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Analysis of Financial Distress

Indian Mutual Fund Managers

Highlights

Complexity of Option Pricing

Study on the Investors' Perceptions

Discovering Thoughts, Inventing Future

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Contents of the Issue

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An Investigation, Measurement, and Evaluation on the Stock Market Crisis, Performances and their Initiatives: A Study on the Investors' Perceptions

By Md. Mohiuddin, Md. Zainal Abedin & Mohammod Naymur Rahman

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Abstract- Capital market (Dhaka Stock Exchange and Chittagong Stock Exchange) have multiple and significant roles in the development of nation's economy. They provide avenues for investment and capital acquisition and can provide an indication of overall economic condition (Stock Market Crisis: Hasan; The Financial Express, 12 July 2012). The stock market is the engine of growth for an economy, and performs a critical role in acting as an intermediary between savers and companies seeking additional financing for business expansion. Vibrant capital is likely to support a robust economy. While lending by commercial banks provides valuable initial support for corporate growth, a developed stock-market is an important pre-requisite for moving into a more mature growth phase with more sophisticated conglomerates.

Keywords: BSEC, DSE, CSE, IPO, BB, capital market, DEC-mobile, DSEX, NASDAQ, demutualization.

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An Investigation, Measurement, and Evaluation on the Stock Market Crisis, Performances and their Initiatives: A Study on the Investors' Perceptions

Md. Mohiuddin [α], Md. Zainal Abedin [σ] & Mohammod Naymur Rahman [ρ]

Abstract- Capital market (Dhaka Stock Exchange and Chittagong Stock Exchange) have multiple and significant roles in the development of nation's economy. They provide avenues for investment and capital acquisition and can provide an indication of overall economic condition (Stock Market Crisis: Hasan; The Financial Express, 12 July 2012). The stock market is the engine of growth for an economy, and performs a critical role in acting as an intermediary between savers and companies seeking additional financing for business expansion. Vibrant capital is likely to support a robust economy. While lending by commercial banks provides valuable initial support for corporate growth, a developed stock-market is an important pre-requisite for moving into a more mature growth phase with more sophisticated conglomerates. Today, with a $3.41 Trillion TK economy and per capita income of roughly $1466, Bangladesh should really focus on improving governance and developing advanced market products, such as derivatives, swaps etc. Despite a challenging political environment and widespread poverty, Bangladesh has achieved significant milestones on the social development side. With growth reaching 7.05 percent in 2016, the economy has accelerated to an impressive level. It is noteworthy that the leading global investment banks, Citi, Goldman Sachs, JP Morgan and Merrill Lynch have all identified Bangladesh as a key investment opportunity. The Dhaka Stock Exchange Index is at a 11 month high last October 14, 2015, however, the capital market in Bangladesh is still underdeveloped, and its development is imperative for full realization of the country's development potential. It is encouraging to see that the capital market of Bangladeshis is growing, albeit at a slower pace than many would like, with market development still at a nascent stage. The market has seen a lot of developments since the inception of the Securities and Exchange Commission (SEC) renamed as Bangladesh Securities and Exchange Commission (BSEC) on December 10, 2012. After the bubble burst of 2011, the capital market has attracted a lot more attention, importance and awareness that have led to the infrastructure we have in the market today. All over the world, Stock Exchanges recognizes their investors need and motivate them to invest properly. The study investigates, measure, and evaluates the stock market Crisis, performances, activities, and initiatives from the reflection light of secondary data and investors' perceptions. To do this Five-Point Likert Scale has been used to survey investors. The study actually reveals the state of actual stock exchange crisis and performance from the view point of secondary data and investors and the initiatives taken by the DSE against critical situations. The study also focused to the extent that whether their (BSEC, DSE and CSE) activities, performance and initiatives and the defined investors perception can create positive impact on their (investors) mind and be able to create positive contribution on Stock Market Crisis and the building of good brand image of the DSE and CSE. A sample of 100 investors and some selective samples have been surveyed since they represent all investors segments in the industry.

Keywords: BSEC, DSE, CSE, IPO, BB, capital market, DEC-mobile, DSEX, NASDAQ, demutualization.

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I. Objectives of the Study

Broad objective

The main objectives of the study are to investigate, measure, and evaluate the stock market Crisis, performances, activities, and initiatives from the reflection light of secondary data and investors' perceptions.

Specific Objectives

- To investigate the reasons for the stock market crisis and the impact of it on investors.
- To sort out the reasons for the crisis.
- To find out the investors knowledge on capital market.
- To motivate the investors doing analysis rather than running after rumor.

II. Methodology of the Study

a) Research Approach

- This is a quantitative research, in some cases qualitative approach has been applied.
- At first phase an exploratory research has been conducted to understand the nature of problem and its subcomponents.

b) Sources of Data

To meet the research objectives both primary and secondary sources of data have been used.

Primary Source

i. A model questionnaire has been developed to elicit essential data. The Questionnaire is structured in nature and is based on Likert Scale method.

Population: All investorsin share market and some selective investors.

Sampling technique: Convenience sampling technique was used to select investors.

Sample Size: Total 100 investors.

Survey area: Dhaka and Chittagong

ii. Informal interviews with industry experts and managers of BSEC, DSE and CSE.
iii. Observation of investors while investing in capital market.

Secondary Sources

- Books and articles on stock markets and financial institutions
- Website of BSEC, DSE, CSE and others.
- Newspapers, Magazines and government's source.

Data Analysis Techniques

- Excel and SPSS software has been used to analyze data
- Various statistical methods and formulae have been used.
- Different Graphs, Tables, Charts and others instruments are used to make presentable the research results (Findings).

III. Literature Review of the Study

Before going for the topic selection, and to gain insight of that problem, it becomes necessary to review the already published work on that particular area. Since the functions on a stock market is tend to be specialized and not is understood by common people, this review part will give some basic knowledge and review of stock market crash, history of the stock market crash and defined reasons for the crash.

Bangladesh is a rising market with two stock exchanges, Dhaka Stock Exchange Ltd. (DSE) and Chittagong Stock Exchange Ltd. (CSE). DSE is the larger of the two. Dhaka Stock Exchange (Generally known as DSE) is located in Motijheel Commercial Area which is situated in the heart of the Dhaka city. It was incorporated in 1954. Chittagong Stock Exchange (Generally known as CSE) is located in SK Mujib Road, Agrabad Chittagong. It was incorporated in 1995.

a) Stock trader and investors

There are especially two types of investors in our country: institutional investor and small investor. Institutional investors include Mutual fund, Merchant Banks, Provident Fund Companies, Insurance Company and Investment corporations. They have the right to invest in the share market. But their buying natures are restricted by the rules and regulations. They take part in the placement of shares. Retail investors are those who invest in the market with a view to earning profit. Their capital is not defined or confined by any laws or means. They are invited by the companies to participate in the IPO. After the IPO, the shares enter into the secondary market for transaction. In the recent collapse of share market, the retail investors are the main victims. The institutional investors are being accused of taking part in destroying the market (MOF, 2011). ICB has more than thirty thousand accounts to facilitate the institutional investors, whereas more than three hundred thousand people are involved in the share market. That means there are more than 30 lakh small investors in our country.

b) Stock Market Collapses in 1996 & 2011

Most of the countries' stock markets have confronted the taste of collapse at least once. In 2000, London Stock Exchange and American Stock Exchange encountered the collapse. Economic recession all over the world caused the share market collapse in America and Europe. But Bangladesh protected itself from this scenario due to very little foreign investment in this country.

After 1996 collapse in the share market, a neutral Inspection Committee was formed with a view to investigating the reasons behind the market collapse. Munir Uddin, an FCA, was the chief of that committee. He opined that the collapse of 1996 was the result of the activities of a group of people. Main accused at that collapse were outsiders to Bangladesh. Some of the leading businessmen along with the foreigners committed the crime. They were sued at that time but lack of evidence closed the files of the alleged persons. According to that Investigation Committee, more than 500 crore was transferred outside the country. But for that failure, the government and the SEC were accused. The controlling and the monitoring activities were weak. As a whole, it can be said that paper based share certificate, lack of knowledge of the retail investors, manipulation, inside trading and greed are some of the main reasons of the collapse (MOF, 2011). The main catalysts for that collapse were the shrewd manipulators from both home and abroad (Mohiuddin, 2010).

After 14 years, SEC and the two share markets again experienced the taste of collapse. But this time the reasons were different. The paper based share certificates are no more in existence. As per the report of Ibrahim Khaled, various reasons led towards this disaster. Institutional investors played a major role in that case. For instance, each merchant bank has the right to invest in the market 10% of the deposit money collected from the clients. But they didn't comply with these rules.

They invested more than ascribed amount that violated the rules. Another reason was that ICB has

more than thirty thousand omnibus account. With this accounts many company speculated and manipulated the total market. The free entrance of the black money caused collapse of the share market. More than 30 lakh B/O accounts are now in Bangladesh. But there is no legal restriction about opening the B/O account. It has been revealed in the report that a single person has more than 20 accounts to conduct share transaction. Lack of surveillance activities led toward this collapse (MOF, 2011). It was said by the expert an economist that more than 30 thousand core taka was taken away by the share market gamblers. These gamblers speculated the shares and increased the price, which attracted the retail investors. They entered in the market without having sufficient knowledge about share market. Lack of knowledge on the part of the small investors is also indicated as the reason of market collapse. Since the collapse of the share market, a number of measures were initiated by the government, of which the most important one was forming a competent probe committee to investigate the activities in the market during the run up to the boom and bust, identify malpractices and manipulations and come up with policy suggestions to address the attendant problems. The report published by Bangladesh Finance Ministry specifying the reasons for share market collapse helped to get an overview regarding the reasons of market collapse. Before describing the reasons behind share market collapse, a citation of the Waran Buffet may be considered which is important for the small investors-the market like the

