

RESEARCH ARTICLE

# Role of Stock Price Fragility on Financial Development and Economic Efficiency: Evidences From Systematic Literature Review

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*Received: September 10, 2021; Accepted: December 18, 2021*

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**Abstract:** The aspiration to do this research is to conduct a systematic literature review produced during last 65 years in domain of empirical finance. The paper highlights the gap of study and their origin in finance by linking concept wise development from simple phenomena to stock price fragility. We also aimed to investigate it theoretically with sensed question to produce lines of work in future. We employed systematic literature review technique to this investigation by assessing source & quantity of data, publication time horizon, contextual participation of articles, content and citation analysis. Recent study worked on 139 published articles on prominent data bases from last 65 years. We erected ample constrains in this scope in all around the world with lack of testified procedure, availability of data for testing, lack of consensus, poor attention to funds and inefficiency to work on price fragility empirically. As per our knowledge this is the first study in the world covering complete time frame “1952-2017” with SLRM in the field of traditional finance and also the first to conduct the review of literature on price fragility. This research will be serviceable to educationists, researchers and for them who are working on this compartment of finance.

**Keywords:** Price fragility; systematic literature review; content analysis; citation analysis

**JEL Classification Codes:** G10

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## 1 Introduction

In last six to seven decades field of finance is emerged with vital knowledge and has become a well-known field on the base of its theories and practices. There are various theories in this field, few talks about "people's choice" i-e, M & M theory, arbitrage pricing theory, Utility theory etc. and others argue about "object behind the choice" i-e Preference theory, mean variance theory & prospect theory. So, in reality when matter of choice and object both moves together these leads the price mechanism in any market to value the subject of risk assets. Previous research in finance has widely focused on trends of market-based return generated by price fluctuation Sharp (1964), Black (1974), Merton (1973) & Ross (1976) on a systematic and digitized plate form. Therefore, various giants of this field have contributed in it very vitally. And in last decade researchers worked on Markowitz (1952) Multifactor models and Tobin (1958) on portfolio side. But various anomalies, contributing in asset pricing models, have realized the need to build more models covering the scope of price structure more broadly. Therefore, in spirit to arbitrage pricing theory, Fama & French proposed three factor model of assets pricing as value premium, size premium and market premium. Further, Carhart (1997) have added the momentum to address the anomalies effect in price structure.

These factors are investigated around the globe but less in-depth studies on these are in Pakistan. Pakistani equity market is becoming special now a days due to its geopolitical reasons in a way that it is considered as cross road of central Asia, emerging market of Asia by joining hand with China a well economically developed economy on CPEC. Therefore, the boosting role of equity market contributing in economy always makes researcher thirsty to investigate price structures, ownership and allocation of funds. It also become necessary to investigate such relationships because Griffin (2002) revealed that these multifactor models are country specified and varies up to their context because each equity market has its own sentiments, price structures and their behavior to respond the choice & objective orientation varies in respect to any other equity market. Hence, there is always a room of investigation. Extending to it Schulz and Johann, (2018) concluded in their investigation that paying extensive attention to financial objectives by investors in equity market and attitude of continuous buying & selling in greed to earn more & more shuffles the price structure of equity market contextually and makes price structure as fragile more than the benchmark pronounced as price fragility.

Stock price fragility is initially introduced by Greenwood and Thesmar, (2011). It is a measure that measures the non-fundamental risk. Thus, it aims to segregate and measure the casual effect of stocks volatility beyond the traditional financial measures, specifically examining the concentrated stock ownership and correlated liquidity shocks on price volatility. So, these measures would be applied in Pakistani financial market. Extending to it (i) current study shall investigate by exploring covariance and beta of returns by co-fragility and these shall be used to predict fragility beta. Because previous studies concluded that ownership of funds have strong association with these forecasts (ii) The Price fragility shall also be researched by measuring the funds volatility by taking total returns a proxy of it. (iii) These total returns shall be evaluated with fund prices to check impact of arbitragers. Hence, the study shall contribute by focusing measures of fragility, relationship of fragility with funds volatility that are these similar or different but interlinked and role of market arbitragers with funds price.

Adequately all stakeholders in corporate sector have to face similar tension in shape of risk when they invest in stocks it becomes not easy to quantify for them. There are several methods to measure the risk i-e by dividing it into parts/components. But here still another issue is that which what these components are all about? Literature states that these factors linked with stocks are fundamental behaviors of stocks that are based on market value analysis, books of accounts measurements and their moving patterns. Such movements of stock patterns reveal another important component associated with stock risk is known as time or time dependence. There are various models developed by experts to measure these components. But there are many other components those are not yet addressed and have been tested even their development is more complicated. Like kind of risk include the perceptions, irrationality, liquidity shocks, etc. producing high volatile and non-conductive conditions for market prices leading to fragility of prices.

The fragility of the funds is caused by investor's motives and decisional movements of the investors in a time span i-e short term & long term that results similarly due to volatility (Kimura, 2017). These short run and long run funds returns are affected by asset pricing coherence that shuffles the entire structure of funds ownership (Amihud & Mendelson, 1986). While, Banerjee, Kaniel and Kremer, (2009) revealed in findings that these non-fundamental structures of ownership cause high volatility in funds due to higher sentimental cognitive senses. And this volatility has potential to run-in all-time horizons in a liquid market where funds mobility is faster than desired structural requirement or expectations (Bernardo & Welch, 2004).

And sometimes these individuals as market stakeholders are rewarded by the high frequency of trade in a fragile structure of funds having mutuality (Baron, Bogaard & Kirilenko, 2012). While, giving importance to it, Chordia and Kottimukkalur, (2015) have argued about frequencies that these are important aspects of market and rewards very big positively or negatively being unfavorable and these should be regulated just to have standard frequency of trade that may not harm any of individual as a stakeholder. But its standard becomes un-supportive because of less common attitudes in trading activities and liquidation in market that makes entire circle in effective. Hence, liquidity has become an important part as literature suggested but it affects the return side of market liquidity risk (Pastor & Stambuagh, 2003). However, such risk can be reduced by considering and planning liquidity so that separate outcome may occur regarding liquidity and risk associated to it and it may reduce extra burden on price mechanism due to ownership separation (Claessens, Djankov & Lang, 2000).

