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## **Investment Decisions by Analysts: A Case Study of KSE**

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# Investment Decisions by Analysts: A Case Study of KSE

Salman Ahmed Shaikh<sup>1</sup>

## Abstract

*Security prices in efficient markets reflect all relevant information. Past price formations and even fundamental analysis cannot guarantee abnormal returns consistently to any pre-identified strategy or market participant, be they novice or expert traders. There have been various studies done in past to test market efficiency in emerging markets. However, in this study, we take the approach of surveying the professional investment community and study their stated actions in making investments. Our results indicate prevalence of herding and overconfidence in professional analysts. We also find that analysts extrapolate past into the future forecasts. We also find association between demographic characteristics and choice of security valuation methods that analysts use. In line with Chevalier & Ellison (1998), we find that young people herd less in our sample than the old people.*

**Keywords** Investment Behavior, Behavioral Finance, Herding, Mutual Funds, Security Analysis, CAPM, Technical Analysis

**JEL Codes** G02, G11, G12, G14

## 1. Introduction to Asset Pricing

Markowitz was the pioneer financial economist who set the foundation for Modern Portfolio Theory (MPT). MPT emphasized the role of portfolio diversification based on covariance analysis. MPT also gave a breakthrough in the definition and interpretation of risk. With MPT, it became clear that security's contribution to the portfolio risk is different and more important than a security's own risk.

Asset pricing models were developed side by side with the advancements in MPT. One of the pioneering asset pricing models was developed by Sharpe (1964). In his model, Sharpe (1964) introduced certain assumptions. He assumes that investors select mean-variance portfolio and investors share the same expected returns, variances, and covariances. He implies from these assumptions that every investor will hold exactly the same portfolio of risky assets. Since all risky assets must be held by somebody, a logical implication is that every investor will hold the "market portfolio".

Degree of risk aversion can be different in different investors and holding same market portfolio does not discount this possibility. Investors can always reduce the degree of risk they want to bear by holding riskless bonds along with the risky stocks in the market

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portfolio. Hence, the portfolio composition can be altered through exchange of risky assets with non-risky assets. Risk neutral investors could also increase their risk by holding negative amounts of the riskless asset, i.e. by borrowing.

Using a two-stage regression, Lintner (1965) performed the first empirical test of the CAPM. He rejected the CAPM based on his tests. Nevertheless, he studied individual stocks rather than portfolios. This shortcoming led to some incorrect estimates of beta.

In later studies, CAPM was tested using portfolio returns rather than individual stock returns. Black, Jensen and Scholes (1972) found evidence to support the CAPM based on their test of portfolios. In another study, Fama and MacBeth (1973) found that while the riskless rate and beta explained the structure of security returns, beta squared and unsystematic variances did not. These results supported the validity of CAPM and that beta alone as a single risk parameter could be used in security valuation.

But, in later studies, Fama and French (1992) found that stock betas did not explain long term return relationships. In their improved methodology, some additional variables like firm size and market-to-book ratios did explain the stock returns. Basu (1977) and Fama and French (1992) found that firms with low P/E ratios outperform firms with higher P/E ratios. Hence, the P/E ratio and the firm size were found to predict security returns better than the CAPM.

Alongside CAPM, Ross (1976) published the seminal paper on Arbitrage Pricing Theory (APT). This alternative equilibrium asset pricing model does not require as much limiting assumptions. The APT states that security returns will be linearly related to a series of factors.

Although the single-beta CAPM lived its way to last more than thirty years of empirical research and challenging evidence, nowadays multi-factor models and behavioral models are employed more often in asset pricing.

## **2. Investor Behavior: Behavioral Finance Perspective**

Behavioral finance tries to explain anomalous behaviour of security prices by the psychological biases in human cognition and irregularities in human behavior. Following is a brief list of various such biases and behavioral irregularities that have been established in empirical studies and experimental research.