Lord, helps those who help themselves. But unlike the Lord, the market doesn't help those who do not know what they do and what they shouldn't do. It has been said in the report that recently market has experienced a sheer increase of investors and the volume of trade in the share market is one of the keys of economic development. The indomitable increasing market was to experience a collapse (opined by many market experts before the market crash). It has been opined by a giant investor that 3 million new B/O accounts have been opened newly in the last four years. The demand supply factor played a vital role in this collapse. Huge amount of money entered into the secondary market. The demand for the shares was created by opening many branches of brokerage houses. But the supply of the shares didn't increase. Such kind of pressure on the limited shares increased the price of the shares, and thereby, led towards the crash. Every merchant bank invests a huge amount of money in the share market and makes huge profit out of it. But in December, 2010, the Bangladesh Bank gave order to the merchant banks to limit their investment in the share market and also increased the cash reserve ratio (CRR). As a result, all the merchant banks had to withdraw the excess amount of money from the share market for withdrawal from the extra investment as well as maintaining high CRR fixed by the Bangladesh Bank. Such kind of situation caused the decrease of liquidity in the share market which also was one of the reasons for market crash. Market manipulators controlled the market by spreading various rumors regarding the shares through media, newspaper, broker houses etc. Such kind of misleading information attracted the small investors to invest and thereby the market became overvalued. Lack of IPOs in the share market and the wrong placement of IPOs created the situation. Most of the IPOs went in the hand of big companies' owners. As a result, people got a few shares to buy. It became easy to manipulate the market by those big persons. Commercial banks are to invest 10% of their total amount collected from the clients as deposits (Banking Act 26(2). But it was found that they invested a huge amount of money that overvalued the market. Broad money and foreign remittance entered into the share market that created such situation. Not only these but also the loans taken by the people for business purpose, housing loan and industrial loan received were invested in the share market. Such situation overvalued the market. The source of the investment was not justified or scrutinized. Therefore, the black money entered easily into the market and the market was overvalued. Strict supervision and excessive intervention by the government created the crash. It was to be iteratively stated by the media that the current higher index could lead the situation like 1996 crash. It is assumed that such news warned the gambler and induced them to withdraw huge amount of money from the market. If the supervision and intervention had been more flexible, the nation would not have confronted the situation like this. The Managing Director of BDBL opined that the excess entrance of liquidity, the split of shares of Tk. 100 into 10 shares of Tk. 10 each, illogical right and preference shares issue, increase of IPOs' price by applying wrong book building method and the misstatement of net asset value of the company were also responsible for the collapse of the share market. The CEO of IIDFC Capital limited opined that merchant bank should act as professional investment advisor to the small and other institutional investors. But Bangladesh Bank restrained the merchant banks from this investment advisory by formulating relevant laws. It is one of the reasons for market collapse. Other reasons like the insider trading by the dishonest broker, dealer and the related parties, wrong procedure in determining the face value of the shares, wrong information spread by the media, poor surveillance activities of SEC, DSE & CSE etc. led towards this disastrous situation in the Bangladesh share market. **(Source: ASA University Review, Vol. 7 No. 1, January–June, 2013)**

There have been some researches reports about stock market bubble not crash. **Islamand Khaled (2005)** analyzed on the predictability of the share price in DSE prior to the boom in 1996 and found

evidence in favor of short –term predictability of share prices. Mobarek and Mollah (2005) suggested that there are some factors (beta, size, the ratio of price-to-book value, volume of shares traded, earnings yield, cash flow yield, dividend yield and leverage) that influence share returns on the DSE. Akhter et al. (2005) identified a number of problems being encouraged by the market. They recommended that the SEC, as a watchdog of the market, should play prominent role in reactivating markets, which is essential for accelerating the speed of country's industrialization. Capital market is recognized as a vehicle for rapid economic development through mobilization of available resources in a country (Ahmed S, 2005). The capital market in Bangladesh received significant boost in last year. All share price indexes, turn over as well as market capitalization, improved substantially. However, the market lacks reflection of company fundamentals and the possibility of price manipulation in the market through insider trading cannot be ruled out. Some most important issues regarding crash-

- The nature of stock market bubble
- Formation of bubble
- Possible reasons behind the crash

Previous findings have reported mostly results that are based on purely the details of stock market bubble and its impact. Given the circumstances, the present study takes the initiative to conduct an historical investigation based on a new approach that evaluates the reasons of crashes of Bangladesh stock market respectively in 1996 and 2011. The findings from this study are valuable in guiding professionals and policy-makers to further formulate effective compliance of Bangladesh stock market.

Due to political unrest of Bangladesh state of emergency was declared and military took power of the country in 2007. During military-backed regime investment in real sectors as well as FDI decreased but the inflow of foreign remittance increased. Investors tried to find alternative investment sector to invest their savings and found stock market as an attractive alternative. According to CPD (2011), the total number of BO Account holders on 20th December, 2010 reached to 3.21 million though the number was 1.25 million in December 2009. Most of these new investors don't have enough knowledge about the stock market but invest their most or all savings in the market. 238 brokerage houses opened 590 branches at 32 districts. As CPD (2011) found, internet-based trading operation, opening branches of brokerage houses across the country, easy access to the market information, arranging a countrywide 'share mela (fair)' are the factors for increasing investors. But supplies of new securities through IPOs were not enough to chase huge capital of too many investors in the market. Banks & other financial institutions of Bangladesh had a lot of excess liquidity due to less business opportunities in the recession period of 2009-10. To minimize the cost of bearing excess liquidity and as a great opportunity, theses financial institutions & its officials as well as other people took loan and invest in the share market. This made a huge influx of liquidity in the share market. It was seen that the daily transaction in the share market was on an average from Taka 20,000 to 30,000 million in 2010 and the figure was double comparing to 2009. (Raisa, 2011). To grow Bangladesh`s economy by 7-8% per year Bangladesh Bank adopted accommodative monetary policy during the high inflation periods to support investment. Bangladesh Bank has pegged Taka against dollar to support exports. As Taka has been undervalued it has made excess growth in money supply. Last couple of years broad money made excess liquidity and the main motive behind it was Bangladesh Bank`s ex-change rate policy. A big portion of this excess liquidity had gone to the stock market but there were very few shares in the market. The policy that was adopted by BB to grow economy by increased exports & investment eventually misguided and ended up blowing the mother of all bubbles. Then government again fuelled the bubble after per-mitting whitening of black money through tax breaks and schemes (Rahman, 2011). Moreover Security & Exchange Commissions was not capable to monitor the market conditions properly. Due to the poor monitoring & market surveillance share prices of Z Category Companies and small companies increased dramatically. Moreover, some ini-31 tiatives taken by SEC were not effective and changed directives frequently such as; it changed directives of margin loan ratio 19 times. (Raisa, 2011)

c) Market Condition before and after the Crash

Dhaka Stock Exchange General Index (DGEN) soared to its highest levels from October, 2010 to December 2010, with the peak on Dec. 5, 2010 at 8,918 points. DGEN'S index on Jan. 3, 2010 was at 4568.40 and went up at a staggering 4,350 points or 95.23% increase! But on Jan 10, 2011, trading on the Dhaka Stock Exchange was halted after it fell by 660 points, or 9.25%, in less than an hour, the biggest one-day fall in its 55-year history. As a result the trading suffered a loss of about 6.7 %. Chittagong Stock Market also met a similar fate. The capital market was shut; small investors turned vandalistic; and the business city of Motijheel was transformed into a battlefield between protesters and law enforcers.

Market capitalization dropped by 5.5 percent to Tk 3, 26,087 corers from Tk 3, 44,958 Cr, as all securities suffered a combined loss of Tk 18,871 Cr in value. This fall in market capitalization occurs because of the massive fall in share prices. Fall in share prices was even greater than the market crash in 1996 when

the stocks plunged by 6 percent on a single-day. As of today (29.07.2012) Market capitalization stood at 2, 38,485 Cr in Dhaka Stock Exchange.

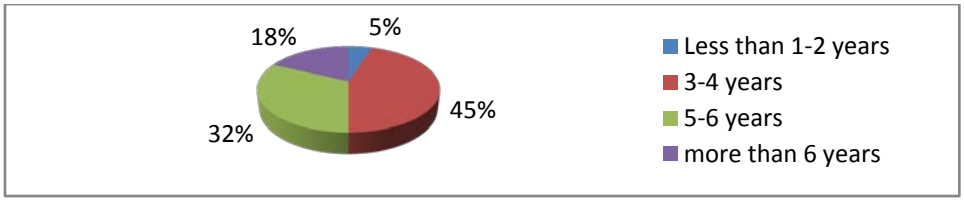
d) Causes and Effect of the Crash

Market insiders blamed the recent fall on the central bank's measures to control the liquidity flow in the banking system. In an effort to contain inflation, the central bank had to increase the Cash Reserve Ratio (CRR) by 50 basis points to 6 %. It was also aimed at stopping credit-flow to non-productive sectors such as giving loans to buy apartments, cars, luxurious items etc. Bank and non-banking financial institution's investment on the stock market depends on the paid up capital. The central bank also issued another directive asking financial institutions to adjust their stock investment exposure by December 2010. From January 2011, no institution will be allowed to invest more than 10 percent of its total liabilities in the stock market, and the exposure will be calculated based on market price, not cost price. Moreover government proposed gain tax on capital gain though this decision was postponed but it affected the investors. Introducing OTC market made the junk share of around 25 companies to be traded there resulting in increase in demand of the remaining share. Companies' asset revaluation opportunities are given. Companies raised their asset value thus in turn increasing the NAV per share of the company. It made the investor to invest in those share. Change of face value of the share and it was a great impact on booming market. As a consequence of changing the face value it ultimately increases that share price. The International Monetary Fund's prescription to Bangladesh Bank for addressing the overexposure of commercial banks to the stock market also propelled the unprecedented fall. The SEC increased the share credit ratio to 1:2 from 1:1.5. It means an investor will get a loan of Tk 2 against shares worth Tk 1. This induced the investors to take loan at the time when the market was good, thus after the crash it takes away all the belongings of the investors. Beside this poor monitoring on big investors or speculators by DSE and SEC and also lack of coordination between stock exchange and SEC is responsible for this crash.