Adversely, these are the reason that causes financial crises which drowns the entire economy just because of price changes as above narrated and therefore various banks ruined their institutional market in 1996 crises (Demirguc & Detragiache, 2000). Thus, Barber, Huang and Odean, (2016) have investigated their investigation in broader with modern techniques that what are the factors affecting price mechanism and produces what? They found their answer as liquidity is major factor affecting stock market that produces fragility in market. But fragility needs transparency in its internalities and externalities both (Bessembinder, Maxwell & Venkataraman, 2006). While, such check and balance of price coherence is very important to plan and uniform individual or institutional funds in shape of pay offs in mutual funds that supports the concept & practice of fragility positively (Chen, Goldstein, & Jiang, 2010). Here to this extent funds managers are found return acquirer more instead to be policy oriented to attain return in long run.

Therefore, Chen and Qin, (2017) argued that adaptive behavior towards financial policy to reduce cons of fragility is more necessary but complicated that depends upon that individual choice – neither can be molded nor can be replaced. Hence, less risk-oriented behavior is seen in these players trading because they are return taker mainly than to be winner after a minor loss (Chevalier & Ellison, 1997). To avoid such losses precautionary strategies are widely used as insurance schemes or liquidity of other projects or investments to save the projects from this sick un-fundamental behavior. Moreover, these activities are considered as life lines of mutual funds to save them and making them habitual of schematic flow of funds, perfectness of resource availability, performance and net size. If these factors are not managed properly, they makes mutual funds fallen into a risk and after being trapped into one it becomes unable to attain better output with significance because it forces to adjust entire structure (Spiegel and Zhang, 2013). And these findings are also found in open – end funds (Stein, 2005) and aggregate mutual funds (Warther, 1995). Extensively, these risk factors, liquidity and other ingredients are found coherent to fragility as per their determinants and vary contextual wise (Ahmad & Mazlan, 2015). But adverse movement of determinants results as crises or support it in crises situation that shows great diffusion to the globe my market side (Bernake, 1983).

Moreover, the antecedents of movements in stock places during depression period are also found covariate with market risk that leads value of pursuit's investments at risk – works uniformly basing on risk theory (Adrian, Tobis & Markus, 2016). But in economic side of the country these coherences affect trade setups, reserves pooled by trader, brokers, hedgers and market makers as well (Afonso & Lagos, 2015). Therefore, these players are found using their steaks and making them volatile majorly. So, it gives sentiment of liquidation and every one disposes of his/her securities by ringing alarm in ears of arbitragers too – ultimately entire market funds ownership traps seriously by producing fragile environment (Ashcraft, James & David, 2009).

And in reality, it becomes too realistic environment where everyone means his/her business very much and lack of trust of practices, procedures market motives is found strongly – losers hold their bunch of stock and earner's quickly disposes off by their hands. Hence, fragility in piece mechanism and ownership variations are not only comes in to being systematically, these are also given birth by sentimental forces (Aruba, Diebold & Scotti, 2009) as explained above. Similar output is later said by Dremann & Juselius, (2013) that these sentiments also work in banking sector by molding satisfied policies regarding financial settlements resulting ownership variations and then crises. While it can be positively moderated by sound information by market (Flannery, 1998) by deploying alternative trade policies helping to cope trade frequencies (Feroni & Marcellin, 2013) and with some shock handling techniques by a diverse transmission using bank leading across country (Hale, Kapranz & Minoiu, 2016). Hence, these will reduce pressure on prices of funds and makes them thicker or self-servant (Greenwood & Thamsen, 2011). While, Hilter and Lehneart, (2014) have shown similar results in their supervisory test.

Krainer and Lopez, (2004) have conducted a research on price pressures and market shocks resulting price leakage by supervisory role in trading activities. They tabulated significant results that role of supervisor is very crucial here with these factors. But these price pressures are found harming when informational asymmetry is found in banking sector (Krainer & Lopez, 2008). And these antecedents adversely raise system failure and it is easy to predict by such ingredients (Mayer & Piffer, 1970). But on large scale when such failure disturbs prices of money market i-e fragile prices then it becomes very tough for a

country to be self-sustaining again because of time constraints (Morrison, Wilson & Zikes, 2017) and returning position by the market to adjust such failures on mass level (Stock & Watson, 2014). And good supervision helps prices of market to be favorable and reward brilliantly to its owners in efficient way (White, 2011).

Thus, reduction in fragility is also resulted because of board diversity (Frag & Mallin, 2016). Friendly and care focused and participative behavior of board members/supervisors also makes to help in policies by making them friendly, helping to all in their steaks ultimate's a good market position (Adams and Fierra, 2007). This cannot be single handedly achieved because board diversity helps prices and other financial operations of market when there is gender diversity in board of governance because such extreme diversified boards are found mature enough to respond the risk during price down fall (Adams & Fierra, 2009). Moreover, similar findings are revealed in big holding companies (Adams & Mehran, 2012). But again, gender role has given the higher importance to it that shows best pricing of assets in market (Adams & Funk, 2012). Prices becomes fragile when local features of a country and its market variants insignificantly and intermediation of market runners takes place that results an abrupt change to prices (Aggarwal & Goodell, 2009).

These sudden changes in prices are resulted by investor inflows to it (Goldstien & Jiang 2017). But these inflows are less rewarding during span when market is less supportive and illiquid (Bao, Pan & Wang, 2011). When these streams are not rewarding are considered as risk-oriented factor because propensity to return becomes probabilistic however this propensity matters to investor in price context rewarding or making poor someone (Barber, Huang & Odean, 2016). When these kinds of cases prevail due to price variations it reduces the organizational reputation on bigger state (Ali, Lynch, Melewar & Jin, 2015). Moreover, in case of price downsizing entire environment of organizations is found disturbed where lack of confidence is, innovation, coping with Burdon is found (Amabile & Conti, 1999). Extending the price downsizing affects announcements of dividends, stock splitting strategies & share re-buying negatively, where stake holders are seen as less interested in these to capture (Asquith & Mullins, 1986). And it is hard to manage these high potency factors but their effective management leads a business or a market to a competitive position with its rivals (Barney, 1986).

