Global Financial Crisis and Market Reactions: Evidence form the Karachi Stock Exchange, Pakistan.

Working Paper

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INTRODUCTION

Background of the Study

- Stock Market Volatility and impact of a good or bad news.

- Anomalies in Stock prices.

- Irrational behavior of investors which is inconsistent with the Efficient Market Hypothesis (Fama, 1970)

- The resulting Overreaction or Underreaction.

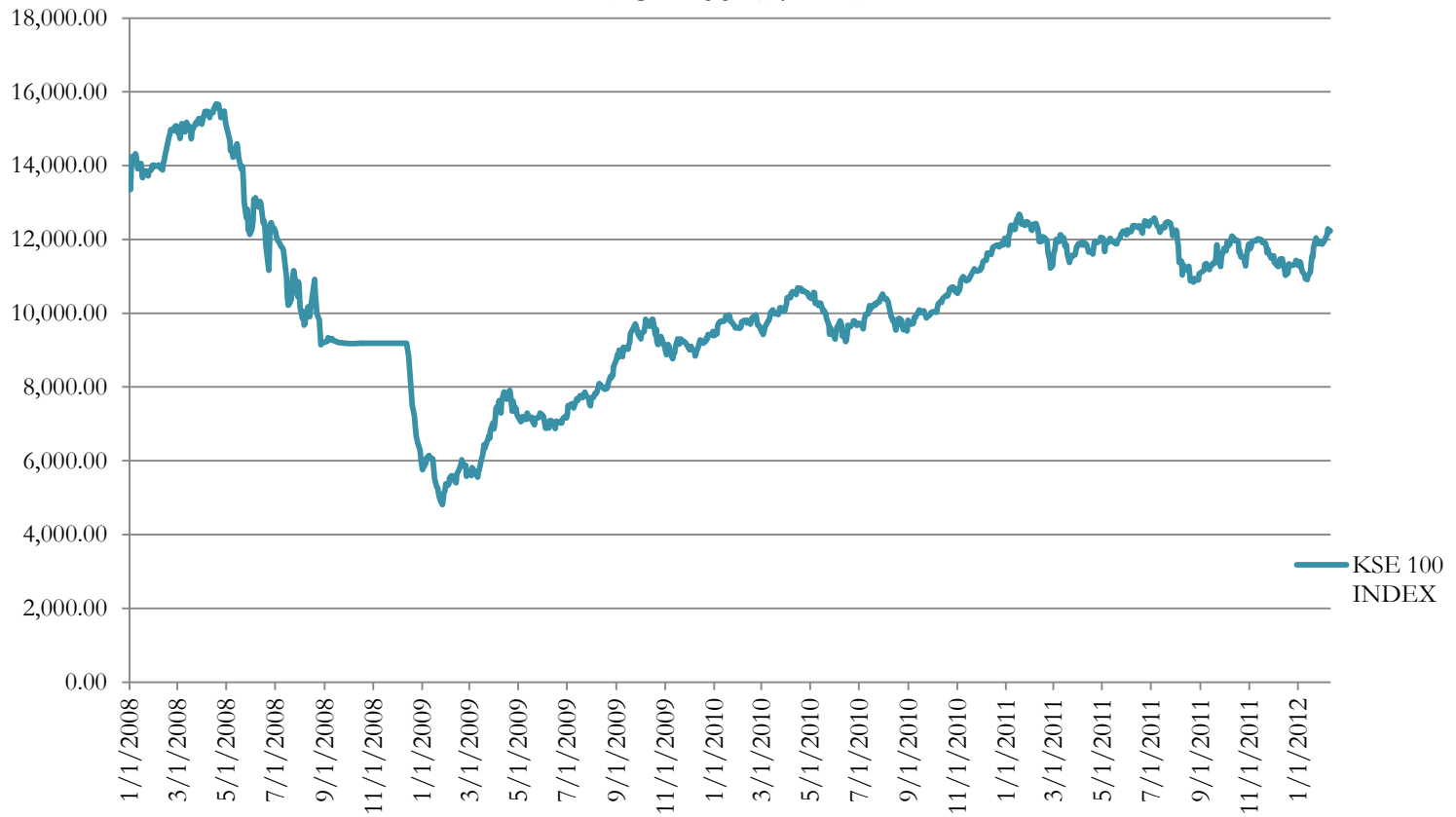- Local stock market and the Global financial crisis of 2008.