### **2.1. Representativeness Heuristic**

In this phenomenon, people expect that recent information represents the key population parameters well. Therefore, people tend to give more weight to recent evidence over prior beliefs and/or past data. Fallacy here is that representative data or observation does not make it likely to repeat in future.

## **2.2. Herd Behaviour**

Herding refers to following the market consensus. It is not necessary that herding be considered irrational. It is a rational response in the face of uncertainty and lop-sided payoffs when deviation from the consensus is penalized more when it does not work than rewarded when it works. In next section, we report evidence from past studies that some fund managers, analysts and even CEO's mimic each other.

## **2.3. Disposition Effect**

As explained later in prospect theory later as well, investors tend to avoid the situation of having to bear actual irreversible losses. People tend to hold losing stocks too long and sell gaining stocks too early. People believe that until they sell the stock at a price less than the purchasing price, loss has not occurred. Hence, they wait for the price reversal on stocks that have gone down in value. But, investors tend to sell gaining stocks too early so as to book gains immediately.

## **2.4. Anchoring**

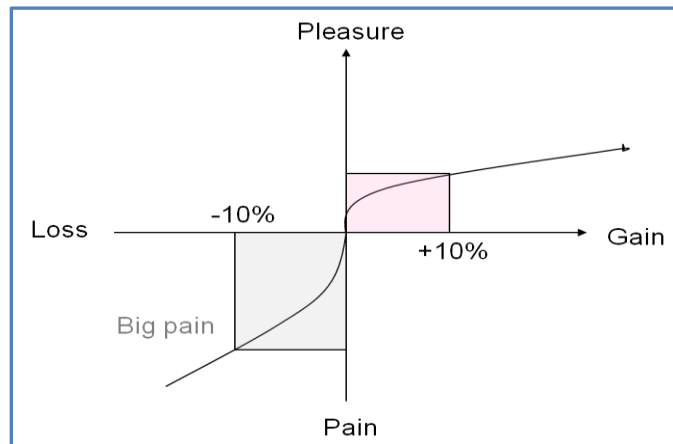
Investors often put more emphasis and credence on recent market information including prices. People tend to extrapolate from recent trends without confirming that the recent trends may differ from historical, long-term averages and probabilities. One form in which it is clearly visible in investors' behavior is that often people are willing to take more risk after they have had good earnings in recent past. Contrarily, they take less risk after incurring losses in recent past. In both cases, the risk taking may be different even if the fundamentals and other information remains same.

## **2.5. Regret Theory**

Humans cannot always detach their emotions from investment decision making. This theory explains the emotional reaction people experience after realizing their errors in decision making. People are sometimes emotionally attached with the price at which they purchased the stock. Current market price and other information may suggest that past price is not relevant basis to value securities. But, the emotional attachment leads people to use it as anchor. This results in behaviors like delay in selling at prices lesser than purchase price so as to avoid the feeling of regret.

## **2.6. Loss Aversion: Prospect Theory**

In loss aversion, the utility function is steeper for losses than for gains. This means that people have more disutility from a loss than the positive utility from an equal gain. According to Kahneman and Tversky (1979), this phenomenon is referred to as loss aversion. Kahneman and Tversky (1979) empirically estimated the difference between the utility and disutility of equal amount of gain and loss and their estimates suggest that disutility from loss was a multiple of two and half times the utility from an equal amount of gain.



**Figure 1: Utility from Gain and Loss**

It also leads to another exposition of this anomaly. The framing of choice by emphasizing gain more than losses or losses more than gains will also tend to influence investment choices. Even though, the information content in both cases may be exactly same.

### **3. Rationale for the Study**

If markets are efficient, then, current prices will reflect all relevant information, either public or private. It implies that in an efficient market, it will be extremely difficult for any investor or any strategy to consistently beat the market and gain excess returns over the market return.

However, in the real world, mutual funds and investment advisors do exist and earn handsome remuneration for their services. It is also observed that size of mutual funds' portfolios have increased in developed as well as developing countries. In Pakistan, for instance, despite there being almost no IPOs in last couple of years, the size of mutual funds industry has still grown.

