestic Institutional Investors (DIIs), listed at PSX. The questionnaire comprised of questions, covering three behavioral factors namely overconfidence, conservatism and herding effect in the context of FPI. Results show that influx of FPI has a positive and significant effect on the confidence of local investors and vice versa. DIIs behave conservative due to FPI fluctuations but they do herd positively with the investment decisions of foreign investors. The study provide significant guidance to the domestic investors (both institutional and retail) as well as foreign investors to invest wisely according to the movements in the FPI flows.

Key Words: *Foreign Portfolio Investment (FPI), Domestic Institutional Investors (DIIs), Conservatism, Herding Effect.*

JEL Codes: *F21,F3, G11, G15, G30*

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1. INTRODUCTION

The investment behavior may either be rational or irrational. Rational behaviour is based on financial facts and figures whereas irrational behaviour is based upon the behavioral sentiments like mood swings and subjective biases influencing the decisions making process. After the proposition of efficient market hypothesis (EMH) by Samuelson and Fama in 1960s, research has been carried to extend the work on EMH and new field in finance emerged, called Behavioral Finance with the advent of Prospect theory by Kahneman and Tversky in 1979. The rational behaviour is based on the traditional models and theories, including William Sharpe (1964) Capital Asset Pricing Model (CAPM), Black and Scholes model (1973) etc. Psychologists challenged the assumption, that traditional theories are not solely responsible for investment decisions. Many empirical studies showed that behavior and human sentiments can affect investment decisions which is not the domain of traditional finance theories to explain (Vasile et al., 2010; Ramnath et al., 2008; Eames et al., 2002; Heaton, 2002; Rozeff & Kinney, 1976).

The centre of battle between behavioral finance, standard finance and professional investors' decisions is the market efficiency. The meaning of market efficiency is two fold. Firstly, it means that no one can beat the market. Secondly, security prices are rational, means that they have all the utilitarian characteristics (Lo, 2005 and Shleifer, 2000). Here, they lack the expressive value characteristics that are the sentiments attached with them. Behavioral finance covers these sentiments (Statman, 1999).

Behavioural finance is a blend of Psychological and Sociological theories with financial investment decisions. Many behavioral factors affect the investors' investment decisions process (Gajjala, 2005). These factors include over-optimism, impudence or overconfidence, intuitive conflict, internal attachment, representativeness, mental accounting, status quo and loss aversion. Due to the behaviour of managers, stocks are undervalued

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resulting in external financing (Wafula, 2018; Malmendier, Tate, & Yan, 2007 and Heaton, 2002). Optimistic investors mostly have buying intentions and pessimistic investor exhibit selling behaviour (Zahera, & Bansal, 2018; Eames, Glover & Kennedy, 2002). Due to optimistic behaviour about certain favourable events, overvaluation occurs and undervaluation occurs as a result of pessimistic behaviour about undesirable events (Ramnath, Rock and Shane, 2008). Pakistan stock market is an emerging and volatile market, yet it has yielded good returns over the years (Iqbal, 2012). The volatility is caused by many host country macroeconomic variables and stock market characteristics (Ullah & Shah, 2019). Foreign investment is majorly of two types, foreign direct investment (FDI) and foreign portfolio investment (FPI). The earlier hold control over the operations and management whereas, the later is investment in the foreign stocks trading at stock market (Haider, Khan, & Abdulahi, 2016; Stepanyan, (2011). FPI flows affect stock market performance, so, it may influence investors investment decisions (Ikezam, 2018). Hence, in order to examine this notion, this study is going to investigate the influence of FPI fluctuations on the domestic institutional investors operating in PSX.

DIIs have an eye on the fluctuations in FPI flows in a stock market. These investment flows may influence the investment decisions of domestic investors because investment inflows and outflows are viewed as signals towards something good or bad happening (Chetanbhai & Desai, 2019). Study of this phenomena that how domestic institutional investors anticipate FPI flows and how it influence their investment decisions is very important because mostly retail investors tend to follow institutional investors. So, here, it is very important to examine the investors' behavioral factors like confidence level, conservatism and herding effect in domestic institutional investors, influenced by variations in FPI flows, in order to take better investment decisions. This study examine these factors to guide the investors and policymakers in a better way.

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The study tends to explore the investment behaviour of DIIs in the presence of FPI in PSX and to analyse the influence of FPI flows on confidence, conservatism and herding behaviour of domestic institutional investors operating in PSX. Also the study guide investors to take better investment decisions; regulators to take necessary steps to compensate both domestic and foreign investors due to variations in FPI flows.