IV. Analysis and Findings based on Primary Data

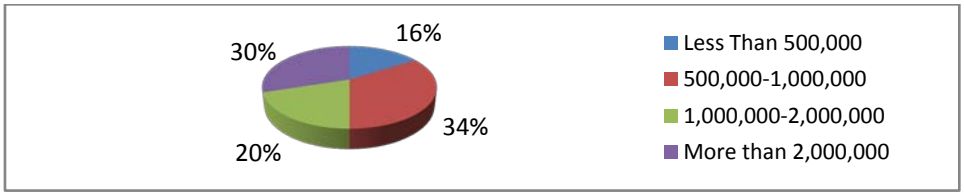
a) Data Collection and Analysis of Individual Items or Questions

01. How long have you been investing in the stock market?



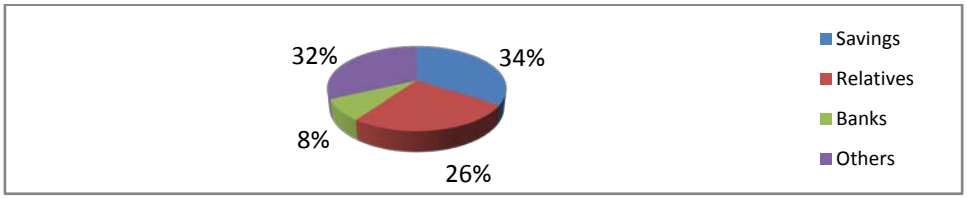
Interpretation: Among the respondents 18% of them have their investment in the stock market for more than 6 years while 32% have made their investment between 5-6 years and 45% of the investors have mentioned they are in the market for last 3-4 years. Only 5% investors entered into the market during the crisis period (less than 1-2 years.)

02. How much is your total exposure to the stock market?



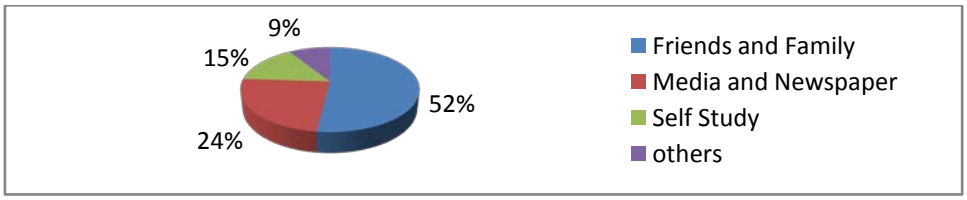
Interpretation: It is observed that 30% of the investors have their investment more than 2,000,000. Only 16% of them have investment less than 500,000, meanwhile 34% of the respondents have investment between 1000000-2000000 and 20% of investors ranges between 500,000-1000,000. It is evident that all the investors have more than 5lac worth of investment in the market.

03. What is the source of your investment fund?



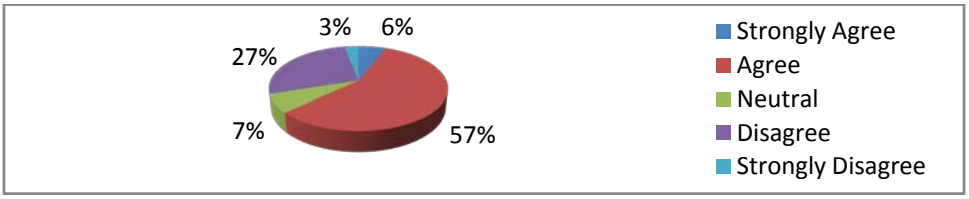
Interpretation: Investors have accumulated their investment from different sources. 34% of the respondents made their investments from own savings, 26% of the respondents collected from their relatives, 8% of the investors borrowed from banks and 32% of them accumulated from other sources.

04. How do you know about the stock market?



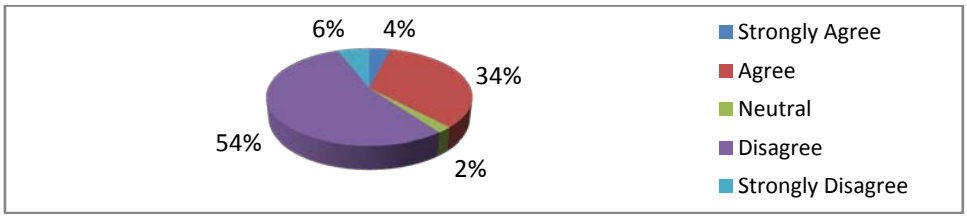
Interpretation: 52% of the investors told us they first learnt about the stock market from their friends and family, 24% of them mentioned Media and Newspapers as their source of information on stock market. 15% investors learnt from their self-studies and 9% mentioned other reasoning.

05. I know the fundamentals of the stock I intend to invest.



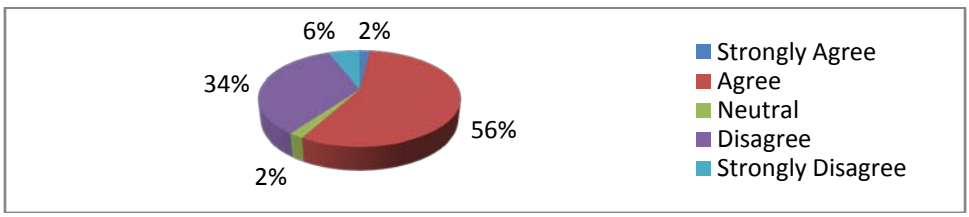
Interpretation: 57% of the respondents agreed that they know the fundamentals P/E ratio, EPS, NAV etc.) of the stock before making any investment decision on any particular stock. 27% of the investors do not know the fundamentals of the stock they intend to invest. 6% of them strongly agreed and 7% respondents remained neutral on the fundamental aspects of the stock they intend to invest. 3% respondents strongly disagree on this issue.

06. I know the technical analysis of stock price?



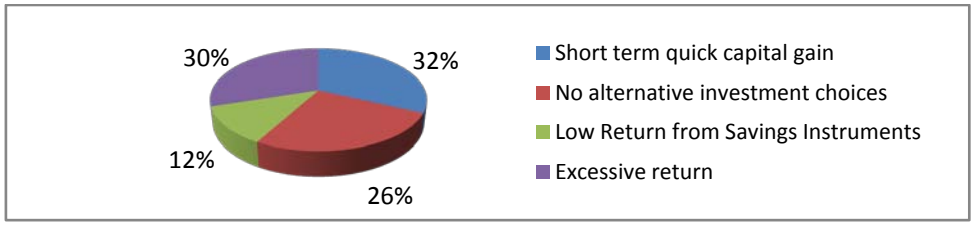
Interpretation: (A technical analysis of securities/stocks is a study of past price and volume trends to Judge the direction of future price movements of stocks.) 54% of the respondents are not acquainted with the technical analysis of stock price.34% of the respondents invest based on the technical analysis of the stock price.4% of investors strongly agreed on their expertise on technical analysis of stock prices.

07. Technical and fundamental analyses do not affect the market?



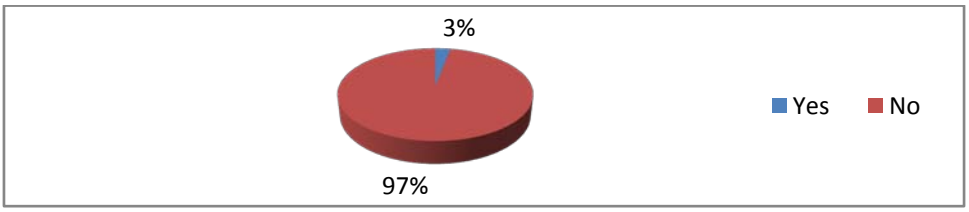
Interpretation: 56% of the respondents agreed with the statement that technical and fundamental analysis do not affect the stock market.34% of the respondents disagreed with the issue.

08. What has attracted /prompted you to make investment decision in stock market?



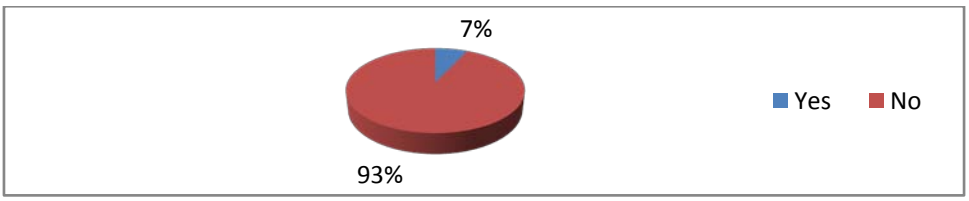
Interpretation: Among the respondents, 32% of the investors made their investment for short term quick capital gain, 26% were attracted towards market because they believe there were no alternative investment choices.30% of them came into the market for making excessive return.12% of the investors were driven by low return from savings instruments.

09. I invest in the stock market for dividend only?



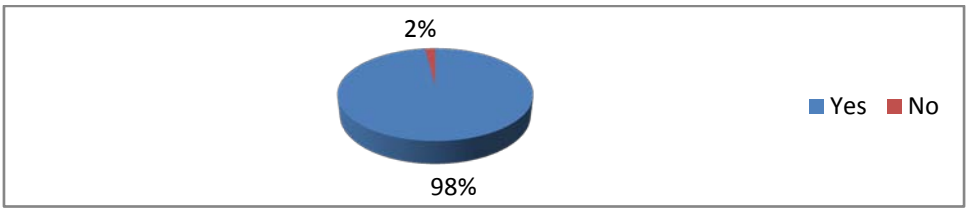
Interpretation: 97% of the investors invest in the stock market not for dividend only but for other financial benefits too.

10. I invest in the stock market for capital gain only?



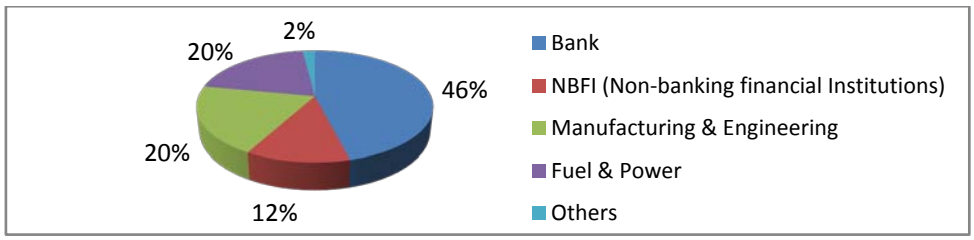
Interpretation: 7% of the respondents invest in the stock market for capital gain only.

11. I invest in the stock market for both dividend and capital gain?



Interpretation: 98% of the respondents invest in the stock market for both dividend and capital gain.