Coming to the investment decision making in funds or by individuals, there have been attempts made in past studies to analyze the investor behavior. Jensen (1968) analyzing 115 mutual funds over the period 1955-64 concluded that fees and expenses take away any advantage that the portfolio managers might have.

Even if investment management fees and loads are added back to performance measures, and returns are measured gross of management expenses, Jensen concluded that on average, the funds apparently were not quite successful enough in their trading activities to cover even their brokerage expenses.

It is also pertinent to study how soon the information is incorporated in the price and whether that is balanced on average or result in over or under reaction. For instance, in

1987 stock market crash in USA, 22.6% value declined without any apparent news. Furthermore, over the years, 50 largest one-day stock price movements occurred on days of no major announcements. It has also been empirically established that inclusion of a stock in the S&P 500 index results in significant share price reactions.

Overreaction leads past losers to become under priced and past winners to become overpriced. De Bondt and Thaler (1985) studied two portfolios of 35 stocks. One portfolio comprised past extreme winners over the prior three years and the other portfolio comprised past extreme losers over the prior three years.

It was found that past losers outperformed winners over the next four years. Past losers were up 19.6% relative to the market; whereas, past winners were down 5% relative to the market. Hence, there was a difference of 24.6% between the two portfolio returns.

Odean's (1999) study of overconfidence in the marketplace noted several important findings:

- Frequent traders earn lesser returns as compared to less-frequent traders.
- Overconfident traders hold under-diversified riskier portfolios.
- Overconfident insiders improve price quality. Hence, they exploit the information.
- Overconfident noise traders worsen price quality. Hence, speculation leads to price irregularity.

In some studies, it has also been discovered that age plays a role in risk taking. Young and old fund managers behave differently because of career concerns. Young fund managers do not tend to take on much risk and hence avoid being in an odd position. Hence, herd behavior is not so uncommon in even the specialist investors. (Chevalier & Ellison, 1998)

In the literature, there have been three motives for herding that are prominently noted and observed, i.e. information based herding, reputation based herding and compensation based herding. Information based herding occurs in situations when the analysts lack confidence in their private information. Reputation based herding is explained by the career concerns of the analysts and it will be more common among less experienced and young analysts. Compensation based herding is also influenced by the career concerns. Since deviation from the market consensus are rewarded less when they are right and penalized more when they are wrong, the young and inexperienced analysts would tend to herd more often.

Cheng et al. (2006) studied the weights assignment by money market fund managers on the forecast recommendation of Buy-Side-Analysts (BSAs) and Sell-Side-Analysts (SSAs). They concluded that the optimal weight put on BSA's research by the fund management increases with the quality of their signals. According to them, the weight put on BSA's research also increased when the quality of the SSA's signal decreases. They also found that the weight depended on the degree of bias. When the degree of

bias increases in SSA's forecast, it also led to increase in optimal weight put on BSA's forecasts.

Brown et al. (2007) investigated the inclination of fund managers to herd, i.e. follow analysts' recommendations. They also tried to explore whether the herding behavior by fund managers had an impact on stock prices in turn.

Discussing their findings, Brown et al. (2007) noted that mutual fund herding did have an influence on stock prices. In their study, it was found that mutual funds overreact when they engage in herding behavior. Positive consensus recommendation revisions resulted in a herd of funds buying a stock, while negative revisions result in a herd of funds selling a stock. They also concluded that herding on recommendation changes is driven partly by career incentives.

Elliot et al. (2008) investigated the relationship between non-professional investors' information choices and their portfolio returns. They found that less-experienced nonprofessional investors earn lower returns as their use of unfiltered information increases relative to their use of filtered information.

Contrarily, for more-experienced investors, they earn higher returns as their relative use of unfiltered information increases. Elliot et al (2008) interpreted the findings to suggest that the observed phenomenon was explained by investors' ability to make effective use of unfiltered information. They concluded that the relative use of information (unfiltered or filtered) did not determine the returns for investors.