2. LITERATURE REVIEW

Many studies have empirically tested the behavioural biases influencing the investors' investment decisions (Mittal, 2022; Sattar et al., 2020; Aigbovo & Ilaboya, 2019; Kumar & Goyal, 2015). Researchers like Vasile, Radu, and Ciprian (2010) looked for the irrational and sentimental behaviour in intuitive Psychology. DeBondt and Thaler (1995) found that overconfidence is the prevailing behavioural biasness and affects investment decisions. It is because investors overestimate their abilities, knowledge, skills and winning situations. Kilka and Weber (2000) found that Germans are more confident about German stock returns and same the case with American investors while forecasting the American stock returns. Fisher and Statman (2000) found that behavioural differences significantly affect the decisions of Wall Street experts and individual investors. Another study of Krishnan and Booker (2002) showed that the suggestions of experts and analysts significantly alter investors' decision-making process and the effect of sentimental factors cannot be ignored. Rozeff and Kinney (1976) say that in January the prices exhibit a rise without any fundamental, which is termed as January effect. According to him, this is because of the general optimistic behaviour with the start of a new year.

Merikas et al., (2011) studied investors' behaviour at Athens Stock Exchange (ASE) through a questionnaire and found that there is certain correlation between the factors explained by Behavioural Finance Theory and the factors identified by the empirical studies undertaken on investors' behaviour. The study further concluded that investors also use certain

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economic criteria with statistics as well, for making investment decisions. Tamimi and Kalli (2009) explained the overall decision-making process of equity investors in UAE and found six factors given by traditional finance theories and five factors that Behavioural finance theory embodied. Srivastava (2006) shows that behavioural elements of stocks investors in India cannot be ignored. The study also concluded that investors behave irrationally because of the market inefficiency; investors' decisions made solely on past data and self-perceptions.

Varadharajan and Vikkraman (2013) studying the active behaviour of portfolio investors found that investors having high self-monitored attitude take more time in making investment decision. Similarly, Jain and Mandot (2012) found that some demographic factors like gender, marital status, age, education and income level and risk tolerance affect investors behaviour. Masomi and Ghayekhloo (2011) analysing Tehran Stock Exchange (TSE) came up with factors like overconfidence, representativeness, risk aversion, mental accounting, price changes, preferences etc. responsible for altering institutional investors' behaviour.

2.1 Foreign Investors' Behaviour

Correlation of investors' sentiments across the internationally integrated markets is always expected. Beckmann et al., (2011), Baker et al., (2012) and Bai (2014) investigated the above phenomena and explored three transmission channels of coinsurance of investor sentiment contagion. Firstly, optimistic behaviour regarding one country's investment prospects by investors in the other country may boost up share prices in that country. Secondly, optimistic behaviour of investors regarding assets of other markets may drive appetite towards risky assets, including international stocks. These two channels posit that influence of foreign sentiments on the assets prices of the home market takes place as foreign investors make investment. Thirdly, the optimistic behaviour of foreign investors about their home country cause the behaviour of domestic investors in the similar direction because of the

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correlation between the characteristics of the two countries. So, domestic assets prices are indirectly affected by foreign sentiments via domestic sentiments.

The fourth realizable execution is that foreign sentiment may influence domestic sentiment directly due herding behaviour of the noise traders. So, domestic investors become more optimistic and trade accordingly as this channel impact share prices. The "word of mouth" has great influence on investors' sentiments and their decisions (Joshi et al., 2018; Ornelas & Alemanni, 2008; Brown et al., 2008; Bowe & Domuta, 2001 and Shiller, 1984). Investors trading on one trading floor have indeed greater influence over one another sentiments but in today's era of globalization, internet based trading has made it possible that they affect the sentiments and trading behaviour (Sabherwal et al., 2011). Moreover, this effect of foreign sentiment become more severe when there is more foreign investment in the domestic stocks like in the case of UK. National Statistics of UK show that in 2012 53.2% values of stocks were owned by foreign investors in which 48.3% investors belonged to North America.

Investment is an international business nowadays, and it is very evident that US investors settled in UK may consider the views of US investors based locally, also, the British investors in London. Hence, it seems that sentiment in one country may directly impact sentiment in another country with influence on the investment decisions.

In order to explore the correlation between cross-borders investors sentiments, survey-based indices are used by Beckmann et. al., (2011) and composed indices are used by Baker et al., (2012) and Bai (2014). Common information which frame sentiments in many countries may cause contagion (Ornelas & Alemanni, 2008). This also cause investors to herd across borders. Thus sentiment in one country may be affected due sentiment in another country. Nevertheless, alteration of sentiments in one country may result in alteration in sentiments in another country no matter how they are measured

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in the other countries. To examine contagion between UK, US and German sentiment, UK composed indices, US survey- based indices, German survey sentiment index and Sentix, are used.