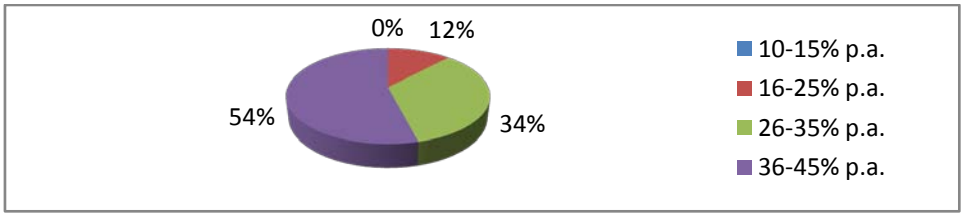
12. Which sector you prefer for investment the most?



Interpretation: 46% of the investor's ranked banking sector at the top of the preference list for their investment decision as this sector is considered safer and fundamentally strong. NBFI has got the investors preference with 12%. Manufacturing & engineering and fuel & power have similar preference with 20%. 2% of the investors are also interested in other sectors which include pharmacy, telecommunication, miscellaneous.

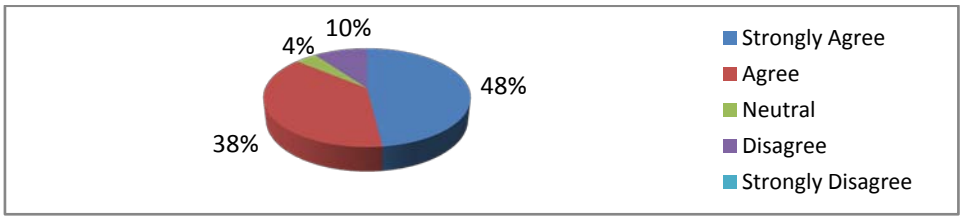
These conclude that investors are keener to invest in banking sector than any other sectors. So, any mishap in this sector will have an adverse effect on the investors and thereby affecting the overall market.

13. What kind of returns expectations do you expect from your investment portfolio account?



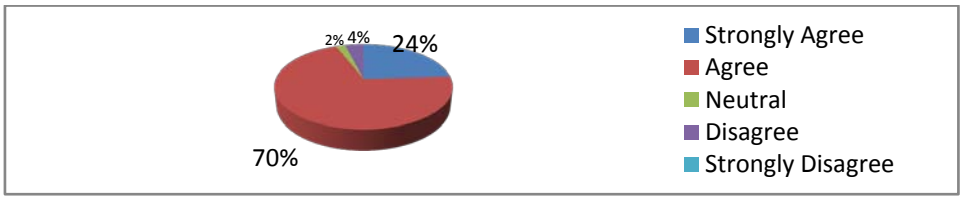
Interpretation: After the market crash investors are compelled to revise their market returns expectation which is not as extreme before when investors wanted to earn more than 100% return from the market. 54% of the investors are quite happy to have return between 36%-45% per annum, 34% of them eager to have a minimum return of 26% to a maximum of 35% per annum. None of the investors are happy with a maximum with a maximum of 15%.It is evident that investors expectation has minimized by many fold after the crash.

14. Do you think market manipulation had a significant impact on the stock market crisis?



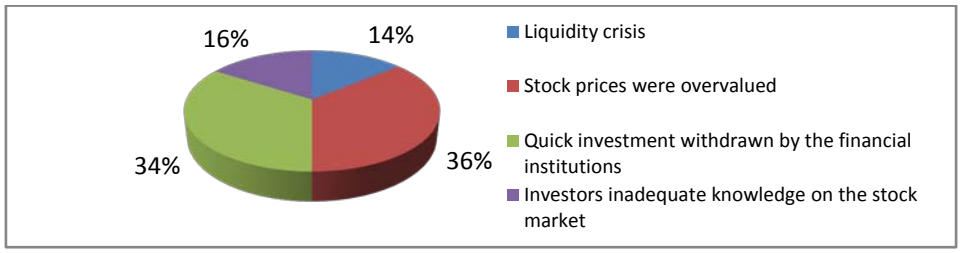
Interpretation: 86% of the respondents believe (48% strongly agree & 38% agree) that market manipulation had a significant impact on the recent market crisis. 10% of the investors disagree with statement.

15. Do you think spreading of rumor also exaggerated the stock market?



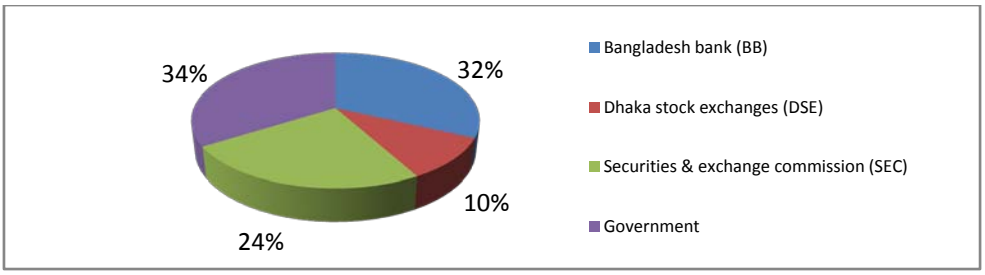
Interpretation: 70% of the investors agreed that spreading of rumor has also exaggerated the stock market. 24% of the respondents enforced strong reaction on this statement.

16. What is responsible for the recent stock market crisis?



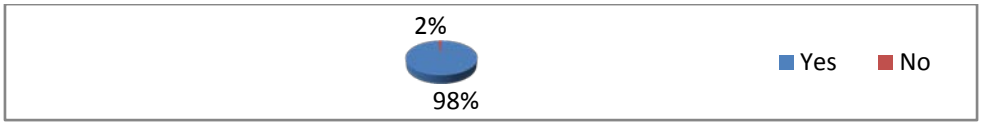
Interpretation: 36% of the investors believe that stock prices were overvalued and 34% of the investors blamed the financial institutions for their quick investment withdrawn which led the market in a severe down fall. 14% of the investors indicated on the liquidity crisis in the market. Meanwhile, 16% of the investors believe that it is lack of knowledge of the investors on the part of their investment decision which can also be considered as a strong reason for the recent market crisis.

17. Which regulatory body do you think is mostly responsible for stock market crisis?



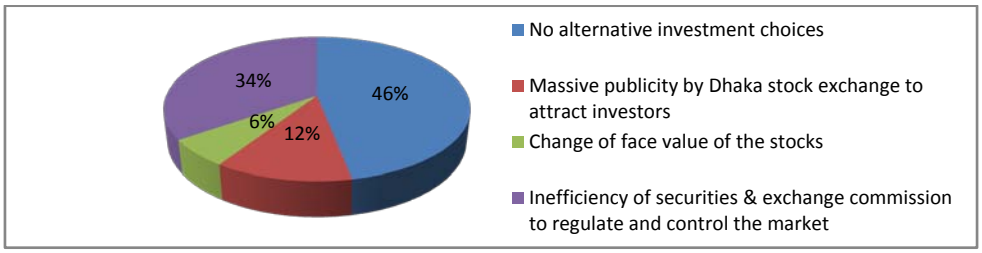
Interpretation: 10% of the investors firmly believe that DSE is responsible for the market crisis. 24% of the investors mentioned that SEC has failed to regulate the market properly. 32% of the investors put their allegation against BB for allowing the banks to invest in the capital market beyond their stipulated limit (bank can only invest 10% of their total liability). 34% of the investors blamed the government for market crisis.

18. Do you think the market was overvalued?



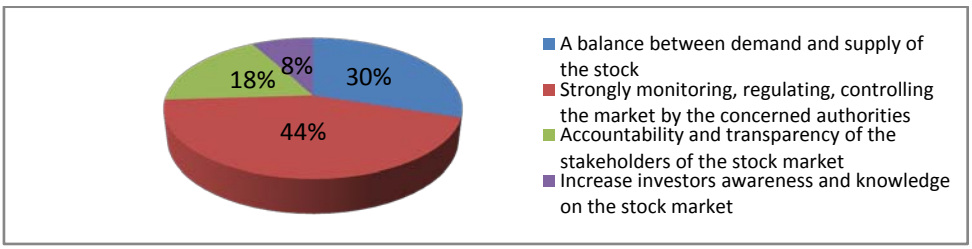
Interpretation: 98% of the investors firmly believe that the market was overvalued.

19. Market was overvalued for following reasons:



Interpretation: 6% of the investors mentioned that change of face value of the stock made the market overvalued, 2% of the respondents believe that there were no other investment opportunities to invest elsewhere which ultimately drag large number of investors to the market. 12% of the respondents believe it is because of the extensive and aggressive publicity by DSE which pulled lot of investors into the stock market. 34% of them said about the inefficiency of SEC to regulate and control the market.46% of the investors could not stick to a particular reason and hence agreed with all the issue.

20. What measures can be taken to stabilize the market?



Interpretation: 18% of the investors suggested that all the participants of the capital market must have accountability and transparency. 8% of the respondents believe that investors should acquire proper knowledge and increase their awareness regarding different aspects and matter of stock market and 30% respondents believe there should be a balance between demand and supply of stocks in the market.44% of the investors also suggested that the concerned authorities of the capital market need to act accordingly.

Summary of Findings Based on Primary and Secondary Data

- Investors have minimum of 5 lac TK investment.
- They mostly prefer banking sector as safe investment.
- They are more interested to have capital gain rather than dividend.
- Investors tried to find alternative investment sector to invest their savings and found stock market as an attractive alternative source of investment.

- Change of face value and it was a great impact on booming market.
- Poor monitoring by DSE and SEC on the market manipulation is the cause of spreading of rumor.
- Quick investments withdrawn by financial institutions from the market.
- Lack of coordination between stock exchanges (DSE and CSE) and BSEC.
- The stock market crisis has restricted the new entrant in the capital market thus hampering the demand and supply of stocks.
- Banking sector is the most preferred among the investors, so implementation of CRR and SLR affected much in the capital market.
- BSEC increases the margin loan facilities from 1.5 % to 2%. As a result, a sizeable number of investors used maximum credit facilities to magnify their profit from the market.
- Introducing OTC market made the junk share of around 25 companies to be traded there resulting in increase in demand of the remaining share in the main stock exchange.
- Investors didn't have idea about financial report of listed securities thus unfair audit report are published.
- Over exposure of banks and financial institutions in terms of investment in the stock market.
- Majority of general investors in Bangladesh stock market don't have enough knowledge about the stock market. So, they fail to make good investment decision. That's why they buy shares depending on rumor and artificial financial report of companies.
- It was found that some illiterate investors even don't know about the company and its business operation when they buy share of the listed companies.