As mentioned before, it is price fragility that harms ownership because of sentimental structures lying in stake holder's cognition in shape of media advertisements, campaigns, international suggestions by various experts and challenges that gives rationale to peoples to think and they anchor their self on it, in return this sentimental behavior is posed in trading named as sentimental trading (Behr & Iyengar , 1985). In contrast, Ang, (2011) said that these sentimental behaviors can be stopped by modern financial development in techniques for business. While, developing new methods about fragility are resulting similar construct theoretically and less variation is found here (Demetriades, Fielding & Rewilak, 2016). And these mechanisms are less supportive to economic growth (Demetriades & Hussein, 1996). In reverse, when fragility concepts prevails and ownership positions are found consistent in national level then these are spread out at international context also creating imbalances at globe by one country to another (Acharya & Schnabl, 2010).

Thus, Davis, (2003) has resulted in his study that there is significant role of intuitional investors in participating to building price structure by holding securities for reasonable time. Continuing to it Mercey, (2011) said that there are various institutional roles who have significant roles in internal predictions and fund allocation for markets determining buying and selling of funds that determines price structure as well in i-e bullish or bearish

way. The allocated funds are serially helped to be pooled in a market by using alternative approaches of pooling and leveraging or liquidity (Adrian & Shin, 2010). And in non-favorable conditions it work negative along with these two resulting bubbles in market and stability of institution into a serious question (Aoki & Nikolov, 2015). Moreover, the stability in financial growth and asset prices results chances of financial disaster in rare to an economy and saves from sovereign default risk (Bolton & Jeanne, 2011). Hence, it resolves corporate fragility price problems on institutional bases (Calomiris, 1995).

This is a detail review of funds fragility i-e price fragility of market investors by addressing their speculative motives, objectives to change ownership of funds continuously & consistently in equity markets. Till the date, up to researcher knowledge, there is no review of literature systematically on stock price fragility and ownership of funds associated to it. Thus, researcher has gauged few important antecedents to slither into scope of fragility entirely.

- a) Stock Price fragility
- b) Ownership of funds and price fragility
- c) Equity investor's attitude and shuffling ownership
- d) Price variations and market volatilities
- e) Arbitrager's effect and fragility

There is solitary work on stock price fragility in equity market mainly by Greenwood and Thesmar (2011) in which they thrived the weigh about price fragility, root on ownership anatomy by capturing exterior of non-fundamental risk and market volatilities.

Thus, the intent of the paper is to,

- i. Harmonize prevailing literature on stock price fragility methodologically.
- ii. To identify the reasons of price fragility and its reaction to equity market.
- iii. To pin point research space and future routes for research in this domain.

The cue of the paper is schemed as that first it explains background of stock price fragility by existing literature, to identify and reveal the theories by whom price fragility scope is covered, secondly methodology is described endorsed for systematical review of literature. Then, explanation method of literature is incorporated to have findings for study conclusion and directions for future investigations.

## 2 Background of Stock Price Fragility

Stock price fragility is initially introduced by Greenwood & Thesmar, (2011). It is a measure that measures the non-fundamental risk. Thus, it aims to segregate and measure the casual effect of stocks volatility beyond the traditional financial measures, specifically examining the concentrated stock ownership and correlated liquidity shocks on price volatility. So, these measures would be applied in Pakistani market. While, this investigation can be extended to entire globe because it has wider room available geographically that has not much investigated. Moreover, by extending the investigation of fragility it would be explored by checking covariance and beta of returns by co-fragility and fragility beta in current investigation. Hence, the previous investigations suggested that ownership structure has impact of these forecasts. Finally, fragility is also suggested to investigate with total

return volatility to have impact of arbitragers on stock prices and it is found significant in African context (Nairac, 2013).

Investment in stocks or in stock markets is never based on the idea "Throwing all the money in one basket of eggs". Uncountable stakeholders participate in stock investments' daily and invests in a way by speculating their funds in more than one projects pronounced as portfolio investment that not only reduces margins of risks but also maximizes chances to attain and pure diversified return. There is a person named as portfolio manager actively pools funds and manage all discretionary matters of those associated investors associated to him.

Here it comes to understand that there are two people's i-e owner and funds manager. One invests and other pools investment. Such investments' is discretionary with market returns. As market returns rises these investments are matured in mints and return is enjoyed by both that individuals. Moreover, it is fundamental practice of market that rises up or slips down, in each situation buying and selling situation prevails. Thus, such continuous buying or selling is good in sense to activate market but shuffles ownership of stock or funds continuously that makes situation extra comparative than desired level and funds price structure becomes highly fragile. And this logic gave birth to the term stock price fragility – a situation where stocks are being excessively exercised by continuous change in ownership of funds that makes price thinner.

Thus, Greenwood and Thesmar, (2010) have conducted first research on stock fragility and have first addressed to find the factors those participate in this concept to give it birth and later proposed the models of it. They also proposed that it is fragility that not only exists in herself moreover, it also exists in shape of co-fragility with role of arbitrages and compositely these both are proved as sub parts of fragility by supporting it significantly. Hence, an asset is considered fragile when it is moving against the fundamental trends. Not only limiting to above concluded findings it is believed by researcher that there are various reasons of gradual rise in stock prices. As Harris and Gurel, (1986) stated the reason of rise in stock price is indexation of company and excessive demand requirements of funds in market.

In this regard, there are many financial theories those participates in literature development. But here in this project there are few theories that have active role in this research like as Modern Portfolio Theory and Arbitrage price theory. The first theory was proposed by Markowitz in 1952, Treynor, 1962 and Lintner in 1965. While, second theory has led some advancements in first one and was introduced by Ross in 1972. These both theories state their rationale in their way like portfolio theory argues about risk and returns factors in similar situations with similar attitudes where everyone is there to nave handsome return. APT says that when you have less choice then you are pinched to transect and in this situation speculative practice moves across fundamentals and results in non-fundamental existence in market price that causes the risk in price leakage or price structure brokerage.

Literature concludes that such risk is caused by many factors categorized as explained and unexplained factors. Explained are direct, observed and measureable factors as suggested by literature but unexplained factors are vice versa and travels in stock market by affecting volatility. Moreover, volatility is also affected by many other kinds of risks as Danielson and Shin, (2003) found significant change in volatility due to endogenous risk factors, It is the risk that pinches stock price negatively but also remains in as antecedent and create shocks within the structure.