2.2 Investors' Behaviour and Returns

DeLong et al., (1990) devised the noise traders models and advise that market fundamentals are not the sole factors of investors investment decisions rather asset prices are more influenced by the uncertain behaviour of investors. This gives the theoretical hypothesis that the level of normal bullish trend of noise traders influence the investment returns. Yu and Yuan, (2011) and Xu and Green (2013) empirically agreed with the notion that investors sentiments do significantly explain the behaviour of stock returns in different scenarios even after controlling for "rational" effects of mean-variance. There is a significant correlation between sentiments and long term returns (Brown and Cliff, 2005). Bandopadhyaya and Jones (2008), Wanget al., (2006) found that sentiment, return, and volatility have causal relationship and show that returns Granger-cause the sentiment but not the other way around. While investigating relationship between investors' sentiment and future stock returns, Schmeling (2009) found that sentiment negatively and significantly influence expected future stock returns and it decrease with the forecasted time. Zouaoui et al., (2011) studied influence of sentiment on stock market crisis. They used logistic model for panel data and found a negative relationship between investors sentiment and stocks performance. Stock market crisis is positively affected by investors' sentiment in short period of time that is within one year. Institutions are risk averse and prefer to invest in low volatile stock. Further, impact of the institutional investment is negative on the stock returns volatility. Hence, it plays a significant role in the stability of PSX (Abbas and Badshah, 2017).

2.3: FPI and Investors Confidence

Individual's confidence on their own judgments is one of the most prominent psychological biases due to which they undervalue variances (Anees, 2022;

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Ainia & Lutfi, 2019; Iqbal et al., 2013; Hogarth, 1978; Kahneman et al., 1982; Lichtenstein et al., 1978). Empirical evidences show that overconfidence is more intense for distributed and abeyance responsive tasks and experts can easily predict them well in such conditions (Daniel et al., 1998). Investors overvalue the information precision whenever subjective confidence or the inside information is involved in investment decision making process (Sadiq et al., 2021; Caballe & Sakovice, 2003; Wang, 1998; Odean, 1998; Kyle & Wang, 1997) and hence response to information is unusual regardless of its objective accuracy.

Confidence of domestic investors increases as the participation of foreign investors increases in the market because they thought of risk sharing phenomena and mobilization of local resources. In similar fashion, with increase of FPI, domestic equity market becomes active and efficiency increases with ability to support flotation of new securities (Aromolaran & Daw, 2021; Usman & Siddiqui, 2019). An event study carried by Ngugi et al., (2003) on Kenyan equity market to examine the pre and post effects of institutional reforms in the market which include the relaxation of investment barriers to foreign investors. They established that with the influx of foreign investment, a positive change starts on like increase in market efficiency, improving liquidity and decrease in volatility. Though some studies have not recognized the positive effects of foreign investment on market liquidity and efficiency (Chang et al., 1999) but most of the studies support this notion (Stulz, 1999).

Madaan and Singh (2019), Metawa et al., (2019), Daniel et al., (2001, 1998) and Odean (1998) investigated the impact of overconfidence on stocks prices. They show that private information is miss valued due to investors sentiment. This leads to the divergence of price from the fundamental values thus result in more uncertainty and positively serially correlated returns. Furthermore, overconfidence bias result in miss-valuation of private information rather then relying on the public information and thus they

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overreact to the private information which drag the assets prices forth from the fundamentals. This divergence can both be be positive as well as negative. In case of positiveness, investors boost up the prices and with passage of time those information becomes diluted. With the arrival of further public news, the overreaction slows down and is corrected. This result in price changes which are negatively auto-correlated at both short and long lags, and volatilizes about private signals being increased. Models of Odean show that confident behaviour of investors result in greater liquidity. So it is evident from the literature that investor's confidence do affect stock prices. In case of foreign portfolio investment to a particular market it is very natural that word of mouth and herding effect of FPI do have impact on the confidence local or the domestic investors.

2.4 FPI and Investors Conservatism

Conservatism is a heuristic bias which means that individuals are accommodating arrival new information very slowly. So, the response to the valuation of stock prices is not very swift with some new earning news. Not updating assets valuation with the arrival of new information in case of conservative and representative sentimental behaviour leads to under reaction or overreaction of assets prices to the news and producing market volatility and momentum (Ani; 2021; Nadeesha, 2019). The entry of foreign invest to a local market surly has impact on the domestic investor. As said earlier, domestic investors will respond positively, being optimistic about the stocks market performance as it will improve stock returns, liquidity and overall performance of the stock market. But at the same time some investors may overly perceive the nagativities of FPI on stock market and may restrain themselves to investment aggressively in the stock market in the presence of foreign investors (Dewi et al., 2023; Simbi et al., 2023).

2.5 Herding and Feedback Trading

The behavioral inclination to go with the actions of others is called herding. It is a phenomena in which individuals follow others and copying other groups

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operating in the market rather then relying on their own information processing abilities. Some driving forces shape the decisions of investors who are herding such as principal agent relationship, information difference and investors sentiments (Abdulkadir, 2023; Zheng et al., 2015; Spyrou, 2013; Baddeley, 2010).

Empirical evidences show that despite the fact that even individuals realize that some groups decisions are wrong still they imitate them (Nofsinger, 2017; Sherif & Murphy, 1936). Welch (2000), found that an investor follow other because he consider that they are more informative than himself so he follow them in investment decisions.Welch (2000), in his study found that, Principal-agent relationship is based on herd behavior and is due to the bonus given by the compensation scheme which are managed by fund managers who make investments on behalf of investors.