Initiatives taken Stock Market, BSEC and Bangladesh Government against Stock Market Crisis:

- DSE has taken initiatives to launch new product Exchange Traded Funds (ETF) by the middle of 2016, Treasury Bonds have been tradable by the middle of 2016; web and mobile based client application for tracking and trading have been launched by the end of year 2015.
- DSE is playing vital role in formation of "Clearing & Settlement Company" which is expected to facilitate the settlement and clearing process of transactions arising from buying and selling of Derivatives and other financial instruments. DSE is relentlessly working to enlist companies with highest growth in their profit, market shares and EPS.
- Dhaka Stock Exchange Ltd. (DSE), the premier and oldest bourse of Bangladesh, was established as East Pakistan Stock Exchange Association Limited on April 28, 1954. The name of the Exchange changed to Dhaka Stock Exchange Ltd. on May 13, 1964. Its trading started in 1956.
- DSE transformed into a Demutualized Exchange on November 21, 2013 with the vision " To be the leading exchange in the region and a key driver of economic growth with state-of-art technology and world class service to ensure highest level of confidence among stakeholders". The Authorized Capital and Paid up Capital of DSE are $320.512 (in million) and $231.253 (in million) respectively.
- At present, DSE has three indices, namely, DSE Broad Index (DSEX), DSE 30 Index (DS30) and DSEX Shariah Index (DSES). All the indices are designed and developed by the world leading provider S&P Dow Jones Indices (SPDJI). DSE Broad Index is the benchmark index which reflects around 97% of the total equity market capitalization. DSEX Shariah Index (DSES) provides broad market coverage of Shariah-compliant stocks.
- DSE introduced new surveillance software "Instant Watch" on February 11, 2014, which acquired from Trapets
- AB, a Swedish Company. On December 11, 2014, it introduced new automated trading system with the world fastest Matching Engine "X-Stream INET", which acquired from NASDAQ and Order Management System (OMS)
- "DSE-FlexTP" from an award winning company, FlexTrade Systems Pte. Ltd.
- NASDAQ is the technology partner of DSE which facilitates in the capability of trading of any exchange traded products; OMS centralized to ensure a minimum standard of trading capability of all brokers; Trading platform separated for Equity and Debt. Separate fee for equity and debt; No more odd-lots, clean circuit breakers etc.
- At present, 556 securities are listed with DSE comprised of 284 companies, 221 Government Treasury Bonds, 41 mutual funds, 8 Debenture and 2 corporate bonds. Out of 556 securities, 284 companies, 41 mutual funds and 2 corporate bonds are tradable. Among 284 companies, 13 are multinational companies, 08 are joint venture companies and the rest 263 companies are local companies.
- In its 61 years journey the stock exchange has made significant contribution to the Economy of Bangladesh. The market capitalization of listed securities was USD 43,129.83 million on September 30, 2015, which is 22.17percent of the country's GDP. DSE has 250 TREC Holders with trading volume in the financial year 2014-2015 was USD 14,441.12 million. The statistics of market capitalization, percentage to country's GDP, total value, total volume and total number of trades of DSE is given below:

Sl. No.	Particulars	Country Total	DSE's share in percentage
01	Market Capitalization[1] in USD millions as on September 30, 2015	43,129.83	100.00%
02	Market Capitalization[1] as percentage of GDP as on September 30, 2015	22.17	100.00%
03	Total Transaction Value in USD millions (Jan-September, 2015)	10,995.32	92.12%
04	Total Volume of Securities Outstanding in millions (Jan- September, 2015)	21,622.14	90.67%
05	Total Number of Trades in millions (Jan- September, 2015)	22.44	86.56%

DSE Steps (2013 to 2016) at a glance:

Starting DSE Broad Index (DSEX) & DSE 30 Index DS30 (by S&P):	28th January 2013
Bangla Website Introduced:	18th February 2013
The Exchanges Demutualization Act 2013 passed by the Parliament:	29th April 2013
Effective date of the Exchanges Demutualization Act 2013:	02nd May 2013
Signed an agreement with S&P Dow Jones Indices to launch Shariah Index:	25th September 2013
Transformed into a Demutualized Exchange:	21st November 2013
Starting DSEX Shariah Index (DSES):	20th January 2014
Go-live Ceremony for Instant Watch Market Surveillance Software :	11th February 2014
Signed an agreement with NASDAQ OMX and Flex Trade Systems to provide the world leading trading system :	21st March 2014
Next Generation Automated Trading System Inaugurated :	11th December 2014
World Federation of Exchanges Correspondent membership upgraded to affiliated :	3rd March 2015
Inauguration of Upgraded Version of DSE Official website:	12 April 2015
Standardization of Circuit Breaker in Trade:	30 April 2015
Discussion on launching Exchange Traded Fund:	12 August 2015
Symposium on "Recent Developments in DSE and Regulatory Reforms for Capital Market" :	15 September 2015
Bangladesh Capital Market Conference:	21 September 2015
Launch of Mobile App "DSE INFO":	25 November 2015
Inauguration of "DSE-Mobile":	09 March 2016
Inauguration of "New Book Building Software":	26 May 2016

V. Recommendations and Conclusion

a) Recommendations

From above discussions and basic understandings about the crisis the following recommendations can be formulated for the crisis:

- It is not the duty of the regulator to control the index, their responsibility is to check irregularities or manipulative transactions furthermore the coordination between stock exchange should increase.
- BSEC and DSE should cooperate with each other and closely monitor if any stock rises unexpectedly. Stock Exchanges and BSEC should have co-ordination their jobs to improve market surveillance. Changing directives frequently by BSEC has a bad effect in the market. So, BSEC should not do it.
- Without acquiring proper knowledge, information and experience regarding different aspects and matters of capital market, one should not invest in the market.
- Investors have to remember all the time, the gain or loss whichever comes from the investment, it belongs to them only.
- Investors should not pay any heed to rumors at the time of trading shares.
- SEC should constantly monitor, regulate and control different aspects and matters of capital market effectively.
- Investors must make investment decisions based on company fundamentals, technical analysis, price level and disclosed information.
- BSEC should increase consciousness for the newcomer in the capital market "invest from your own savings not from borrowings"

- To save general investors; DSE, CSE, and BSEC should provide courses and training programs to enrich their knowledge about the stock market.
- Regulators should adopt new technologies like surveillance software to monitor trading activities.
- BSEC should appoint more qualified officials for market research and in other necessary areas.
- BSEC officials should perform their job honestly according to law. They should not work for market manipulators and their decision should serve interest of general investor and other stakeholders of the market.
- To keep a balance between demand and supply of shares in the market, the government can offload shares of government organizations.
- A new beginning for DSE Demutualization has been a new issue in the capital market in Bangladesh. As in the case of many other stock exchanges all around the world, steps have been taken to turn the traditional mutual stock exchanges into demutualized ones. Normally demutualization means turning a nonprofit organization into a profit oriented organization, and also turning a mutual organization owned by members into a company that is owned by shareholders. The company could be either a listed or unlisted entity that may be closely held or publicly held. Demutualization divides a member's rights into two segments¬ ownership rights and trading rights. In addition to the trading rights, a member acquires the ownership rights, which have a market value. So, demutualization converts a mutually ¬owned organization into a company, which is owned by shareholders. The main differences between a mutually¬ owned organization and a demutualized company are the functions of ownership, management and trading. In a mutual exchange these functions are handled by a single group, but in a demutualized exchange these three functions are separated and managed by different bodies. Demutualization transforms the legal structure of a mutual exchange into a business entity.

b) Conclusion

The study was carried out to find out the major reasons for the recent stock market crisis of Bangladesh up to 2016 and its impact on the investors. The market faces crisis broadly because of the speculative attack and extensive investment by banking sectors. Bangladesh Bank forces the banks to go for massive selling of their shares that they are holding thus making an increase in excess supply of shares in the market resulting in a fall in the price of share. A number of reasons for the stock market crisis have been identified in this study. Though many causes were identified, few factors emerged stronger in the recent stock market crisis as those are pointed by majority of respondents. The causes includes over exposure of banks and financial institutions, poor monitoring of regulators, margin loan, insider trading, lack of general investor´s knowledge, imbalance of share and intervention of Bangladesh Bank. The crisis made changes in the investor's perception now they reduce their investment in risky securities and also to have less expected return on their investment. The regulators and government have developed role and functions to minimize crisis. But they need to develop more and introduce new tools, strategies, directives, rules and regulations for market development and to prevent this kind of stock market crisis in future. Providing education on the stock market to the general investors and taking strict actions against manipulators can improve the situation and prevent this kind of crisis in the future.

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Complexity of Option Pricing

By Victor Olkhov

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Keywords: *option pricing, black-scholes-merton equations, economic space.*

GJMBR-C Classification: *JEL Code: C500, C520, C530, C600, G110, G130*

Strictly as per the compliance and regulations of:

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I. Introduction

Correct estimations of assets price determine core problem of finance theory. Assets and option pricing models are subject for permanent studies (Cochrane, 2011; Fama, 2014). This paper presents new approach to classical options pricing model that is based on most famous economic equations derived by Black, Scholes and Merton (BSM)more then forty years ago (Black and Scholes, 1973; Merton, 1973). We study options on stock price of corporations, banks or any economic agents. Our approach utilizes economic space that permits describe economic variables of economic agents and their Value in particular as function of time and coordinates on economic space. Option price also becomes a function of coordinates on economic space. Derivation the BSM equation on economic space opens hidden problems for assets and options price modeling and presents many questions. Approach based on economic space notion has nothing common with spatial economics (Perroux, 1950; Fujita, 2012).