So, it came into understanding that prices are also changes due to change in volatility. Samouilhan and Shannon (2008) has investigated volatility in similar conditions by hypothesizing their model, have resulted sensible change in volatility movements due to price shuffle and also sentenced it predictor of volatility too. For this, to check the models and their resulting change in volatility various authors have tested by using multifactor models including one, two & three factor models (Carthat, 1997, Fama and French, 1993; 1992). Though, this change in volatility is also found in equity market (Koch et al., 2010) and in mutual funds perspective too of growing markets leading investor attitudes correlating towards volatility movements and their risk management (Qin, 2007).

Literature extended that fragility of price is strongly nonintegrated with sum of volatility resulted by market movement and co movements and it works on the grounds of arbitrage theory of market prices. But such all depends upon the market trends resulting in any away based on measurement models used to operationalize study. Moreover, continuing this argument, Lin, (2011) investigated such phenomena of fragility with sentiments of market and has resulted coherent linkage between them in presence of valuable government intervention playing role as an external factor of market. Thus, in emerging stock markets funds flow structure becomes high volatile in all situations. It is due to excessive trading patterns among investors and ultimately it creates shuffle mint in returns volatility. Hence, there is significant association among price fragility and volatility of returns in developing markets.

Rani, (2017) has conducted a study to investigate the differences among market patterns in U.S and Indian market regarding stock price fragility by taking two context i-e India and United States by applying ARCH GARCH models that resulted in a way that there are numerous points in both the markets that makes them different than other, moreover, Indian market is resulted as less volatile as compare to US financial market. After reading value bale literature it is found that both above stated markets are found different in subprime crises for the first time. And research has revealed significant heterogeneity among each (Chakrabarti & Roll 2002). Moreover, these differences are specifically region wise that varies international financial returns of the funds. These returns results in positive in various developed nation and vice versa (Mun, 2005), not only limiting to it there are various other behavior those affects return psychology one of them is named as volatility. Spillover effect of volatility is another main factor that affects stock returns including other market motives and sentiments i-e Herd behavior, disposition situation and news effects. While, Koulakiotis et al., (2009) has said in their study that news of two kinds good and bad and both has similar consequences on returns and market capitalization as per their underlying theoretical concept. Such effects are uniform in all around the globe either economically nations are developed or less developed.

Moreover, Adrian, Tobias and Franzoni, (2002) has conducted a study on subprime crises by evaluating it with actual financial position and market trends and have concluded that these are being affected apparently due to adverse financial conditions prevailing in market. Similarly, Manurung et al. (2013) has conducted a research on financial indicators and macroeconomic facets co integration on stock market shuffle mint and has found revealed significant association of these factors in shape of variation in stock returns and volatility by throughout variations in market owning that represents ownership of the funds being floated in economic plethora of Jakarta context especially. Moreover, Kosapattarapim (2013) has reviewed role of IPO and retirement funds in respect to predictive



market volatility and actual volatility by deploying GARCH model and have deduced that there is significant variation in both nature of volatility as per their existence of origin.

Thus, such continuous shuffle in shape of volatility that results non-homogeneous in situation of boom and burst causes keen demand of funding, it rises due to imbalance of situations, non-proper management, unfair planning, less experience, less consumption and borrowing from more than a desired level that becomes a Burdon on an institution instead of injecting life to it Cripps et al., (2011). This is all matter of synchronicity in funds. However, Basu Sanjoy, (1983) have investigated this concern of funds connectivity to check the matter of question that was not observed and have resulted that it is all based on activity roles of funds manager because some are working actively and others as passively that results in heterogeneous way. And the biggest reason against this non-homogeneity is ownership of funds that particulates to a person till the time he/she owns it until to make retired from it. These are the findings being investigated on the shoulders of Barberis and Shleifer (2003), those of prior settled the base to it in methodological sequence with reasonable theoretical grounds.

However, Amihud and Yakov, (2002) concluded that funds are floated, hedged and moves with their sensibility of co movement on the basis of their fundamental grounds rather than in irrational way. But it is the concept not always fit to each ink or each product of stock market in all around the globe. It varies because of certain demographics that literature reveals in every section. Thus, Baker et al., (2009) said that in mutual funds perspectives their prices are found variation beyond the traditional level if we not compromise the fundamental grounds of its trading because their ownership concern in highly volatile and is seen as abruptly changing due to execute flotation in market. And it is uniform in the entire situation either we examine or analyze it from bottom to top or vice versa.

There is one attitudinal factor that also plays its pewit role by giving birth to fragility is behavior to obtained similar desired return as pre decided in his or her cognition. This sense of relational forces one to invest in stock in very irrational way and theretofore that market funds are found commoved in shape of ownership change with high ratio similarly the returns. It is the behavior about Greenwood and Thesmar, (2011) said that it not only negatively affects a trading cycle moreover it also results negatively by impressing arbitragers to trade in this way by keeping sentiment of hope to acquire remarkable return in very little practice. And conclusively, everything becomes worst by it and chances of favorable return decreases.

These findings are not new in resulting in this way because these are participating by relating such results with similar variation since 3 to 4 decades in a shape that such funds have direct association with financial and economic performances due to their flow of investment and exercise ability (Ippolito, 1992). Baker et al., (2006), have resulted that as the level of trading of a stock becomes higher than a desired level the chances of return acquisition becomes lower in that way. These findings also resulted in bond market by studying convertible and non-convertible bonds in western countries (Vayanos & Woolley 2013). While, these funds are also traded in future markets by hedging them in way to reduce the margin of risk and are actively co integrated with market returns by reducing the role of arbitragers and being significant with returns of company (Sadka, 2010).

On the bases of above literature, it comes to realize that all the trading is based on demanding situation – as it changes results varies. Thus, Lou, (2012) have argued in his or her study that chances of market shocks also affect stock returns and their ownership concentration antecedents due to higher change in status of extensive fire sale attitude found in

that market relating to these stocks i-e mutual funds. These finds are also found coherent contextually region wise in developing and modern nations. Continuing, this argument Chen et al. (2008) have worked that either funds those are hedged becomes favorable to stock market returns in both risky & risk-free securities or not. They investigated their study by dividing it into to time horizon i-e short, long- and lagged-time frame. Their findings resulted uniformly that sound significance exists in this topic. Shleifer and Vishny (1994) have argued investors finding in their study as pessimist and taking situation for granted because they over value situations during investing in any portfolio by believing in result of historic growth.