Overview of the Karachi Stock Exchange

- Established on September 18, 1947.

- Indices :
  - KSE 100 Index
  - KSE 30 Index
  - KMI 30 Index
  - KSE All Index

- Biggest and most liquid stock exchange in Pakistan.

- Total of 36 sectors listed on KSE.

THE KSE AT A GLANCE FROM 2008-2012

KSE 100 INDEX

The Global Financial Crisis and the Emerging Economies

- the US sub-prime mortgage market crisis that surfaced August 2007.

- quickly spread around the world resulting in a huge financial meltdown.

- bankruptcies of banks and insurance firms in many countries.

- including the emerging market economies (EME)

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SIGNIFICANCE OF THE STUDY

- Did the investors exhibit under- reaction in the Karachi Stock Exchange during the global financial crisis of 2008?

- Did the investors exhibit over-reaction in the Karachi Stock Exchange during the global financial crisis of 2008?

- Did past losers significantly outperform past winners?

- Were there winner-loser reversals at the KSE 100 Index?

SIGNIFICANCE OF THE STUDY

• It is significant to understand the *impact of the global financial crisis of 2008 on the local economy* which is considered among the emerging Asian economies.

• It will help to understand *the overall reactionary behavior of the stock market* (both under-reaction and over-reaction) in relevance to international financial crisis news.

• It will help to assess the *shock absorbing capability* of the local market in terms of investor reaction.

SCOPE OF THE STUDY

The purpose of this study is also;

• to contribute to the short term stock market reaction related literature by using daily return stock data and trading volume of Karachi Stock Exchange over the period of September 2008 to 2009.

• to contributes to the existing literature in examining the under-reaction and over-reaction hypothesis in an emerging market i.e. KSE, with respect to the global financial crisis of 2008.

OBJECTIVE OF THE STUDY

- To examine that the investors exhibited under and over-reaction in the Karachi Stock Exchange during the global financial crisis of 2008.

- To examine whether past losers significantly outperformed past winners.

- To investigate whether there was winner-loser reversals at the KSE 100 Index or not.

- **The Efficient Market Hypothesis (EMH):**

Fama, E. (1970). Efficient capital markets: a review of theory and empirical work. *Journal of Finance, Vol. 25, pp. 383-417.*