Current economic and financial models as well as assets and options price models deal with economic variables like Demand and Supply, Profits and Debts, Corporate Value and Liabilities treating them as function of time. Financial and economic models establish relations between these functions of time and describe dependence of one economic variable upon the others. We propose that extreme complexity of economics and finance requires more improved technique then relations between functions of time. To develop economic modeling capacity let move from modeling economic variables as functions of time to treating them as functions of time and coordinates. That extension requires introduction of certain economic space where economic and financial variables can be described as functions of time and coordinates. Such economic space (Olkhov, 2016a; 2016b; 2016c) was introduced as generalization of common risk ratings of economic agents that regularly published by international rating agencies like Fitch (Dyke and Jenning, 2015), S&P (Kraemer and Vazza, 2012), Moddy's (Metz and Cantor, 2007) etc. Current risks ratings practice can be extended and adopted as basis for economic space. Risk ratings of economic agents can play role of their coordinates on economic space. Such treatment allows study evolution of economic agents on economic space and model behavior of economic variables as functions of coordinates and time. That approach allows review assumptions and derivation of BSM equation on economic space.

The rest of the paper is organized as follows. In the next section we argue reasons for economic space definitions and explain possible advantages for economic and financial modeling and option pricing. Then we discuss option pricing BSM model on economic space and outlines additional hidden problems of assets pricing and derivatives theory. Main results are derived in Appendix.

II. Economic Space

Economic space (Olkhov, 2016a; 2016b; 2016c) was introduced with goal to establish basis for mapping position of each economic agent of entire economics. Dynamics of separate economic agents can be described as evolution of their coordinates on economic space. Up now economic variables like Assets and Liabilities, Value and Capital, Demand and Supply are treated as function of time. Introduction of economic space permits describe economic and financial variables of each economic agent as functions of time and coordinates. That allows model changes of economic variables of particular economic agent like Assets and Liabilities, Value and Debts etc., by methods and technique of mathematical physics equations and definitely enlarges capacity of economic models. Here we present brief reasons for economic space definition.

Definition of economic space utilizes treatment of economic agents as primary elements of entire economics and finance but is completely different from agent-based modeling (Tesfatsion and Judd, 2005). Main idea is clear and simple: economic agents as corporations and banks, householders and investors, etc., are described by set of economic variables as Demand and Supply, Consumption and Savings, Investments and Value and etc. Economic variables of

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economic agents constitute variables of entire economics and finance. Correct choice of "independent" economic agents permits aggregate their extensive economic and financial variables and determine Demand and Supply, Assets and Credits of entire economics. Let call economic agents "independent" if sum of their extensive economic variables like Value and Profits, Assets and Liabilities and etc. equal corresponding variables of entire economics. Up now economic variables of economic agents and variables of economics and finance are treated as functions of time. Relations between functions of time describe dependences of Demand and Supply, GDP and Investments, etc., on other economic and financial variables. Such scheme hardly restricts capacity of economic modeling. Definition of economic and financial variables as functions of time and coordinates on certain space permits usage of mathematical physics equations and boost economic modeling capability. Introduction of economic space solve that problem and establish description of economic and financial variables of entire economics and finance as well as economic agents as functions of time and coordinates.

Introduction of economic space allows distribute economic agents of entire economics by their coordinates on economic space. To do so we propose following:

1. Let assume that international rating agencies can provide risk ratings for all economic agents of entire economics. If so, economic agents can be distributed over finite number of risk grades by their risk ratings. Risk ratings of economic agents can be treated as their coordinates of finite discreet space.
2. Let assume that generalization of risk ratings methodology allows plot risk ratings on continues space R^1. If so, risk ratings of economic agents can be treated as their coordinates on R^1.
3. Let assume that simultaneous measurements of ratings of n different risks allows distribute economic agents on n-dimensional space that can be discreet or R^n.

Let define economic space as any mathematical space that is used to map economic agents by their risk ratings as space coordinates. Dimension of economic space is determined by number of different risks for which risk ratings are measured simultaneously. Usage of economic space R^n allows distribute all economic agents of entire economics by their coordinates on R^n. Economic agents are characterized by economic variables like Demand and Supply, Assets and liabilities, Production Function and Capital. Correct aggregates of economic variables of all economic agents determine variables of entire economics. Sum of extensive economic variables of k "independent" agents equals economic variable of the whole group. For example, sum of Value of economic agents equal their total Value. There are certain parallels between description of economic agents with coordinates on economic space and description of physical particles with coordinates on space-time and for brevity we propose to call economic agents as economic particles or e-particles.

Introduction of economic space gives opportunity to use mathematical physics equations and increase capacity of economic and financial modeling. On the other hand it arises many difficult problems and discovers hidden problems of economic modeling. Definition of economic space R^n requires extension of methodology of risk measure estimation. Description on economic space R^n requires definition of n major risks that have major effects on economic interactions, macroeconomic and financial processes. To determine a reasonable economic space one should estimate current risks and select two, three, four most important risks as main factors affecting contemporary macroeconomics and finance. That permits establish economic space with two or three dimensions and derive appropriate initial distributions of economic variables as functions of most powerful risks. To select most valuable risks one should establish procedures that allow compare influence of different risks on economic agents, their economic interactions and processes. Selection of n major risks defines initial representation of economic space R^n.

It is well known that risks can suddenly arise and then vanish. To describe economic evolution in a time term T it is necessary forecast m main risks that will play major role in a particular time term and define economic space R^m. This set of m risks defines target state of economic space R^m. Changes of major risks require modeling transition from initial set of n risk to target m risk. Such transition should describe how initial set of n risks decline its action on economic agents and their economic variables and how the influence of new m risks grows up. Transition from initial set of n main risk to target set of m risks describes the evolution of initial representation R^n of to the target one R^m.

This is only a part of problems that should be solved to establish reasonable description of economic interactions on economic space. Selection of main risks simplifies description and allows neglect "small risks". Risks benchmarking defines a separate tough problem. Risks selection processes can become a part of validation procedure. Selections of major risks give opportunity to validate initial and target sets of risks and to prove or disprove initial model assumptions. It makes possible to compare theory predictions with observed economic data and outlines causes of disagreements.

Introduction of economic space discovers hidden complexity of economics and finance. We propose that risks should be treated as drivers of economic and finance dynamics and absence of any

risks cause degradation of development. To demonstrate advantages of economic space approach we present treatment of option pricing and BSM equations. Further for brevity we mention economic space as e-space and study option pricing on e-space R^n.

III. The BSM Equations on Economic Space

Definition of e-space allows look on the BSM equations from a new point of view. Let study options on stock price of companies, corporations, banks, etc. that are mentioned above as economic agents or e-particles. As we stated before risk rates of e-particles play role of their coordinates on e-space. Risk ratings of e-particles are determined by their economic and financial variables. Economic and financial processes can change variables of e-particles and thus change their risk ratings and their e-space coordinates. In other words motion of e-particles on e-space induce changes of their economic and financial variables. For convenience let assume that positive direction along each axis of e-space points to risk growth and negative direction points to risk decline. Motion of selected e-particle on e-space induce corresponding changes of it's economic variables. For example, Value of e-particle can grow up with motion in high-risk area along risk axis X in positive direction as it may follow with growth of high-risk profits. Further, growth of X coordinate can bring this e-particle to unacceptable risks and that can cause fall of this e-particle Value. Thus value of e-particle, as well as other economic and financial variables are determined as functions of time and coordinates of e-particle on e-space. Movements of e-particle on e-space induce corresponding changes of economic variables. These changes can have regular and random components. Now let study the BSM equation on option price V.

The BSM equation that is one of the most recognized equations in financial theory and for price V of option on underlying asset with price a has form:

$$\frac{\partial V}{\partial t} + ra\frac{\partial V}{\partial a} + \frac{1}{2}\sigma^2 a^2 \frac{\partial^2}{\partial a^2}V = rV \qquad (1)$$

Here r is risk-free interest rate. A simple way to derive the BSM equation (Hull, 2009) is based on assumption that assets price a obeys Brownian motion $dW(t)$and

$$da = a\,c\,dt + a\sigma dW(t) \qquad (2)$$

$$< dW(t) > = 0; < dW(t)dW(t) > = dt \qquad (3)$$

c – is instantaneous rate of return on security, and σ^2 – is instantaneous variance rate. Option price $V = V(t,a)$ is function of time t and assets price a. Operator $<\ldots>$ denotes averaging procedure.

Let study the BSM equation on n-dimensional e-space R^n. Thus we assume that economics and selected e-particle are under the action of n major risks. Let threat options on stock price of e-particles. Stock price of selected e-particle is determined by Value of e-particle. Coordinates of e-particle are determined by their risk ratings. Motion of selected e-particle on e-space R^n cause changes of its economic and financial variables and changes of it's Value in particular. Stock price is determined by Value of e-particle and it's changes due to motion on e-space induce corresponding changes of stock price. Let assume that stock price of selected e-particle is determined by random changes dWin time due to (2) and by motion $d\boldsymbol{x}$ on e-space R^n

$$da = a\,c\,dt + a\,\sigma\,dW(t) + a\boldsymbol{k}\cdot d\boldsymbol{x} \qquad (4)$$