Noting the effect of investing experience, the noted scholars suggested that less-experienced investors are likely to remain unable to use unfiltered information. This is not the case with more-experienced investors. Hence, investing experience affects the ability to make better use of unfiltered information and which determines the return. Relative availability of information content is not a principal determinant of returns.

Other than herding, some studies have explained other psychological factors that affect different analysts' behavior. For instance, Chen & Jiang (2005) reasoned that overconfidence which is maintained over the holding of private information may result in deviation from consensus.

In this current study done for the Pakistan's premier equity market, we try to analyze the investment decisions by professional investors. We attempt to analyze various links between demographic variables and choice of security valuation methods. We also try to find the evidence for various behavioral finance concepts and hypothesis like anchoring, herd behavior, overconfidence etc.

## **4. Research Methodology**

### **4.1. Nature of Data**

Primary data is collected from 46 people who are professional analysts working in mutual funds, brokerage houses, investment companies etc. Data is collected through a structured questionnaire.

### **4.2. Sampling Unit**

Sample unit comprises individual persons who are professionally working as financial analysts, fund managers, broker analysts, and research analysts in senior and junior positions.

### **4.3. Sampling Methodology**

For sampling, a mix of convenience and snowball sampling method is used.

### **4.4. Methods**

For analysis of data, descriptive tools are mostly used. Contingency tables used in the study also enable us to highlight possible relationships between different factors in the study.

## **5. Data Analysis**

### **5.1. Profile of Respondents**

#### **5.1.1. Age Profile**

Mean age of the respondents is 29 years. Median age of respondents is 27 years. It shows that mostly young people are hired for financial analysis tasks who are usually better trained and equipped with numerical computations and use of modern day software to carry out financial numerical analysis.

#### **5.1.2. Marital Status Profile**

We collect data on 'marital status' so that we can relate marital status with security valuation methods used and identify whether people with more family expenditure requirements tend to be radical or conservative in their forecasts. If they herd more, then, they are conservative forecasters. In next sections, we present the evidence. Table 1 gives the frequency distribution of this variable.



<b>Marital Status</b>	<b>Number of Respondents</b>
Married With Kids	15
Married With No Kids	5
Single	26

**Table 1: Marital Status Profile of Respondents**

### 5.1.3. Designation Profile

Table 2 shows the profile of respondents by designation. It can be seen that the analysts taken for study in this sample are working in both senior/supervisory and junior positions. Table 2 gives the frequency distribution of this variable.

<b>Designation</b>	<b>Number of Respondents</b>
Fund Manager	8
Head of Research	4
Stock Broker	4
Senior Analyst	16
Junior Analyst	14

**Table 2: Designation Profile of Respondents**

## 5.2. Forecast for KSE for 3QCY13

We ask the analysts to forecast the market movement in next quarter, i.e. July to September 2013. Table 3 reports the results.

<b>Forecast (% Change)</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
-10	3	6.52	6.52
-5	3	6.52	13.04
0	7	15.22	28.26
5	19	41.20	69.57
10	14	30.43	100.00
Total	46	100.00	

**Table 3: Forecast for KSE for 3QCY13**

Average result of their forecasts is 4.13% computed as grouped mean. Hence, on average, market participants comprising professional analysts think that market will rise by 4.13% during Jul-Sep 2013.

It can be seen from table 4 that bullish past influences the future expectation. Market return in excess of 10% in 1QCY2013 and 2QCY2013 influences the investors to carry the bullish sentiments forward in 3QCY13.