1. Weak form Efficient

2. Semi-strong form Efficient

3. Strong form Efficient
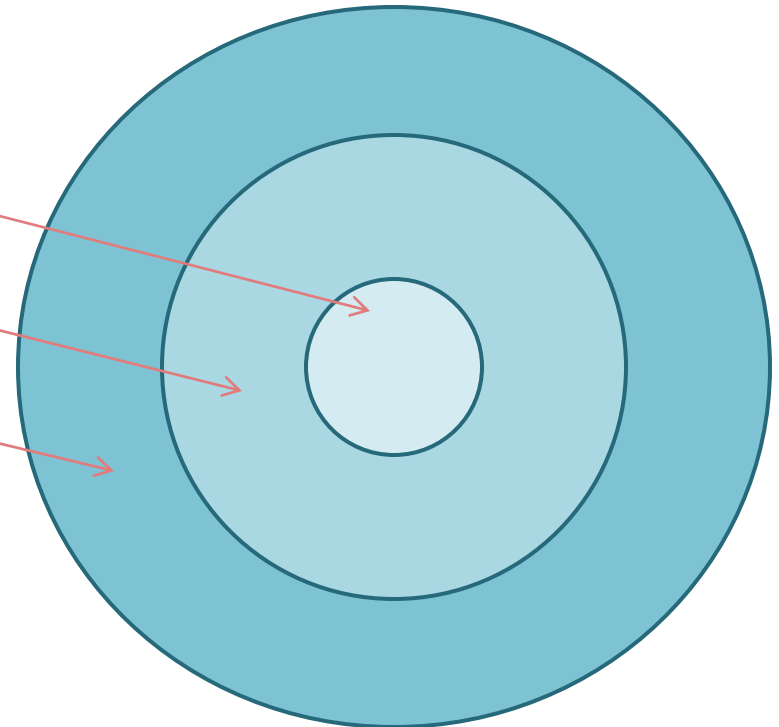
- **The Stock Market Anomalies:**

▪ Shiller, R. J. (1981). Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends. *American Economic Review*, 71: 421435.

▪ Lo, A. W. & C. MacKinlay (1988). Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test. *Review of Financial Studies, Vol.1, 41-66.*

▪ Lo, A., & MacKinlay, C. (1990). When are contrarian profits due to stock market overreaction? *Review of Financial Studies, 3*(2), 175–206.

▪ Shiller, R. (2003). From Efficient Markets Theory to Behavioral Finance, *Journal of Economic Perspectives, Vol.17, pp.83-104.*

| Representativeness Heuristic | → | Overreaction |
| Anchoring Heuristic | → | Underreaction |
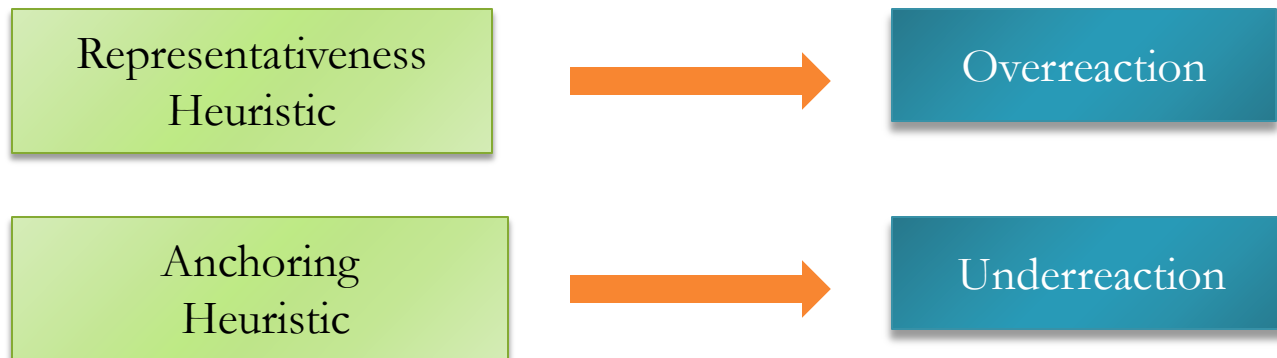
- **The Event Study Literature:**

▪ mergers and acquisitions (Jensen & Ruback, 1983)

▪ earning announcement (Barklay & Litzenberger, 1988)

▪ issue of new debt or equity (Myers & Mujluf, 1984)

▪ announcements of macroeconomic variables such as trade deficit (McQueen & Roley, 1993)

▪ stock market crash (Kemmna & Klock, 1992; Claessens, Djankov, Fan & Lang,2000)

▪ natural disaster and the insurance firms (Angbazo & Narayanan, 1996; Shelor, Anderson & Cross, 1992; Javed, 2009).

▪ Kothari & Warner (2005); Campbell, Lo & MacKinlay (1997) and MacKinlay (1997).

REVIEW OF RELATED LITERATURE

- **The Stock Market Under-reaction:**

- Market underreaction to open market share repurchases (Ikenberry, David, Josef Lakonishok & Vermaelen, 1995)

- The equity issuing firms performed poorly as compared to non issuing firms (Kang, Kim & Slutz, 1999)

- Negative long-horizon abnormal returns following mergers (Agrawal, Jaffee & Mandelker, 1992).