Breugem and Buss (2019), Shiller (1995) and Banerjee (1992) suggested that some investors have special private information. So, sometimes following them in the investment decisions can lead to profitability. As other human beings, investors also interact with one another and they may agree with the investment strategies that they are implementing. So, in this way they may follow and imitate them. All these convergence of opinions lead to the herding behaviour of investors. Herding can be rational as well as irrational (Bikhchandani & Sharma, 2001). Processing and analyzing information from many sources in a systematic and meaningful way to take investment decisions is termed as rational form of herding. Results from Bayesian models can be good or bad as it rely upon the correctness of actions and information processed (Baddeley, 2010). Learning from others' course of action is all about the mental processing of information. Keynes (1936) determined that as for as herding is concerned it is advisable to be traditionally incorrect than nontraditional correct (Baddeley, 2010). Similarly, Hirshleifer and Teoh (2003) posit that sometimes irrational phenomenon naturally emerge from the rational environment. Irrational herding emerge from the processing of

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sociological, psychological and emotional factors while making investment decisions.

An individual is affected by the investment decisions and financial dealings of other investors. These effects may be rational and may be irrational due to herding element in their investment decisions and their emotional reaction to the information available.

In reality capital markets are very active and efficient. Investors make investment decisions by analyzing the uncertainties and opportunities by using there own skills, experiences and beliefs. The assets prices are influenced by the heterogeneous lot of investors with different experiences, beliefs and backgrounds. When investors interact with noise traders in the market, along with market fundamentals they are simultaneously aligning their investment strategies to respond to the other counterparts. The mispricing phenomena prolongs and stay unadjusted due to the uncertain behaviour of noise traders' sentiment even after betting of arbitrageurs against mispricing which restrict the rational traders for opposing the noise traders to correct the mispricig phenomena (Gajjala, 2005).

Batra (2003) analyzed the trading behavior of Foreign Institutional Investors (FIIs) and the influence of behavioral biases on equity market steadiness. It was found that FIIs were chasing the trend and considered as positive feedback traders. No long run relation was found between stocks purchase and returns. Foreign investors were herding on trend basis. In literature herding covers a popular subject of ignorance, unfamiliarity and trading on sentiment by investors. Fads and fashions affect investment decisions of the investors (Venkatesh et al., 2021; Anuradha, & Rajendran, 2014; Stepanyan, 2011; Shiller, 1984; De Long et al., 1990). Shleifer and Summers (1990) said that mostly individual investors follow large market players like brokers, financial analysts and experts. Nofsinger and Sias (1999) postulated that individual investors are positive feedback trader and are selling past losers. Conversely, Shefrin and Statman (1985) claimed that

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individual investors are negative feedback traders and sell past winners. Patel, Zeckhauser and Hendricks (1991) establish that investment in mutual funds played a vital role in the market performance. Sirri and Tufano (1998) posit that investors invest proportionally in assets having good past performance. On other hand, Odean (1998) said that investors are negative feedback traders that is they sell past winners rather then losers.

Sehgal and Tripathi (2009) explored the investment behavior of Financial Institutional Investors (FIIs) in their study and found that they are either positive feedback traders or rely on herding. Furthermore, FIIs display return chasing behavior in short run as wait for the market information to disseminated (Dasgupta et al., 2011). FIIs have strong herding behavior at aggregate level than at a single stock level. This might be due to the higher familiarity of FIIs regarding the market fundamentals of singular stock level .

2.6 Herding and Feedback Trading by Institutional Investors

It is popularly assumed that herding by institutional investors chiefly lead to large price changes of asset and this destabilize shares prices. It is not necessary that herding institutional investors destabilizing shares price (Zheng & Zhu, 2015; Lakonishok, el al., 1992). For instance, in case of better hands over information, institutional investors will be going away from overvalued shares and will herd to overvalued shares thus moving prices towards equilibrium (Mukherjee & Tiwari, 2022; Kumar, 2022; Mukherjee & Tiwari, 2022; Alhussayen, 2022; Dhananjaya, 2020; Hirshleifer et al., 1994; Froot et al., 1992; Bikhchandani et al., 1992).

Lakshman et al., (2013) investigated impact of different market variables and inflows of FII on herding of institutional investors. They used high frequency of daily data and employed VAR models. Mukherjee and Roy (2011) compared drivers of investment decisions of mutual funds with FIIs and found that in case of investment in stocks, decisions of FII are influenced by the decisions of mutual funds and both of them account international interest rates (Jain, 2012).