Some times as we observe the situation it doesn't exists in that way and its adverse side results very badly. Considering this construct, funds market not always work rationally by resulting in shape of fundamentalist behavior in its trading. Because it should be considered that it is operated by human beings – a key player of world, who usually is found arrested in various sentiments. Therefore, past literature also suggested that there are much of the biased cognitions, attitudes, heuristics and sentiments that not only takes trading activity away from the fundamental level, it also results adversely by resulting higher loss to the investor. Campbell and Vuolteenaho, (2003) has also argued about these phenomena in their study and have defined return by naming them as good and bad beta on the base of its favorability to investor in shape of return. They have significantly resulted in by categorizing and analyzing CAPM in different ways in their methodology.

Basically, the above cited concepts are vastly based on portfolio of markets prevailing under ownership of companies who are participating in market for funds acquisition. Therefore, returns of portfolio exist in similar way as narrated in paragraph above. The significance of their return is different for risky attitude individuals and far different from this than risk averse peoples (Banz, 1981). Therefore, the findings suggest that a company can acquire valuable return in conditional way rather than non-conditional in presence of capital pricing model (Jagannathan & Wan, 1996). Such conditional variations exist due to understanding of risk factor that and investor is less aware but has to be informed so that a better plan may prevail in direct liaison of him with his agent in prior to invest good money objectively (Adrian & Franzoni, 2002). And in reverse investor rollback, it sometimes results due to very small ratio of book to market.

Prior studies also reflect to the side of arbitrage because it has also wider affect in concept of price fragility. The attitude of arbitragers is always compromising in trading patterns also in mutual funds similar to others. This complete concept works on it except in a situation when securities are been mispriced. Hombert and Thesmar, (2014) also investigated similar construct by evaluating securities market that how the role of arbitragers exists in theory and either it practically prevails yet or not and has resulted uniformly to prior researches. And it is because of miss pricing theory because arbitragers are final counter part of this trading activity who passively takes part in trading cycle by being impressed or following any trading trend identified by earlier traders (Gromb & Vayanos, 2002). These are the small investors and cannot bear bigger losses and always wish to have small returns with little effort. Therefore, they people cannot take part more actively in creating liquidation situation to a portfolio because they have less tendency to bear adverse situations because of their funding complexities, having less resources to outsource the funds or borrow excessively and intensively.

These individuals have a similar feature among them – to be in trading cycle always. However, they always prefer to have that much funds those they have less chances to lose

and can bear that much margin of loss. Hence, their capital structure is planned in this way. In situation like vice versa they cannot afford bigger loss (Ang & Bollen, 2010). As per this perspective role of arbitrage by controlling a big chunk of amount and making it secure is considered as by being consistent to hedging phenomena, so that higher return may achieve by optimizing cost of this pattern in less (Stein, 2009). These two sides of cost and return are also based on the performance of the funds that usually replicates variation in shape of underperformance and over performance. In reverse performance funds results as exists free and this leads them to massive cash out flow to outside and ultimately the funds are finally sold.

Such purchase and sale of the funds determine the nature of capital structure being invested in securities usually by following the similar patterns as companies invest because it is same kind of investment and funds arrangement being deployed by one individual (Shliefer & Vishny, 1997). But here during capital selection role of drawings used by drawers of the companies because their exclusive drawing usually pinches the financing situations in a given scenario where an optimum investment objective lies under risky situation in order to obtain a sound benefit (Mitchell, Pedersen & Pulvino, 2007). Moreover, Carhart, (1997) has prior resulted in a way regarding drawings that there are some common mean adjustment and deviation factors among portfolio investment specifically in funds flow scheme that replicates the actual situation in a diversified way to presume the normal situation to adverse resulting a collapse. Hence, the main concern that plays its key role to it is the picking ability of funds to digest your income as an sensible investment.

Consequently, as we have discussed before main issue in securities market that exists is informational sharing. Thus, the prevail of information sharing is based on the information theory used in finance. Titman (1993) analysis revealed that there is sound role of such information towards market return rise or fall that are named as bullish or bearish mode of scheme. This situation of funds flow structure is based on the parameter of the globalization, where it behaves similarly in some context and in some it also deviates. As far as point of Islamic estates is concerned very few studies are conducted that have investigated the determinants of it. But such finds are furthered dependent upon the periodic situations where in bear period Islamic funds of mutual funds are found negative instead on non-Islamic (Usmani, 2002). But the main issue regarding Islamic funds is that these operate ideally in their situation where circumstances are averse to it. Such concept is generic that varies up to the situations and support in similar circumstances uniformly. As prevailing literature is arguing about the identity and importance of the mutual funds and their fundamental behavior by informing the position that these funds are become identical time to time.

It is another reason that many of the researches has been conducted their investigation is by deducting Islamic funds of mutually has have revealed significant results. Such investigations have covered all the angles of research as per categories of it i-e fixed, random, bond and balanced funds. In Pakistani context Shah and Hijazi, (2005) have conducted the study on actual performance of funds and their parameters that resulted in significant way by identifying their factors. But the outcome of this structure of price fragility varies due to variation in demands and trading motives (Sipra, 2006). There are various ratios used by the individuals who have builder them. These ratios are named as Sharp, Trynor and Jensen Alpha measures of mutual funds that are actively considered as another angle in measuring the concept of fragility in quantities way. These ratios were developed in 1965, 1966, 1967 serially and are named on the good names of their authors.

However, these are true measurement models for mutual funds either these are conventional funds or Islamic funds. Moreover, in adverse movement of the funds the bubbles come into beings. Such bubbles are first identified by the Mehra and Prescott, (1985). These two individuals have identified, tested and resulted about them and also said that these are the adverse mover behavior of the stock or securities by leading them towards the well for drowning. Such behavior is strongly dependent on the behavior of that investors. And these are the attitudes that shuffle the volatility motives and attitudes to recent stigma operating semantically in fundamental way (Kaizoji, 2002). Moreover, these fundamentals are variant as per nature of tolerance and providers of true responders who act as an active performer that shuffles the price mechanism (Kirchler & Huber 2007).

There are some sentiments that plays an active role in it and has significant linkages among them. These sentiments comprise on behavioral biases, herd behavior, effect of disposed behavior, line of agreement, sequential returns mobility and various cognitive behavioral mistakes (Qiu & Welch, 2004). Moreover, such sentiments are found significant towards stock market returns and with their prices sequentially with positive and negative consequences as per model of plan (Baker & Wurgler 2007).