Date	Close Value	Return
2-Jan-13	17,242.74	
1-Feb-13	18,173.67	5.40%
1-Mar-13	18,043.31	-0.72%
1-Apr-13	18,982.42	5.20%
2-May-13	21,823.05	14.96%
3-Jun-13	21,005.69	-3.75%
1-Jul-13	21,363.16	1.70%
Average Monthly Return		3.80%
Average Overall Return		23.90%
1QCY2013 Return		10.09%
2QCY2013 Return		12.54%

**Table 4: Past Returns in KSE for CY 2013**

### 5.3. Analysis from Behavioral Finance Perspective

#### 5.3.1. Marital Status & Herding

It can be seen from table 5 that 80% of the unmarried people do not follow market consensus as compared to 40% of married people with no kids and 60% of married people with kids. This shows that possibly single people are less conservative and more ambitious in their financial valuation.

Market Consensus	Marital Status			Total
	Married w	Married N	Single	
0	9 28.13 60.00	2 6.25 40.00	21 65.63 80.77	32 100.00 69.57
1	6 42.86 40.00	3 21.43 60.00	5 35.71 19.23	14 100.00 30.43
Total	15 32.61 100.00	5 10.87 100.00	26 56.52 100.00	46 100.00 100.00
Pearson $\chi^2(2) = 4.2541$ Pr = 0.119				

**Table 5: Marital Status & Herding**

It maybe because of the following reasons:

- a) Career concern. Their forecast error will be heavily penalized than the errors made by experienced forecasters. But, still for career growth and to stand out, they take the risk.
- b) Low opportunities to switch jobs in initial phase of career. Hence, they want to advance with performance that stands out.
- c) Coming from the academia, they have inclination to use tools that may not be used generally by existing analysts. Hence, their forecast may differ from others and they may have more confidence and credence in their numerical capabilities to understand the workings of capital markets and frictions.
- d) No past forecasting success in career which could act as a cushion if they make errors.

### 5.3.2. Age & Herding

For defining the age group, we categorized analysts as young and old. Analysts with age less than 30 are considered young and analysts with age greater than 30 are considered old. It can be seen from table 6 that 75% of the young people do not follow market consensus as compared to 55% of old people. This further reinforces the above findings.

Market Consensus	Age Group		Total
	Young	Old	
0	26	6	32
	81.25	18.75	100.00
	74.29	54.55	69.57
1	9	5	14
	64.29	35.71	100.00
	25.71	45.45	30.43
Total	35	11	46
	76.09	23.91	100.00
	100.00	100.00	100.00
Pearson chi2(1) = 1.5404			Pr = 0.215

Table 6: Age Group & Herding

### 5.3.3. Overconfidence

In the table, we see that analysts are overconfident and this result is consistent with earlier studies as well. People tend to be overconfident about their abilities, trade more than necessary, create noise and volatility in the market which is capitalized by some

other investors and hence abnormal returns do tend to occur to some strategies and to some participants.

It can be seen from table 7 that less than 5% people rate themselves below average. More than one third of analysts in the sample rate themselves above average.

<b>Self Rating</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Above Average	16	34.78	34.78
Average	28	60.87	95.65
Below Average	2	4.35	100.00
Total	46	100.00	

**Table 7: Self-Rating by Respondents**

#### **5.4. Mean Income Comparison by Designation**

Monthly ungrouped mean income in the sample of 46 respondents is Rs 112,500. The table shows that investors or the management of mutual fund or brokerage is willing to incur higher cost to source quality labor force to make the investments and manage portfolios and offer investment advice. The distribution of income by designation in the sample results gives an exploratory view of monthly compensation in table 8.

<b>Designation</b>	<b>Mean Monthly Income (Rs.)</b>
Fund Manager	142,500
Head of Research	318,750
Stock Broker	156,875
Senior Analyst	96,875
Junior Analyst	41,607

**Table 8: Income Distribution by Designation**

#### **5.5. Mean Income Comparison by Education**

Though, nothing causal and conclusive could be said from an exploratory nature of the study and limited sample size, but few interesting things are pointed out. The table 9 shows that financial analysis industry has merit and it compensates based on education which represents the skill level of an analyst. Foreign university degree and CFA earn more than local university degree holders.