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2.7 Herding Behaviour in Emerging Markets

Researchers got significant results of herding behavior in Asian markets like BRIC, Pakistan, South Korea and Taiwan etc. (Yasir & Onder, 2023; Chhimwal & Bapat, 2020; Emenike & Amu, 2019; Arora, 2016; Javaira & Hassan, 2015; Chen 2002; Kim & Wei, 1999; Choe et al., 1999; Chang et al., 1999). Investors buy or sell in groups if they are positive feedback traders and likely to herd (Abdulkadir, 2023). Kim and Wei (1999) and Choe et al., (1999) claimed that local institutional investors of Korea used to negative-feedback trade that is selling recent winners and purchasing recent losers whereas foreign institutional investors were doing opposite before Asian financial crisis, but during the crisis both tended to positive feedback trade and herding behaviour of FII was more important. Conversely, Jain (2012) and Choe et al., (1999) argued that foreign investors herding can't be blamed for destablising stock market as no indication of foreign investors positive feedback trading was found. Chang et al., (1999) suggested that due to the lack of company's specific information, foreign investors may herd as mostly they have macroeconomic information.

According to economic survey of Pakistan in 2021-22, foreign flows to Pakistan has increased immensely and the percentage ratio of foreign inflows to free float weighted market capitalization. This presence of international investment therefore shows that they are expected to influence Pakistan stock market and accordingly affect Pakistani fund managers decision making process.

Heuristic Theory says that thoughts affect many decisions regarding the probability of unsure activities (Tversky and Kahneman, 1974 & 1979). This means that people do not totally rely on the traditional finance objective judgments rather they also account for the subjective judgments to analyse certain information (Kahneman & Riepe, 1998). Heuristics in human decision-making can be defined as simple strategies, mental shortcuts and rules of thumb that people created on the basis of their experience and they

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use them while facing certain difficult situations to take decisions (Jahanzeb, 2012; Fairchild, 2010; Shefrin, 2002; Lo, 2005; Ritter, 2003). It follows that heuristics give certain guidance to save time and effort less when making certain decision. For example, Ritter (2003) declares that the rules of thumb are intended to make quick decisions without wasting time and energy, analyzing complex scenarios, assessing probabilities and forecasting values, resulting in simpler judgments (Baker & Nofsinger, 2002; Tversky & Kahneman, 1974, 1973).

Kahneman and Tversky (1979) projected prospect theory which focuses on how people react when they face losses or gain. This theory was against Expected Utility theory which focuses on how people make choices in uncertain and risky situations. They found that investor give value to return on investment than to loss on investment. Investor love to get gain in investment and try to minimize risk in all aspect (Waweru et al., 2008). Further, that people use to take decisions on their own choices in spite of taking decisions systematically. They also proposed two phases of these. In first phase, they emphasize on editing where they refer to different options available in a situation and then investors take final decision. This phase can also be referred as a procedure of abstracting the risk-free part of a prospect from its unsafe component. Second phase is the evaluation phase, the emended options are investigated and are matched to prospects, high score value is selected. Shefrin and Statman (1985) posit that decision making usually refer to use S-shaped value function to assess the addressable options. The critical review of literature shows that investors behavior is subject to the different heuristics and biases. Further, the international events may alter investment behaviour of investors across different markets thus giving birth to certain behavioral trends like herding, conservatism and being overconfident in FPI flows. It is important to explore these behavioral trends in DIIs in the presence of FPI flows, as they being the trend setters for the individual investors.Hence, the hypothesis established in light of the literature are:

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H_1: FPI flow do affect investment decision behavior of DIIs.

Figure 01 shows the established relationship between FPI flows and behavioral response of DIIs in light of the literature review which is investigated.

3. RESEARCH METHODS AND ANALYSIS

Empirical studies (see literature review) show that investors investment behaviour in stock market depends on many factors. FPI flows is also one of those factors among macroeconomic factors and other stock market characteristics which has impact on the stock market. How investors perceive FPI while making investment decisions is a desirable quest. An answer for this question is researched in this study by gathering primary data through questionnaire.

3.1 Measurement of Investors Behaviour

The more important thing is the measurement and quantification of the investor's behaviour rather than looking into how longer investors sentiments affects stocks trading (Baker & Wurgler, 2007).

One way of measuring is conducting questionnaires and interviews based surveys which is also called direct measure method. In this method market players are asked directly to express their views and expectations about the market. American Association of Individual Investors (AAII) and Investors Intelligence (II) are the most popular examples of such surveys. Individual investors are investigated by American Association of Individual Investors (AAII) whereas professional investors are targeted by Investors Intelligence (II) which is used as institutional investors' sentiments proxy (Brown & Cliff, 2004). Brown (1999) investigated relationship between investor's behavioural factors and closed end funds fluctuations by using AAII. Similarly, Lee, Jiang and Indro (2002) explored the relationship between the investor's sentiments and returns of the stocks while using II. Rutkowska (2017), Brown & Cliff (2005), Verma and Soydemir, (2006) and Fong (2013) are amongst others to use both AAII and II.

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Another survey based indicator to measure investors behaviour is the investors confidence index (ICI) (Chowdhury & Barua, 2009). Beckmann et al., (2011) and Schmeling (2009) explored the flow of investor's sentiments across borders from one country to another while using ICI. They discovered that stock returns are significantly influenced by investors' sentiments and the flows of investor's sentiments across borders also affect the stocks returns. Survey based measures of sentiments are more realistic as they are based upon the primary data directly collected from the market investors. Market players express their views about the market which gives a realistic and up to date general trend of the market.