Let assume that vector $\boldsymbol{k}$ describes the input of e-space coordinates variations $d\boldsymbol{x}$ on stocks price a and $\boldsymbol{k}\cdot d\boldsymbol{x}$ denotes scalar product. Motion of e-particle has regular and random components. Let assume that motion of e-particle on e-space R^n is determined regular speed $\boldsymbol{v}$ and by Brownian walk $d\boldsymbol{Z}(t)=(dZ_1,\ldots dZ_n)$ on e-space R^n

$$d\boldsymbol{x} = \boldsymbol{v}dt + d\boldsymbol{Z}(t) \qquad (5)$$

Value of e-particle on n-dimensional e-space R^n determines it's stock price $a=a(t,\boldsymbol{x})$. Hence option price V on stock price $a=a(t,\boldsymbol{x})$ of selected e-particle cause that option $V=V(t,\boldsymbol{x},a)$ becomes a function of coordinates $\boldsymbol{x}$ on n-dimensional e-space R^n. Let assume that random changes dW of stock price in time and vector components of random walks $d\boldsymbol{Z}(t)=(dZ_1,\ldots dZ_n)$are correlated and their correlations can be presented as follows:

$$< dW(t)\,dZ_i(t) > = b_i \qquad (6)$$

$$< dZ_i(t) > = 0; < dZ_i(t)dZ_j(t) > = \eta_{ij}\,dt \qquad (7)$$

Relations (6) reflect possible correlations between random changes of stock price in time and random walks along risk-axes of e-space R^n. Relations (7) describe possible correlations of random walks along different risk axes on e-space. As we show, these factors define behavior of option price $V(t,\boldsymbol{x},a)$. To derive the BSM equation on e-space R^n let follow usual scheme (Hull, 2009). Assumptions (4-7) allow derive (see Appendix) the BSM equation on option price $V=V(t,\boldsymbol{x},a)$ on n-dimensional e-space R^nas follows:

$$\frac{\partial V}{\partial t} + ra\frac{\partial V}{\partial a} + rx_i\frac{\partial V}{\partial x_i} + \frac{1}{2}a^2q^2\frac{\partial^2 V}{\partial a^2} + \frac{a}{2}\left(\sigma b_i + k_j\,\eta_{ji}\right)\frac{\partial^2 V}{\partial a \partial\, x_i} + \frac{\eta_{ij}}{2}\frac{\partial^2 V}{\partial x_i \partial x_j} = rV \qquad (8)$$

$$q^2 = \left(\sigma^2 + k_i\,k_j\eta_{ij} + 2\sigma k_i\,b_i\right);\ i,j = 1,\ldots n$$

Equation (8) has additional parameters k_i, b_i, η_{ij}; $i,j=1,\ldots n$, and all these factors affect behavior of option

price $V(t,\boldsymbol{x},a)$ on e-space R^n. Sum is taken by all repeated indexes. Equation (8) has n additional variables $\boldsymbol{x}=(x_1,\ldots x_n)$ and more complex then (1) and but conform it's diffusive-type eqution.

The main diversity between classical BSM equation (1) and equation (8) concern modeling on e-space R^n. As we discussed above definition of e-space R^n requires selection of n major risks that determine behavior of economics and selected e-particle in particular. This set of risks can vary during time to expiration and new risks may become cause major influence on financial and economic dynamics. To forecast e-particle stock price $a(t,\boldsymbol{x})$ and option price $V(t,\boldsymbol{x},a)$ dynamics one requires foresee set of m major risks that can replace initial set of n risks. Initial set of n major risks that determine initial e-space R^n can dissipate and can be replaced by new set of m risks that will determine new e-space R^m. To develop appropriate description of stock price and option price dynamics during the transition from e-space R^n to e-space R^m one should describe dissipation of n initial risks and model growth of new m risks. This transition dynamics affect behavior of selected e-particle on initial e-space R^n. Such influence can cause changes of regular and random behavior of stock prices of e-particle as well as changes of random walks of e-particle on e-space R^n. Hence options pricing should depend on transition model from initial e-space R^n to final e-space R^m. Assumptions (2,3) and (4-7) that found the BSM equation (1) or it's generalization on n-dimensional e-space R^n can describe option pricing model for constant set of major risks only. Any random changes of major risks, decline of some risks and growth of new risks completely change initial model. Moreover, initial assumptions on Brownian property of random behavior of stock price a and random walks of e-particle coordinates $d\boldsymbol{x}$ during transition from initial set of n major risks on e-space R^n to final set of m major risks on e-space R^m might fail. These random properties may depend on transition process and may be different from Brownian motion.

Development of option pricing model on e-space via the BSM-like equations for the case with variable set of major risks requires additional studies and considerations.

IV. Conclusions

Truthful pricing of assets and options define one of most important problems of economic and finance theory. Introduction of economic space gives fresh approach to economics and finance modeling and allows describe financial variables as functions of time and coordinates. That simple transition allows boost methods and models for economic and financial modeling. Economic space provides wide usage of mathematical physics equations for economic modeling and that may increase capacity and adequacy of description. Economic space approach allows treat option pricing from different point of view and derives BSM-like equations (8) on n-dimensional economic space R^n. These equations depend on coordinates of economic space and on additional parameters that describe correlations of different Brownian walks and other factors. It is obvious that economic space approach don't solve all problems of option pricing but mainly uncovers extreme complexity of that problem.

We assume that main contribution of economic space approach to option pricing concern observation that unpredictable risks behavior may cause important changes of the model description. Possible variability of set of major risks that determine initial representation of economic space should disturb the BSM equations and it's solution. Development of consistent option pricing theory on economic space for cases with variable initial and final set of major risks requires additional research.

Introduction of economic space arises many new difficult problems and econometrics becomes one of most important. Options pricing modeling on economic space requires appropriate econometrics and statistics. Up now econometric data sufficient for modeling on economic space are absent. Adequacy of our approach to financial modeling can be proved by comparison of theory predictions with econometric observations. To do that it is required to launch suitable econometric procedures and obtain distributions of economic agents on economic space. It is necessary develop procedures that compare influence of different risks on finance, economics and economic agents dynamics and establish suitable procedures for selection of most valuable risks. That requires cooperation of Central Banks and Financial Regulators, Rating Agencies and Market Authorities, Businesses and Government Statistical Bureaus, Academic and Business Researchers, etc. It is necessary to develop unified risk ratings methodologies that can map risk ratings of economic agents on R^n and solve many other problems. Hope it might be useful for development of economic and finance theory that will provide more reasonable methods for assets and options pricing.

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Appendix. Derivation of BSM Equation on Economic Space R^n

Option price $V(t,\boldsymbol{x},a)$ depends on time t to expiration, e-space R^n coordinates $\boldsymbol{x}$ and Price $a=a(t,\boldsymbol{x})$ of underlying stocks of e-particle. Let assume that

stocks price *a* of e-particle follows regular move and Brownian walks *dW(t)*

$$da = a\,cdt + a\,\sigma dW(t) + a\boldsymbol{k}\cdot d\boldsymbol{x} \qquad (A.1)$$

$$< dW(t) > = 0;\ < dW(t)dW(t) > = dt \qquad (A.2)$$

c – is instantaneous rate of return on security, and σ^2 – is instantaneous variance rate. Operator <…> denotes averaging procedure. Vector $\boldsymbol{k}$ describes action of e-space coordinates variation $d\boldsymbol{x}$ on change of e-particle stocks price. $\boldsymbol{k}\cdot d\boldsymbol{x}$ is a scalar product. Let assume that coordinates $\boldsymbol{x}$ of e-particle that defines underlying stocks price also follows regular move and Brownian walk $d\boldsymbol{Z}(t)$ on the *n*-dimensional e-space R^n:

$$d\boldsymbol{x} = \boldsymbol{v}dt + d\boldsymbol{Z}(t) \qquad (A.3)$$

Vector $\boldsymbol{v}$ defines regular velocity of e-particle on e-space. Let assume that components of Brownian processes $dZ_i(t)$ along different axes of e-space R^n are correlated and follow relations:

$$< dZ_i(t) > = 0;\ < dZ_i(t)dZ_j(t) > = \eta_{ij}\,dt \qquad (A.4)$$

As well let assume that processes $dW(t)$ and $dZ_i(t)$ also correlated:

$$< dW(t)\,dZ_i(t) > = b_i dt \qquad (A.5)$$

These assumptions allows apply method (Hull, 2009) and derive equation on option price $V(t,\boldsymbol{x},a)$ taking account of (A.1-A.5) receive:

$$dV = \frac{\partial V}{\partial t}dt + \frac{\partial V}{\partial a}(cadt + \sigma adW(t) + a\,k\cdot(vdt + dZ(t))) + \frac{\partial V}{\partial x_i}(v_i dt + dZ_i(t)) + \frac{1}{2}\frac{\partial^2 V}{\partial t^2}dt^2 + \frac{1}{2}\frac{\partial^2 V}{\partial a^2}(cadt + \sigma adW(t) + a\,k\cdot(vdt + dZ(t)))^2 + \frac{1}{2}\frac{\partial^2 V}{\partial x_i^2}(v_i dt + dZ_i(t))^2 + \frac{1}{2}\frac{\partial^2 V}{\partial t\partial a}dt(cadt + \sigma adW(t) + a\,k\cdot(vdt + dZ(t))) + \frac{1}{2}\frac{\partial^2 V}{\partial t\partial x_i}dt(v_i dt + dZ_i(t)) + \frac{1}{2}\frac{\partial^2 V}{\partial a\partial x_i}(cadt + \sigma adW(t) + a\boldsymbol{k}\cdot(vdt + dZ(t)))(v_i dt + dZ_i(t)) + \frac{1}{2}\frac{\partial^2 V}{\partial x_i\partial x_j}(v_i dt + dZ_i(t))(v_j dt + dZ_j(t))$$

With accuracy up to *dt* obtain:

$$dV = [\frac{\partial V}{\partial t} + (ca + a\,k\cdot v)\frac{\partial V}{\partial a} + v_i\frac{\partial V}{\partial x_i} + \frac{1}{2}a^2(\sigma^2 + k_i k_j\eta_{ij} + 2\sigma k_i b_i)\frac{\partial^2 V}{\partial a^2} + \frac{\eta_{ij}}{2}\frac{\partial^2 V}{\partial x_i\partial x_{ij}} + \frac{a}{2}(\sigma b_i + k_j\eta_{ji})\frac{\partial^2 V}{\partial a\partial x_i}]dt + \sigma a\frac{\partial V}{\partial a}[dW(t) + ak_i dZ_i(t)] + \frac{\partial V}{\partial x_i}dZ_i(t)$$

According to common "portfolio" function

$$B = V(t,\boldsymbol{x},a) - a\frac{\partial V}{\partial a} - x_i\frac{\partial V}{\partial x_i}$$

and obtain that equation on portfolio *B* does not depends on Brownian walks

$$dB = \left[\frac{\partial V}{\partial t} + \frac{1}{2}a^2(\sigma^2 + k_i k_j\eta_{ij} + 2\sigma k_i b_i)\frac{\partial^2 V}{\partial a^2} + \frac{\eta_{ij}}{2}\frac{\partial^2 V}{\partial x_i\partial x_j} + \frac{a}{2}(\sigma b_i + k_j\eta_{ji})\frac{\partial^2 V}{\partial a\partial x_i}\right]dt$$

Similar to standard derivation of the BSM equation for simplest case let assume that portfolio *B* grows as riskless rate *r*:

$$dB = r\,B\,dt$$

The BSM equation on *n*-dimensional e-space R^n for assumptions (A.1-A.5) takes form:

$$\frac{\partial V}{\partial t} + ra\frac{\partial V}{\partial a} + rx_i\frac{\partial V}{\partial x_i} + \frac{1}{2}a^2q^2\frac{\partial^2 V}{\partial a^2} + \frac{a}{2}(\sigma b_i + k_j\eta_{ji})\frac{\partial^2 V}{\partial a\partial x_i} + \frac{\eta_{ij}}{2}\frac{\partial^2 V}{\partial x_i\partial x_j} = rV$$

$$q^2 = (\sigma^2 + k_i k_j\eta_{ij} + 2\sigma k_i b_i);\ \text{sum by } i,j = 1,\dots n$$

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Delta- Hedging Models: Comments

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Abstract- The paper questions the ability of arbitrageurs to ascertain value with some confidence and to realize it quickly. The discussion in the paper suggests a reason why some markets are more attractive for arbitrage than others The paper identifies a number of so-called anomalies in which particular investment strategies have may not earn higher returns than their systematic risk. Our analysis offers a different mathematical approach to understanding these anomalies than does the standard efficient market theory.