By extending this argument there is sound impact of the noise traders in affecting the stock market returns. Thus, Kyle, (1985) argued in his study that such traders are considered vital similar as like other individuals in shuffling graph of volatility on actual grounds that results in continuously and results are resulted in shape that volatility data also become very thin in shape of its change into a condition by one phenomenon to another. But some studies have found them as positive persons working with corporate culture (Bloomfield et al. 2009). The main concern of the security market is the movement of cash from one point of use to another. And these are dependent on the asset pricing theory. Therefore, these funds are co integrated with certain pricing patterns including other factors as features mood, sentimental categories and other factors, this all is in result of trading activities and holding of funds in specific chunk of investment (Barberis, Shleifer & Wurgler, 2005).

These chunks are found in all the sectors normally like financial, non-financial and retail etc. While, the investment in these is found basing on the structure of funds pooling behavior and shifts occurring in reverse to pay the return (Kumar, 2009). But Sun (2008) has revealed insignificant behavior in contrast to Kumar by identification the temporal analysis of the instructional role in funds development, pooling and their co movements. While, such co movement are also based on the attitude of the respondents of study because they have their own significance in proving study direction, it is not only limited to it these are also resulted towards stock performance, splitting moods of stock and institutional role of organizations.

## 2.1 Theoretical Support

The idea of stock price fragility is relying on pillars of two theories i-e asset pricing theory and conventional theory. Relating asset pricing theory with fragility concept explains the concern of risk and elaborates the association of ownership of asset by affecting it with current return. In vice versa ownership does not change the return in predictive way for future transactions. This theory is presented by Fama & French in 1979. Thus, role of arbitragers is always to trade highly by following the trading pattern and affecting the graphical picture of market movement. Moreover, conventional theory considers flat demand regarding singular financial requirement where arbitragers affect trading cycle against liquidity shocks.

However, dealing with conventional theories APT explains ownership side of the current research relating to fragility and second theory argues or provides base for arbitragers activates those also affects prices by resulting it as fragile. Hence, these both theories have active role in fragility of prices contextually.

### **3 Research Design**

In this investigation, systematic review methodology of literature about stock price fragility is deployed for analysis of its articles. And it is deployed by objectives identification, choosing study papers, classification and articles analysis, concluding findings and future investigation direction.

#### **3.1 Prophecy for Literature Searching**

For systematic review of literature, a suitable research criterion is used by pointing out key words and time horizons on many databases. Authors have used Google Scholar, ethos, HEC Pakistan Digital Library, Springer, Emerald, and CUST library to extract literature with key words of price fragility, ownership concentrations, arbitragers and volatilities. It is the first highly significant study in the world in which researcher's has tried to cover the entire literature of finance relating to this frame of study in this research paper. Thus, study covers the literature of more than six decades (1952 – 2017). The year of 1952 is considered as the first year of search because in this year Markowitz has led an idea of portfolio selection significantly. Further, forethought the articles for accumulate in this study those are published printed in peer reviewed journals in English format having key words, full text and having abstract. We also gathered various case studies review & working papers as well for analysis. The steps incorporated in this study for systematic review are i-e Objectives Identification, Articles searching & selection, articles classification, concluding findings and research directions for future.

### **4 Literature Analysis**

#### **4.1 Sources of Data**

The database search is conducted in routinely in December (2017), January and February 2018. The objective behind this continuity in searching articles was that to add fresh literature in analysis as it is available on above mentioned databases to have unique findings. For this, we cited 150 articles for review. From these Greenwood and Thesmar, (2011) is considered thrice because it is only paper covering stock price fragility, ownership and arbitragers' role in equity-oriented market. While, all papers produced by Fama & French and Markowitz throughout their legacy are also cited here because without these it is not possible to work on this study. The following table shows database searching sources,

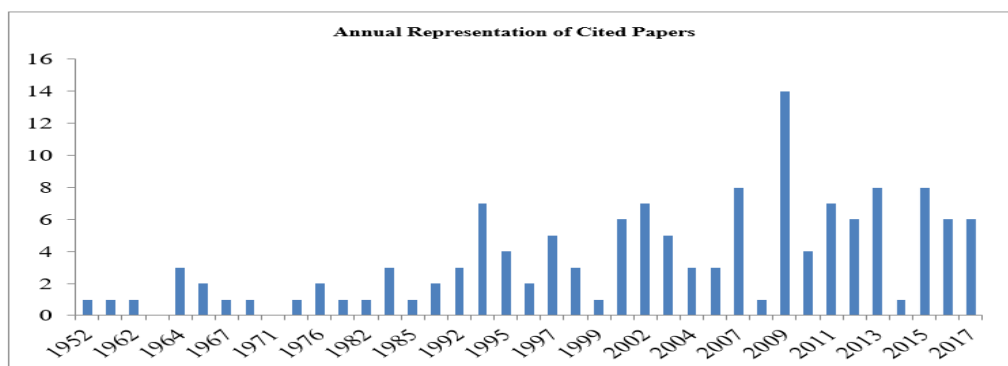
**Table 1: Data Sources**

Database	SPF	OC	VOL	ARB	Total
Google Scholar	20	10	17	14	61
HEC Digital Library	11	1	3	1	16
Emerald	9	7	13	1	30
Springer	8	7	9	3	27
Ethos	2		1		3
CUST Library			1	1	2

SPF – Stock Price Fragility, OC – Ownership Concentration,  
VOL – Volatility, ARB – arbitrage

Table (1) shows data bases of literature from where researcher has searched about this study. Most of the literature is extracted from Google scholar of entire variables of study. Secondly data is obtained from Higher Education Commission (H.E.C) Pakistan digital library because researcher is focusing contextually i-e Pakistani context. So, in Pakistan HEC library is prime and authentic source for literature search. Thirty papers are also cited in this study as per scope from another sound database named as Emerald. Similarly, 27 papers helping much more to have deep insight from historic investigations by their literature and findings are also extracted from Springer and cited here. While, two research dissertations from Ethos on “Stock Price Fragility” and one on “Volatility in Pakistani Context” are also included in this study and these three have provided sound base to conduct this research especially. Moreover, two more thesis of doctorate level on “Volatility” & “Arbitrators” are also incorporated here. These both are taken by digital library of C.U.S.T University Islamabad database.