3.2 Variables Specification

Influence of FPI flows on the behaviour of institutional investors while making investment decisions, is explored through a questionnaire based survey. Different questions accounted for different factors given by the stated theories and the literature review. To make the questionnaire best representative, broad categories of factors are incorporated in the questionnaire, which reflect the investors' behaviour in the context of FPI. Most relevant and appropriate behavioral factors including investors' confidence, conservatism and herding behaviour of domestic institutional investors (DII) operating in PSX, are blended in the questionnaires in light of the relevant literature (Komba, 2016; Bansal, 2015; Bakar & Yi, 2015; Shikuku, 2014; Kengatharan, 2014; Rahul, 2012 and UNCTAD, 1999). The close ended questionnaire comprise of thirty questions covering each behavioral factor (confidence, conservatism and herding). Each of the behavioral factor is inquired through ten sub-questions.

Questionnaire respondents are all the domestic institutional investors (DII) of PSX. Five point Likert scale is used for the ranking of questions. This technique is widely used to analyse the respondents' views and attitudes (Fisher, 2010). These points are from one to five representing strongly disagree, disagree, neutral, agree, and strongly agree. This technique helps in

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getting higher response rate. There are many advantages of closed ended questionnaire as they are pre-coded it can easily be processed and analysed (Bryman & Bell, 2007). It makes comparison between two or more variables easy (Lim, 2012). The results are more concrete and quantifiable. It also makes job of the respondents easy and more clarify that what researcher want to ask.

All of the 78 institutional investors operating in PSX are targeted. Among them 28 are investment banks, 32 are insurance companies, 8 are mutual fund institutions and 10 are investment companies.

3.3 Data Analysis Procedure

Total of 156 respondents responded to the questionnaire covering two participants from each institution. The collected data is treated and investigated by using a statistical software SPSS. Statistical techniques are implied on the data in order to achieve the objectives. These techniques include; descriptive analysis, reliability testing through Cronbach's Alpha test, Logistic regression model and best model selection method. Statistical procedures have been carried out in the data analysis and interpretation in order to reach the concrete findings.

3.4 Descriptive Analysis

Descriptive Statistics including mean, median, mode, standard deviation, kurtosis, skewness etc are measured to explain the series of data. The level of effect of investor biases variables on the investment decision process of Pakistani stock market institutional investors is checked through descriptive analysis. The main theme of every statistical data analyses is to elaborate and specify in the selected data set average and variation. For the determination of this, basic descriptive statistics methods are used. Furthermore, for the examination of selected data shape kurtosis and skewness are calculated to know about the shape of data.

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Table 3.1 Descriptive Statistics of Confidence, Conservatism and Herding Effect

	Minimum	Maximum	Mean	Std.	Skewness	Kurtosis
Confidence	2.40	4.50	3.7681	0.3728	-1.142	2.603
Conservatism	2.70	4.70	3.7650	0.4108	-0.030	-0.187
Herding Effect	2.80	4.50	3.4850	0.3594	0.445	-0.335

3.5 Validity and Reliability of Data

The data in applied research may be primary or secondary collected from other sources and it is essential that it should be valid and reliable. Precision and accuracy in results depends upon the reliability of the data. If data is not reliable then findings are not acceptable. For this reason, it is important to test reliability of the data before preceding for further statistical analysis. The widely used test for testing reliability is the Cronbach's alpha test statistic in behavioral and social researches (Liu, Wu & Zumbo, 2010). Hence, Cronbach's alpha test is used to check the reliability of the data set containing the measured variables. If value of Cronbach's Alpha statistics is closed to 1 then it means that the data is valid and reliable and one can proceed further, whereas value near to zero mean data is not reliable and will give statistically weak results. Table 3.2 gives the test statistic value of Cronbach alpha. The value of Cronbach alpha is 0.615, testing the reliability of 31 number of items of the questionnaire, which is in the acceptable range, showing that the data is reliable and can be tested further.

Table 3.2 Reliability Statistics of Collected Primary Data

Cronbach's Alpha	Number of Items
0.615	31

3.6 Correlation Analysis

In order to capture the strength and direction of association among the selected variables, correlation analysis is undertaken. Two scores taken into account in this technique from a single variable. Correlation technique shows

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the strength of relationship between the independent variables (Schober et al., 2018). The Wald test also called the Wald Chi-Squared Test, is used to check out that whether variables in a model are significant or not.

Bhaduri and Samuel (2009) examined the the correlation and speed of integration of stock markets by employing logistic smooth transition method and found that rate of integration between Indian stock market and world market is insignificant.