- Investors focus on familiar or attention grabbing stocks (Barber & Odean, 2008)

- Markets underreact to the slow release of news (Da, Gurun & Warachka, 2012)

- Investors also underreact to the absence of news which itself can contain valuable information (Gilio & Shue, 2012)

REVIEW OF RELATED LITERATURE

- **The Stock Market Over-reaction:**

- the earliest observation about overreaction in the capital markets (Keynes, 1964).

- prices were based too little on long-term dividend paying power and too much on current earning power (Williams, 1956).

- excessive reaction to current information (Kahneman and Tversky, 1982).

- extreme winners stocks subsequently underperformed the market while the extreme losers stocks subsequently outperformed (DeBondt & Thaler ,1985).

- results in favor of the overreaction hypothesis for the January effect that give unusual returns in January (DeBondt & Thaler ,1987).

- contrarian returns arise as a result of investor overreaction (Kang, Liu & Ni, 2002; Wang, Burton & Power, 2004; Da, Liu & Schaumburg, 2010)

THE UNDER-REACTION HYPOTHESIS

- financial and non-financial sectors have been considered to see the impact of the same news (Kutan & Muradoglu, 2012; Ali, Ahmad & Anusakumar 2011)

- the shortage of returns is compared between winner and loser portfolios

- **Hypothesis:**

$$H_o: CAR_L = CAR_W$$

$$H_1: CAR_L < CAR_W$$ $(Under\text{-}reaction\ if\ magnitude < 0)$

where,

$CAR_L =$ *Cumulative Abnormal Return for Losers*

$CAR_W =$ *Cumulative Abnormal Return for Winners*

THE OVERREACTION HYPOTHESIS

- the excess returns are compared between winner and loser portfolios

- **Hypothesis:**

$$H_o: CAR_L = CAR_W$$

$$H_2: CAR_L > CAR_W \qquad \textit{(Over- reaction if magnitude > 0)}$$

where, $\quad CAR_L = $ *Cumulative Abnormal Return for Losers*

$\qquad\qquad CAR_W = $ *Cumulative Abnormal Return for Winners*
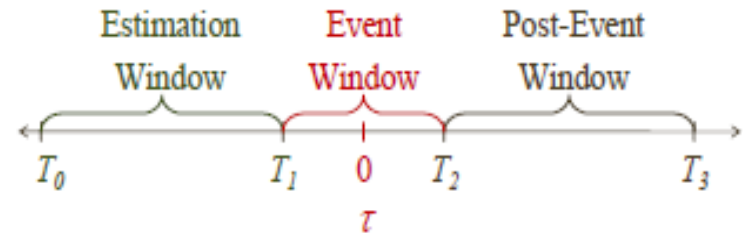
DATA AND METHODOLOGY

Data Collection

- Securities and Exchange Commission of Pakistan (SECP)
- Karachi Stock Exchange (KSE)

Sample

- KSE 100 Index
- Sept 2008 - Sept 2009
- Sectors:
  - Financial
  - Non Financial

Methodology

- Portfolio Formation
- Event Study Methodology

- Event Date: 15th September 2008
- Event window: + - 5 days
- Estimation window: 250 days prior to the event for estimating CAPM. Pre reaction is 11 days
- Post-Event window: 1, 2, 3, 4, 12, 24, 36, 52 weeks

DATA AND METHODOLOGY

a) _Actual Return:_

$$R_t = \frac{P_t - P_{t-1}}{P_{t-1}}$$

b) _Expected Return:_

CAPM Model

$$E(R_{it}) = \alpha_i + \beta_i R_{mt}$$

where, $Rit = \alpha i + \beta i Rmt + \varepsilon it$

$$R_{it} = E(R_{it}) + \varepsilon_{it}$$

c) _Abnormal Return:_

$$AR_{it} = R_{it} - E(R_{it})$$

d. _Cumulative Abnormal Return (CAR):_

$$CAR(t_{i1}, t_{i2}) = \sum_{t=t_1}^{t_2} AR_{it}$$

e. _Average Cumulative Abnormal Return (ACAR):_

$$ACAR_{pt} = \frac{1}{N} \sum_{i=1}^{N} CAR(ti1, ti2)$$

f. _The Testing Framework:_

$$ACAR_{loser} - ACAR_{winner} < 0$$
(Under-reaction

$$ACAR_{loser} - ACAR_{winner} > 0$$
(Over-reaction)