## 4.2 Distribution of Articles

**Figure 1: Annual representation of cited papers**

This graph is showing number of articles cited year wise and providing very valuable insight theoretically from the supreme field of finance. Because in finance, price movement, price structure, market volatilities, volatility role in ownership and other major factors associated too these like arbitrage role are initially introduced by Fama & French time to time with in two to three years. And uncountable researchers have continued to conduct and more & more invitation on these factors. As a result, now concept of Price fragility is established in finance and is now being investigated in minor level as literature suggested in section two. Thus, Fama and French, (1952) study an initial step in finance is taken as base of study and the journey for literature review in this is study is started from it till year 2017. In initially years as graph shows there are fewer papers because it was rise of this filed. Later on, it is increased as in 1983, 1992 to 1999. In 1999 researcher has found various articles regarding this study to cite but their findings were not providing deep insight so only one paper having good output is included herein. It is similar in 2008 and 2014. 2009 is found very valuable year of research regarding this area because 14 incredible research studies are cited. This graph of research excellence is decreased by giants from 2010 onwards and less than nine studies are found that are included in this research. Hence, the cited literature for this review is schematic from its origin, it is novel due to its findings and modern because it is till recent year (2017) providing deep and fresh insight.

### 4.3 Data of Sample Country wise

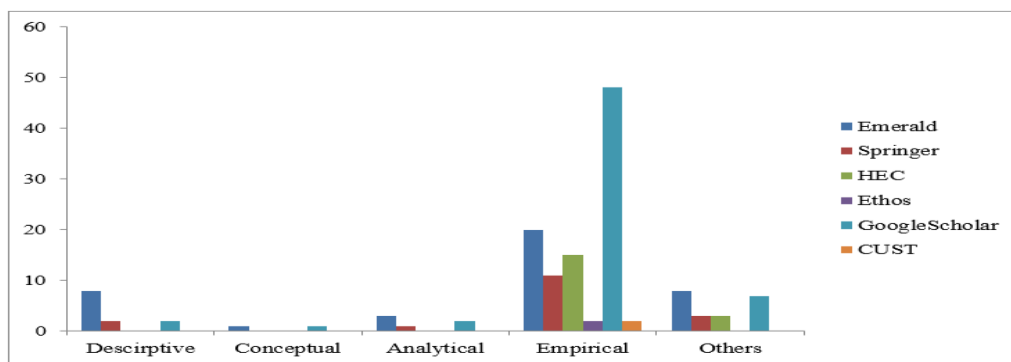
**Table 2: Country Wise Data Collection**

Country	SPF	VOL	ARB	OC	Total
France	3	4			7
Australia	2	4	2		8
UK	10	5	1	3	19
USA	18	10	1		29
Pakistan		2			2
India	1				1
Africa	1				1
Japan	8		9		17
Poland		6	6	2	14
Malaysia	3	10			13
Chic Republic		2	1		3
Italy	1	6	5	1	13
San Francisco			1		1
Taiwan	3			1	4
Austria	2	2	1		5
China	2				2
Total	54	51	27	7	139

Table 3 reveals about country wise representation cited in this study. The origin of research is obtained by reviewing origin of study authors and their association to HEI's/Universities. Thus, seven papers are from France, 8 from Australia, 19 papers are from UK and USA has major contribution in this field as 29 papers. Pakistan is having 2 papers. From Indian context one paper is on fragility cited here. Similar numbers of studies

are included from African Side. Japan has contributed with 17 papers in this study. Fourteen papers of Poland are also included. Malaysia has 13 papers from which three papers are on fragility of prices. Chez Republic contributed having three sound researches. Italian context is participating to this area with 13 papers. San Fransico state contributed with one vital paper, Taiwan with 4, Austria with 5 and China with 2. Therefore, no investigation regarding this area is found by any other country. Hence, in total 139 papers are cited here from these 16 countries.

#### 4.4 Study Type wise Articles Segmentation



**Figure 2: Nature of Study Database Representation**

This graph represents database wise papers representation as per their nature of study. The researcher has adapted five categories of research from literature of research i-e empirical, descriptive, analytical, conceptual and others. While, databases of study comprise on Emerald, HEC library, Springer, CUST Library, ethos, Google scholar and Springer as briefly explained in previous table. Thus, this graph shows that price fragility, arbitragers and volatility are empirically investigated mainly and most of the empirical work is contributed by Emerald and Google scholar, thirdly HEC Pakistan and fourthly Springer is participating to it here. Very less work is done on this area with analytical and conceptual method of investigations. While, there are also less investigation descriptively of this topic and their major chunk is holder by Emerald and Springer. There are less than studies available in literature those are not laying in the scope of these natures of investigations by these databases.



## 4.5 Cited Citations Score

**Table 3: Number of Citations Study Wise**

Variable	Article	Citations
Stock Price Fragility	Greenwood, Thesmar, (2011)	157
	Anand (2009)	83
	Demetriades, Fielding & Rewilak, (2016)	9
	Rani, (2017)	11
	Demirguc (2000)	294
	Barber (2016)	60
	Banerjee, Kaniel, Kremer (2009)	106
	Anderloni, (2012)	39
	Al mamun (2015)	8
	Yusof et al, (2015)	6
	Nairic, (2013)	12
	Ayllon & Fusco (2009)	6
	Brunetti (2016)	27
	Christilis, (2009)	52
	Acharya (2011)	295
	Aitkin (2015)	14
	Aoki & Nikolov (2015)	57
	Bolton & Jeanne (2011)	295
	Calomiris, (1995)	386
	Kirchler & Huber (2007).	61
	Campbell et al. (2003)	306
	Singleton & Kenneth, (2011)	316
	TREYNOR, (1965)	95
	Baker Malcolm and Jeffrey Wurgler (2006)	12
	Baker et al, (2009)	54
	Lin, C., Massa, M., Zhang (2011)	56
	Danielsson & Shin (2003)	45
	Treynor, (1962)	46
	Sharpe, (1964)	22
	Basu & Sanjoy (1983)	12
	Mun & Kyung-Chun (2005)	33
	Volatility	<i>Carhart (1997)</i>
Lou & Dong (2012)		126
Sadka & Ronnie (2010)		37
Leeves (2007).		34
Koch, Ruenzi & Starks (2009)		24
Harris, Gure, (1986)		135
Sadka & Ronnie, (2010)		23
Sirri, Eric, Peter Tufano, (1998)		27
Ross & Stephen (1976)		67