Table 3.3 gives results of correlation among the main variables of the study. As the main variables were calculated on the basis of all sub-variables in each main variable by taking their mean so the main variables becomes continuous in nature. Pearson correlation was calculated for each pair of main variables because of continuous nature and their significance was observed at two different level of significance as five percent and one percent ($\alpha = 0.05, 0.01$). Correlation between pairs of main variables was recorded positive while no negative correlation was observed. The correlation between confidence and herding effect bias and between conservatism and herding effect bias found statistically significant at one percent level of significance ($\alpha = 0.01$) and correlation between confidence and conservatism at five percent level of significance ($\alpha = 0.05$).

Table 3.3: Correlations Between Main Variables

		Confidence	Conservatism	Herding Effect Bias
Confidence	Pearson CO	1	0.184*	0.232**
	Sig. (2-tailed)		0.020	0.003
Conservatism	Pearson CO	0.184*	1	0.560**
	Sig. (2-tailed)	0.020		0.000
Herding	Pearson CO	0.232**	0.560**	1

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Effect Bias	Sig. (2-tailed)	0.003	0.000	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

3.7 Logistic Regression Model

The dependent variable investment decision behavior, explained by three sub variables that is confidence level, conservatism and herding; has two possible outcomes. To analyse this association between the dependent and independent variables, the method of logistic regression analysis is used. Logistic regression is used when the selected dependent variable has only two possibilities, such as 0 and 1 or may be Yes and No etc. This model was formulated by statistician David Cox in 1958. Let "Y" be the dependent variable having only two categories "a = 2" and $X_1, X_2, X_3, \ldots, X_n$ are independent variables, so, the model is written as:

$$P_a = \text{Prob}\left(Y = \frac{a}{X}\right) = \frac{e^{X\beta_a}}{1 + e^{X\beta_2} + e^{X\beta_3} + , \ldots, + e^{X\beta_A}}$$

So, here we also deal with categorical variable that is investment decision behavior biases which may be affected or not affected by FPI flows. The two realizable result from data may take two stances.

Taking investment decision due the presence of FPI = 1

Not taking investment decision due the presence of FP = 0

Results of the table 3.4 demonstrate the model summary of the fitted logistic regression model. The best fitted logistic regression model is selected on the basis of -2 Log likelihood ratio test and two types of pseudo R Square through forward conditional method. These statistics are calculated in order to estimate the explained variance in the fitted model. The minimum value of -2 Log likelihood ratio test is considered best comparatively to the whole model and the maximum values for both types of pseudo R Square comparatively to the main model is also considered best. Model having both these qualities called optimum model. The calculated statistics of Cox & Snell R Square is

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0.469 and Nagelkerke R Square is 0.638. This means that around 47 percent and 64 percent of variation is explained by independent variable of the model which are well accepted.

3.8 Optimum Model Summary

Table 3.4 presents the results of the best fitted logistic regression model summary through -2 Log likelihood/ likelihood ratio test and two type's pseudo R Square. It's includes the results of main model at step one and the best model at step two. The best model was selected at step two, on the basis of the said criterion with optimum number of independent variables. The value -2 Log likelihood for model in step-1 and step-2 are 122.998 and 112.957 respectively. No much deference was observed but however the value for model in step-2 was observed small which is an indication of optimum/best model. Also, the recorded values of Cox & Snell R Square = 0.429 and Nagelkerke R Square = 0.584 for model in step-1. It means that about 43 percent and 58 percent variation is explained in dependent variable on the basis of given independent variables. While for model in step-2 the recorded values of Cox & Snell R Square = 0.464 and Nagelkerke R Square = 0.631. This shows that about 47 percent and 63 percent variation is explained in dependent variable on the basis of given independent variables, which is quite good as compare to model in step-1. Furthermore, on the basis of these results model present in step-2 is the selected best logistic regression model.

Table 3.4: Optimum Model Summary

Step	-2 Log likelihood	Cox & Snell RSquare	Nagelkerke R Square
1	122.998[a]	0.429	0.584
2	112.957[b]	0.464	0.631

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.

b. Estimation terminated at iteration number 6 because parameter estimates changed by less than 0.001.

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3.9 Optimum Model Coefficient

Table 3.5 consists the results of the best fitted logistic regression model at step-1 and step-2 respectively. The main fitted model in step-1 includes only one independent variable namely overall confidence and its impact was observed on the investment decisions of investors in the presence of FPI. While the optimum model in step-2 has two independent variables namely overall confidence, overall conservatism. The optimum model show only two independent variables that have significant impact on dependent variable, that's why the third variable herding effect bias was removed from the selection process of optimum model as it is found insignificant.