g. _The Test of Significance:_

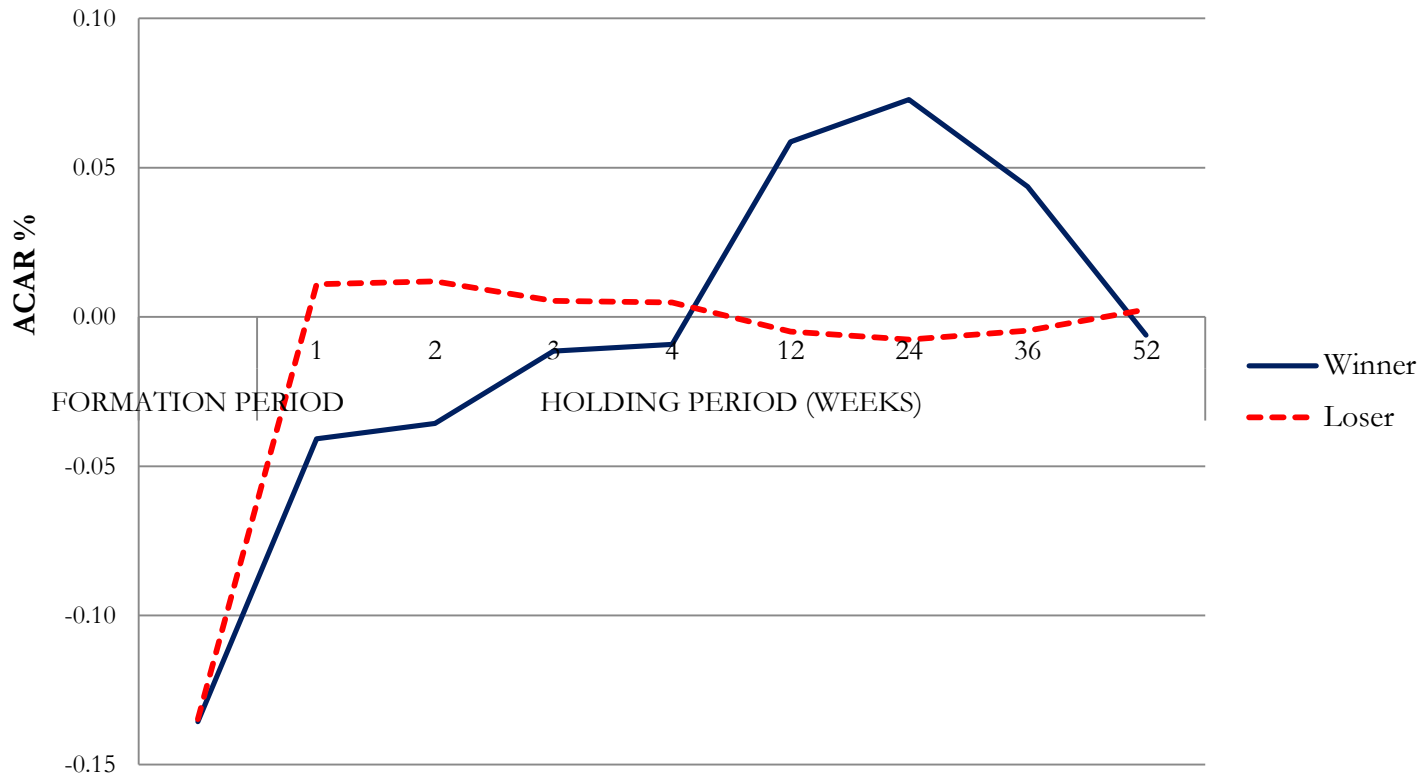$$t_t = \frac{CAAR - H_0 Value}{(\sigma_t^2 / \sqrt{n})}$$