	SIPRA (2006)	28
	Koulakiotis, Dasilas & Papasyriopoulos, (2009)	21
	Amihud & Yakov (2002)	23
	Manurung et al, (2013)	18
	Sharpe & William (1964)	334
	Baker & Wurgler (2007)	2031
	Merton (1973)	12846
	Adrian, Tobias and Francesco Franzoni (2002)	34
	Amihud & Mendelson (1986)	6060
	<i>Betermand, (2001)</i>	1554
	<i>Ross (1976)</i>	3751
	<i>Markowitz (1959)</i>	2389
	<i>Markowitz (1952)</i>	35707
	<i>Griffin (2002)</i>	735
	<i>Fama &amp; French (1998)</i>	2642
	<i>Fama &amp; French (1996)</i>	635
	<i>Fama &amp; French (1995)</i>	3981
	<i>Fama &amp; French (1993)</i>	21756
	<i>Black (1972)</i>	3753
	<i>Sharp (1982)</i>	2257
	<i>Sharp (1964)</i>	20936
	Kosapattarapim & Chaiwat (2013)	7
	<i>Tobon (1958)</i>	6087
	Kimura, Y. (2017)	672
	Bernardo & Welch (2004)	1713
	Chakrabarti & Roll (2002).	17
	JENSEN, (1967)	95
	SHAH & HIJAZI, (2005)	27
	Qin (2007)	9
<b>Ownership Concentration</b>	Macey, (2011)	124
	Kyle, (1985)	9678
	Bloomfield, O'Hara & Saar (2009)	229
	Qiu & Welch, (2004)	395
	Banz & Rolf (1981)	6956
<b>Arbitrage</b>	Ali, Lynch, Melewar & Jin (2015)	47
	Asquith & Mullins (1986)	2113
	Davis, (2003)	1224
	Shleifer & Vishny (1997)	4721
	Kumar, Page & Spalt (2009)	6
	Jagannathan, Ravi and Z.Wang (1996)	2554

The table.3 narrates the original worth of the papers selected by us for this study to complete it by telling number of citations cited all around the globe by various researchers. And these papers with number of citations are segregated as variable wise. The range of cited literature is between 1952 – 2017 and research papers those are majorly contributing in literature are shown in this table. Thus, the papers those are being cited in five or more than five papers are tabulated below and also cited in this study for their participation. These numbers of citation of relevant articles are taken by Google Scholar. Thus, 31 papers are majorly talking of stock price fragility. Greenwood and Thesmar, (2011) has developed mechanism of price fragility for the first time and it is cited in 157 other papers, Anand

(2009) is cited in 83 papers arguing about fragility of price. Similarly, Demetriades, Fielding and Rewilak, (2016) is cited as nine times, Rani, (2011) is cited in 11 papers, Demirgüç (2000) is cited in 294 papers, Barber (2016) is cited in 60 papers regarding fragility. Extending to it, on volatility, Carhart, (1997) is been cited by 13022 individuals, Merton, (1973) is also been cited by 12846, Amihud and Mendelson, (1986) are become 6060 times part of literature, Fama and French (1993) are been narrated in research as 21756 times and Sharp (1964) has become part of studies as 20936 times. These are the authors having highest score of being cited, while rests of the others are also mentioned in table. Many authors worked on concentrated ownership and their work is been cited more than one hundred times but Kyle, (1985) and Benz and Rolf, (1981) has highest score in this regard as 9678 and 6956 respectively. While, on arbitrage Asquith & Mullins (1986) work is used by 2113 other authors, Davis, (2003) is been narrated in 1224 papers, Shleifer and Vishny (1997) has supported studies by 4721 time and 2554 authors has considered Jagannathan, Ravi and Z.Wang (1996) paper in their research.

#### 4.6 Content Analysis

Here in this type of review to elaborate review of such conceptualized variables content analysis method is used. "It is a technique where researcher uses to study the text from the past literature and elaborates its consequences on various factors to the audience" (Reitz, 2004). Thus, by elaborating it Greenwood and Thesmar, (2011) concluded that stock price fragility is significantly produced due to fragile ownership mechanism, arbitrage behavior and volatility in price. Ali, Lynch, Melewar and Jin (2015) have found that arbitragers are significant key players of conventional market and actively participates in minor chunks by varying market position from prevailing position and this ultimately makes price graph of market very thin. Kyle, (1985) found that extensive buying and selling of exchange traded funds varies ownership of particular funds negatively and it normally happens in micro seconds that harms funds prices and funds holders lose their confidence on market operation. Moreover, similar findings are found by many other researchers those are deeply cited in section two. Hence, price fragility, volatility, ownership of funds and arbitrage's role has significant relationship among each other.

### 5 Key Detections

In this section, we explain research directions and study findings. As explained above conventional finance has flourished during seven decades and is completing its eighth one. We truly have made our best effort to incorporate suitable studies and have faced these complexities in our research. The area of stock price fragility is very new and is still emerging; majority of the work done on fragility is about bank fragility in European countries. Many of the researchers have studied it empirically and have not properly identified it conceptually by following its theoretical base. Another main limitation is that Greenwood and Thesmar, (2011) has developed a brief and accurate empirical methodology on it but its further testing is required that has not been done seriously till now. Price fragility is about exchange traded funds. But there is lack of censuses for data to test it. We have checked it contextually on various well known data sources and found it limited for empirical testing. Contextually these are very limited studies on this concept as said above.

## 6 Destiny Line for this Research

The focus of this paper was to identify the factors of stock price fragility by responding to question of the study that how stock price fragility works and what main indicators are producing it in a rational market? The researchers have found various new avenues for research after comprehensive study of literature review. As we explained earlier there is lack of proper empirical methodology except Greenwood and Thesmar, (2011) so it needs further testing for its validation that is lacking much more yet. The area of stock price fragility may be re-examined regional wise around the globe. In Pakistani context China has started work on E.T.F's in cooperation with PSX. How ETF's will respond in both countries and what would be the role of CPEC in association to it shall contribute vitally in literature. Is there would be any spillover effect from these both countries to each other regarding "exchange traded funds". It would provide another fresh insight to the field if finance. By working on these narrated avenues many other doors for research shall open because it is newly identified area for researcher and needs serious focus.

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