The table 3.5 shows results of the coefficients (B) of the selected variables, its standard error, Wald statistic, degree of freedom (df), level of significance (Sig.) and Odds ratio (Exp (B)). From the fitted optimum logistic regression model in step-1 it is clear that variable "Overall Confidence" has positive and highly significant impact on investment decision of investors in the presence of FPI. It means that FPI flows significantly influence confidence of the DII in PSX. In other words, DII take confident investment decisions in the presence of FPI. As the recorded coefficient (B = 3.150) with a standard error = 0.445 and much larger value of the Wald test statistic = 50.192 and small (p-value = 0.000). The odds ratio for overall Confidence (Exp (B) = 23.334), indicates that the presences of foreign investors' interest increase confidence. In step-2 model containing two independent variables namely "Overall Confidence" from the model in step-1 and "Overall Conservatism". It's observed that from model in step-2, "Overall Conservatism" has negative impact on investment decision of investors in the presence of FPI (B = -2.165) with standard error 0.749 and significantly (p-value = 0.004) and large value of Wald test = 8.358 associated with variable. The odds ratio (Exp (B) = 0.115) indicates that, "Overall Conservatism" prevail in the presence of FPI.

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Table 3.6: Optimum Model Coefficients

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Ccombined	3.150	0.445	50.192	1	0.000	23.334
	Constant	-10.136	1.526	44.113	1	0.000	0.000
Step 2[b]	Ccombined	3.544	0.525	45.511	1	0.000	34.590
	CNcombined	-2.165	0.749	8.358	1	0.004	0.115
	Constant	-3.197	2.542	1.583	1	0.208	0.041

a. Variable(s) entered on step 1: Ccombined.

b. Variable(s) entered on step 2: CNcombined.

3.10 Model Coefficients

Table 3.6 consists the results of the fitted logistic regression model including three independent variables, namely overall confidence, overall conservatism and overall herding effect bias and its impact was observed on the investment decisions process of investors in the presence of FPI. Results includes regression coefficients (B) of the selected variables, its standard error, Wald statistic, degree of freedom (df), level of significance (Sig.) and Odds ratio (Exp (B)). From the fitted logistic regression model it is clear that variable "Overall Confidence" has positive and highly significant impact on investment decisions of investors in the presence of FPI. As the recorded coefficient (B = 3.538) with a standard error of 0.530 and much larger value of the Wald test statistic of 44.622 and (p-value = 0.000). The odds ratio for Overall Confidence (Exp (B) = 34.396) indicating that, the investment decision of confident investor in presence of FPI are 34.396 more as compare to non-confident investors. "Overall Conservatism" has negative impact on investment decision of investors in the presence of FPI (B = -2.630) with standard error 0.845 and highly significantly (p-value = 0.000) and large value of Wald test = 9.690 associated with variable. The odds ratio (Exp (B) = 0.072) indicates that, if "Overall Conservatism" is present then the investor investment decision in the presence of FPI decrease to 7.2 percent as compare to 100 percent during its absence, which means that about 93 percent investor

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investment decision in presence of FPI is affected due to Overall Conservatism. Also it is noticed that, Overall Herding effect bias has positive but no significant relation with investment decision of investor in the presence of FPI with regression coefficient B = 0.959, large p-value = 0.209 (greater than 0.05), small Wald statistic value = 1.579 and (Exp (B) = 2.609). This indicates that, if "Overall Herding effect bias" is present then the investor investment decision in the presence of FPI increases but not significantly.

Table 3.6: Model Coefficients

	B	S.E.	Wald	df	Sig.	Exp(B)
C combined	3.538	0.530	44.622	1	0.000	34.396
CN combined	-2.630	0.845	9.690	1	0.002	0.072
HE combined	0.959	0.763	1.579	1	0.209	2.609
Constant	-4.738	2.882	2.703	1	0.100	0.009

a. Variable(s): C combined, CN combined, HE combined.

4. CONCLUSION

Through questionnaire based survey, the study analyzed DII behavior in the presence of FPI. This behavior is explored through three variables including investors' confidence, conservatism and herding effect. Results show that investors feel very confident with the flow of FPI to PSX. Moreover, participation of foreign investors boost up confidence level of DII while investing. On the other hand, with the flight of FPI, the investors' confidence goes down. Investors feel less conservative to invest in PSX in the context of FPI. Domestic investors herding was observed positive but insignificant in the presence of FPI. When foreign investors tend to withdraw their investment that is when they sale their securities, then the local investors do herd but not significantly. Further, with inflow of FPI that is when foreign investors purchase securities in PSX, the investors' confidence boosts up and they follow them by investing in the similar stocks. Furthermore, they responded that domestic investors feel conservative with swift changes and fluctuations in FPI flows. The results show that the participation of foreign investors in

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PSX influence the investment behavior of the domestic investors. So, keeping in view the results, it is recommended that domestic investors should consider the participation of foreign investors. Furthermore, the policymakers shall take steps like specific policies shall be devised to attract more foreign investors as it boosts the local investors confidence. At the same time, certain policies are desirable to cap the foreign capital flight as it fuels negative feedback trading behaviour. The study has many practical implications for policy makers and regulators like Security Exchange Commission of Pakistan (SECP), PSX management bodies and State Bank of Pakistan (SBP). Stock market investors including foreign participating investors, domestic institutional investors as well as retail investors shall consider the behavioral influence of FPI flows to PSX while taking investment decisions. The policy makers and regulators shall devise and implement certain policies in light of this study's results and recommendations that are favorable to all stakeholders.

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