EMPIRICAL FINDINGS

ACAR (%) for Winner, Loser and Loser-Winner Portfolios for the Financial Sector

| PORTFOLIO | FORMATION PERIOD | HOLDING PERIOD (WEEKS) | | | | | | | |
		1	2	3	4	12	24	36	52
Winner	-0.14	-0.04	-0.04	-0.01	-0.01	0.06	0.07	0.04	-0.01
t-stat	(-4.35) *	(-1.31)	(-1.15)	(-0.37)	(-0.30)	(1.98) *	(2.33) *	(1.40)	(-0.20)
Loser	-0.13	0.01	0.01	0.01	0.005	-0.005	-0.01	-0.005	0.002
t-stat	(-4.32) *	(0.69)	(0.84)	(0.30)	(0.27)	(-0.27)	(-0.42)	(-0.26)	(0.14)
Loser– Winner	**-0.003**	**0.05**	**0.05**	**0.02**	**0.01**	**-0.06**	**-0.08**	**-0.05**	**0.01**
t-stat	**(-0.09)**	**(1.96) ***	**(1.99) ***	**(0.67)**	**(0.57)**	**(-2.15) ***	**(-2.76) ***	**(-1.66)**	**(0.33)**

Statistical Significance at the 5% level

ACAR (%) for Winner, Loser and Loser-Winner Portfolios for the Financial Sector
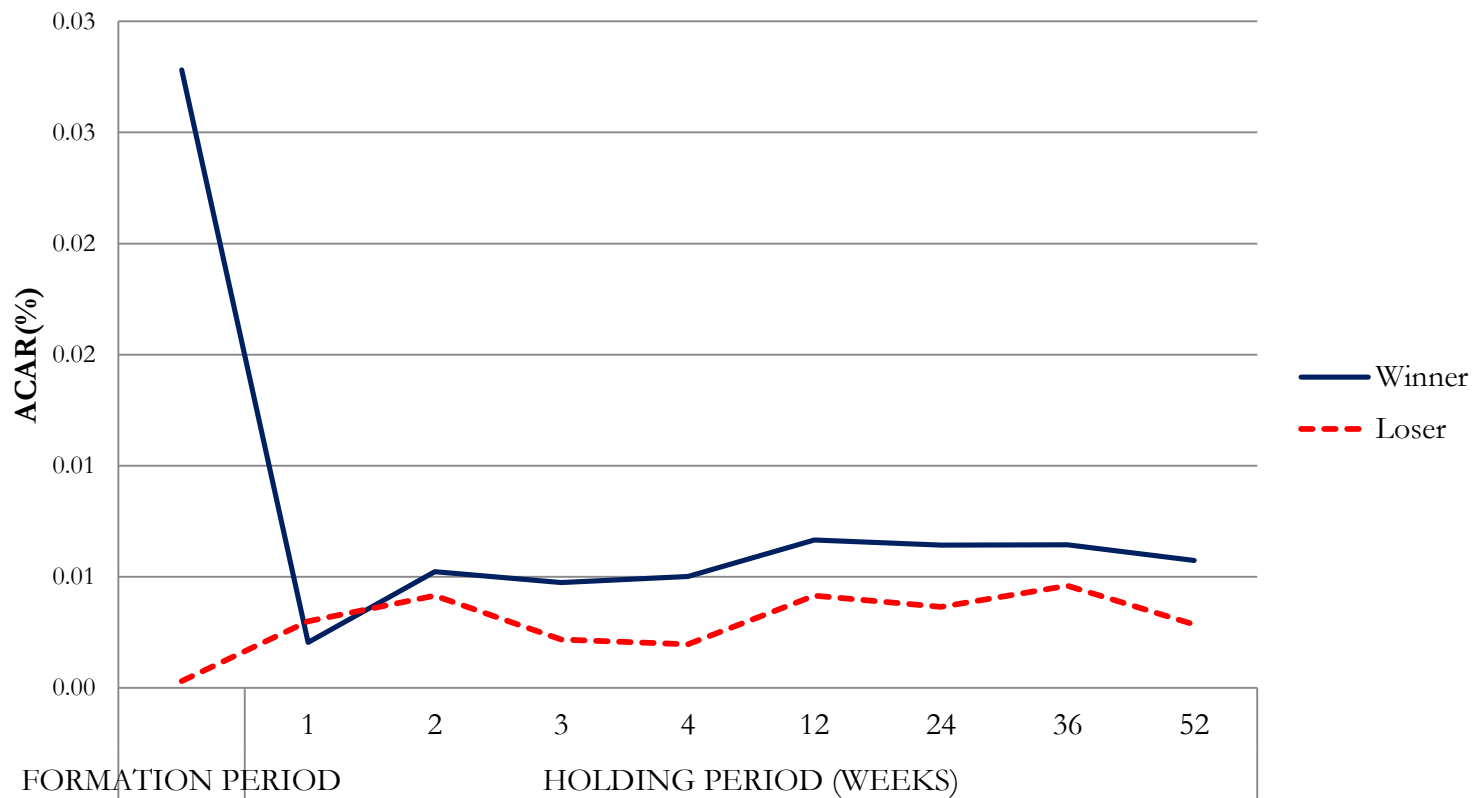
ACAR (%) for Winner, Loser and Loser-Winner Portfolios for the Non-Financial Sector