<b>Education</b>	<b>Mean Monthly Income (Rs.)</b>
Graduation – Local University	67,500
Post Graduation – Local University	112,968
Graduation – Foreign University	375,000
Post Graduation – Foreign University	145,000
ACCA	51,250
CFA	153,928

**Table 9: Income Distribution by Education**

### 5.6. Mean Years of Experience at Particular Designation

The table 10 shows that possibly promotion within the financial analysis industry is not necessarily a function of experience. While junior analysts take time to progress, not all people who have spent same working experience go up the ladder necessarily. This is also substantiated a bit by the fact that correlation between income and experience is 0.38.

<b>Designation</b>	<b>Mean Experience</b>
Fund Manager	7.09
Head of Research	8.75
Stock Broker	9.75
Senior Analyst	7.59
Junior Analyst	3.01

**Table 10: Experience by Designation**

### 5.7. Appraisal Frequency

The table 11 shows the appraisal frequency. It can be seen that there is tendency in some organizations for a more frequent appraisal. But, mostly, performance appraisal is done on annual basis.

<b>Experience</b>	<b>Mean Experience</b>
Monthly	8
Quarterly	6
Half Yearly	3
Annually	29

**Table 11: Appraisal Frequency**

### 5.8. Use of Valuation Methods by Education

Table 12 shows the relative frequency with which different valuation methods are used by the analysts. We categorize the choices by the educational background. The legends are described as follows:

CAPM	-	Capital Asset Pricing Models
MFM	-	Multi-Factor Models
DDM	-	Dividend Discount Models
TA	-	Technical Analysis
FM	-	Financial Models
TS	-	Time Series Tools (ARIMA, GARCH, ARIMA, VAR) etc
MC	-	Capital Asset Pricing Model

Education / Methods	CAPM (%)	MFM (%)	DDM (%)	TA (%)	FM (%)	TS (%)	MC (%)
Local Graduate	47.1	35.3	58.8	35.29	17.7	5.88	17.7
Local Masters	50.0	25.0	56.3	25.0	12.5	6.25	37.5
Foreign Graduate	50.0	50.0	50.0	100	50.0	100	50.0
Foreign Masters	50.0	100	50.0	100	100	100	50.0
ACCA	50.0	100	50.0	100	50.0	100	50.0
CFA	71.4	28.60	100.0	42.9	42.9	14.3	26.6

**Table 12: Security Valuation Methods Used by Education**

Table 13 shows the relative frequency with which different valuation methods are used. It can be seen that DDM is used most frequently, followed by CAPM, Technical analysis and market consensus.

It is interesting to note that one third of respondents in the sample use technical analysis; hence, they do not believe that weak form efficiency strictly holds for Pakistan's premier equity market. Hence, they believe that past price formations have useful information and can be used to earn excess returns. We also find that almost one third of the respondents tend to follow market consensus. Since, few large block trades historically have moved stock prices away from fundamental values, analysts do not want to deviate too much from the market consensus.

Time series tools are used by only 3 out of 46 respondents. It may very well be because of lack of skills set since most business schools and curriculum of professional certifications do not give a rigorous training of these tools. It also points towards the fact the economics schools need to fill this gap as they alone train their students in econometrics techniques.

Valuation Method	Number of Respondents	Percent (%)
CAPM	24	52.17
MFM	12	26.09
DDM	29	63.04
TA	15	32.61
FM	10	21.74
TS	3	6.52
MC	14	30.43

**Table 13: Security Valuation Methods**

## Conclusion

In this study, we tried to analyze the investment decisions made by professional investors. We attempted to analyze various links between demographic variables and choice of security valuation methods. We also tried to find the evidence for various behavioral finance concepts and hypothesis like anchoring, herd behavior, overconfidence etc.

Our results indicate prevalence of herding and overconfidence. We also find that investors extrapolate past information into the future. We also find association between demographic characteristics and choice of security valuation methods. We find that young people herd less in our sample of analysts than the old people.

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