PORTFOLIO	FORMATION PERIOD	HOLDING PERIOD (WEEKS)							
		1	2	3	4	12	24	36	52
Winner	0.03	0.0020	0.0052	0.0047	0.0050	0.0067	0.0064	0.0064	0.0057
t-stat	(3.54) *	(0.26)	(0.67)	(0.60)	(0.64)	(0.85)	(0.82)	(0.82)	(0.73)
Loser	0.0003	0.003	0.004	0.002	0.002	0.004	0.004	0.005	0.003
t-stat	(0.04)	(1.09)	(1.52)	(0.79)	(0.71)	(1.51)	(1.33)	(1.68)	(1.04)
Loser - Winner	**-0.03**	**0.001**	**-0.001**	**-0.003**	**-0.003**	**-0.003**	**-0.003**	**-0.002**	**-0.003**
t-stat	**(-3.50) ***	**(0.83)**	**(0.85)**	**(0.19)**	**(0.08)**	**(0.66)**	**(0.51)**	**(0.86)**	**(0.31)**

Statistical Significance at the 5% level

ACAR (%) for Winner, Loser and Loser-Winner Portfolios for the Non -Financial Sector

CONCLUSION

Financial Sector

- Significant over-reaction in the first four weeks followed by under-reaction
- Winner loser reversals is observed in the first four weeks.
- Loser stocks significantly outperformed the winner stock for the fist two weeks
- Acceptance of Alternate Hypothesis

Non-Financial Sector

- No signs of significant under- or over-reactions witnessed.
- No winner loser reversals are observed.
- Acceptance of Null Hypothesis

PRACTICAL IMPLICATIONS / RECOMMENDATIONS

1. helpful to the local institutional as well as individual investors:

- in administering and devising a safer and securer investment strategy especially in the time of global financial crises in the future.

- align their investment objectives with the global events to minimize the risk of the investment

- minimizing the risk in the times of financial crises by focusing on the buy and hold strategy.

2. advantageous for the Securities and Exchange Commission of Pakistan (SECP) to reduce the volatility in the stock markets of Pakistan through policy measures.

3. Results may be beneficial for the different sectors of Pakistan economy.

FUTURE RESEARCH DIRECTIONS

- Increase in sample size and time horizon.

- Long term under and overreaction and other biases.

- Coverage of local events and other international events like Asian Crisis.

QUERIES