Keywords: *delta hedging, stochastic integral, risk-free rate, efficient market hypothesis.*

GJMBR-C Classification: *JEL Code: F65*

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Abstract- The paper questions the ability of arbitrageurs to ascertain value with some confidence and to realize it quickly. The discussion in the paper suggests a reason why some markets are more attractive for arbitrage than others The paper identifies a number of so-called anomalies in which particular investment strategies have may not earn higher returns than their systematic risk. Our analysis offers a different mathematical approach to understanding these anomalies than does the standard efficient market theory.

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I. Introduction

Delta is the ratio comparing the change in the price of the underlying asset to the corresponding change in the price of a derivative[1]. For example, if a stock option has a delta value of 0.65, this means that if the underlying stock increases in price by $1, the option will rise by $0.65, all else equal. Delta hedging is a derivative trading strategy. It is an options strategy that aims to reduce, or hedge, the risk associated with price movements in the underlying asset, by offsetting long and short positions. The delta of an option helps you determine the quantity of the underlying asset to buy or sell. This is known as delta hedging. Delta hedging involves trading another security to create a delta-neutral position, or a position that has a zero delta. For example, a long call position may be delta hedged by shorting the underlying stock. This strategy is based on the change in premium, or price of option, caused by a change in the price of the underlying security. The theoretical change in premium for each basis point or $1 change in price of the underlying is the delta, and the relationship between the two movements is the hedge ratio. The price of a put option with a delta of -0.50 is expected to rise by 50 cents if the underlying asset falls by $1. The opposite is true as well. The delta of a call option ranges between zero and one, while the delta of a put option ranges between negative one and zero. So, delta hedging is a strategy used to mitigate the risk associated with the price move in the underlying asset of an option by entering an offsetting position. Although this hedge reduces a portfolio's exposure to the underlying asset, it has its limitations. One limitation of delta hedging is that a position still has risk exposure even if the position is delta-neutral. Delta hedging needs to be constantly readjusted with movements of the underlying asset.

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[1] Those industries which are connected to the finance and commodity markets and are trading derivatives are the most likely to use delta hedging techniques. This may include institutional investors, banks, hedge funds and natural resource companies, among others. Delta hedging is a technique that attempts to manage risk for an option position by hedging the exposure with shares or contracts in the underlying asset.

II. Delta-Hedge Volatility

The delta hedge portfolio has the value

$$\pi = -\mu + w' p \tag{1}$$

where $w\ (p, t)$ is the option price. The instantaneous return on the portfolio is

$$\frac{d\pi}{\pi\, dt} = \frac{-dw + w'\, dp}{(-w + p\, w')\, dt} \tag{2}$$

We can formulate the delta hedge in terms of the returns variable x. Transforming to returns $x = In\ p / p_o$, the delta hedge has the value

$$\pi = -\mu + \mu' \tag{3}$$

where $\mu(x,t) = w(p,t)$ is the price of the option. If we use the stochastic differential equation.

The general theory of volatility of fat-tailed returns distribution with $H = 1/2$ was formulated as follows. Beginning with a stochastic differential equation

$$dx = (\mu - D\ (x, t)/2)\, dt + \sqrt{D\ (x,t)}\ dB\ (t) \tag{4}$$

where $B\ (t)$ is a Weinerprocess, $(dB) = 0\ (dB^2) = dt$ and $x = ln\ (p\ (t) / p_0$ where $p_0 = p\ (t_0)$. In what follows let R (x= μ - D(X, t) / 2. The Solution is given by the stochastic integral equation

$$\Lambda x = \int_x^{t+\Delta t} R(x(s), t)\, dx + (D(x, t)^{1/2}\ O\Delta B \tag{5}$$

Transforming to returns $x = ln\ p/\ p$, the delta hedge portfolio has the value

$$\pi = -\mu + \mu' \tag{6}$$

where μ (x, t) / p =w(p, t) is the price of the option. If we use equation (5), then the portfolio's instantaneous return is (by Ito's calculus) given by

$$\frac{d\pi}{\pi\, dt} = \frac{-(\mu - \mu' D/2) - \mu''' D/2}{(-\mu + \mu')} \qquad (7)$$

And is deterministic; because the stochastic differential terms O (dx) have cancelled. Setting $r = d\pi / \pi\, dt$ we obtain the equation of motion for the average or expected option price μ (*x,t*) as

$$r\,\mu = \mu + (r - D/2)\,\mu' + D/2\,\mu''' \qquad (8)$$

With simple transformation

$$\mu = e^{\int_T^t r(s)\,ds} \qquad (9)$$

Equation (8) becomes

$$0 = v + (r - D/2)v' + D/2\,v''' \qquad (10)$$

Note that if the equation does not exist due to the non vanishing of higher moments in which case the option pricing partial differential equation (6) must be used, then the option privcing partial differential equation also does not exist.[2] Therefore, in order to bring the 'expected pricce' option pricing principle into agreement with delta hedge, we see that it would be necessary to choose $\mu = r_d = r$.in order to make prediction risk neutral. How, then to choose *r*?

Let *r* denote any rate of the expected portfolio return *r* may be constant or may depend on *t*). Calculation of the mean square fluctuation of the quantity ($d\pi / \pi\, dt - r$), shows that the hedge is risk free to O (*dt*) whether or not *D* (*x, t*) is constant or variable and whether or not the portfolio return *r* is chosen to be the risk –free rate of interest[3]. Would an application of arbitrage argument would lead to the choice $r = r_0$?[4, 5]

Finance theorists treat the formal no-arbitrage argument as holy but mathematicians know that every proposition about the market must be tested and retested. We must therefore pay close attention to the traders' practices because traders are the closet analog of experimenters that we can find in finance[6]. No-arbitrage argument assumes that the portfolio is kept globally risk free via dynamic challenging. The delta hedge portfolio is instantaneously risk-free but has finite risk over finite time intervals Δt unless continuous-time updating is accomplished to within observational error.

III. No- Arvitrage Arguments

The no-arbitrage argument assume that the portfolio is kept globally risk free through dynamic rebalancing. The delta-hedge portfolio is instantaneously risk free but finite risk over finite time intervals, Δt .unless continuous time updating is accomplished to within observational error. However one cannot update too often because of trading fees and all that and this introduces error that in turn produce risk. This risk is recognized by traders who do not use the risk-free interest rate. The reason for this is also theoretically clear: why bother to construct a hedge that must be dynamically balanced, frequently updated, merely to get the same rate of return r_0 that a money market account or a CD would provide?[7] In our present era since the beginning of the collapse of the bubble and under the current non-conservative regime in Washington, it would be pretty risky to assume positive stock returns over time intervals on the order of a few years. Let us pursue the matter a little further:

$$\hat{\delta} = r - D(\delta, t)/2 \qquad (11)$$

$$D(\bar{\delta}, t) = \begin{cases} b^2 & x > \delta \\ b'^2 & x < \delta \end{cases} \qquad (12)$$

We must take *r* (*t*) and also $\mu(t)$ to be discontinuous in δ as well. The value of t is then fixed by the condition related to the cost of carry r_d but with the choice $\mu = r$ the solution for a call with *ln (K / P)* $\leq \delta$. this then will have the form:

[2] The equation (9) is the same as Kolmogorov equation, see Gnedenko (1967), with the choice of $\mu = r$, both equations have exactly the same as the Green function so that no information is provided by solving the option pricing that is not already contained in the Kolmogorov equation. solution

[3] Practical examples of so-called risk-free rates of interest r_0 are provided by the rate of interest for the money market, bank deposits, CDs or U.S. Treasury Bills. So, we are left with the important question: what is the right choice of *r* in option pricing.

[4] Arbitrage plays a critical role in the analysis of securities markets, because its effect is to bring prices to fundamental values and to keep markets efficient. For this reason, it is important to understand how well the textbook description of arbitrage approximates reality. Many argue that the textbook description does not describe realistic arbitrage trades and, moreover, the discrepancies become particularly important when arbitrageurs manage other people's money. See Grossman and Miller (1988).

[5] Even a simplest trade becomes a case of what is known as risk arbitrage. In risk arbitrage, no arbitrageur does not make money with probability one and may need substantial amounts of capital to both execute his trades and cover his losses. Most real world arbitrage trades in bond and equity markets are in a sense examples of risk arbitrage. When arbitrage requires capital, arbitrageurs can become most constrained when they have the best opportunities, i. e., when the mispricing they have bet against gets even worse. Moreover, the fear of this scenario would make them more cautious when they put on their initial trades and hence less effective in bringing about market efficiency. See De Long *et al* (1990) , Dow and Gorton (1994).

[6] Shleifer and Vishny (1990)in their arbitrage model focus on the market for a specific asset, in which they assumed there are three types of participants, noise traders, arbitrageurs, and investments in arbitrage funds who do not trade on their own. Arbitrageurs specialize in trading only in this market, whereas investors allocate funds between arbitrageurs operating in both this and many other markets.

[7] This choice also agrees with historic stock data, which shows that from 1900 to 2000 a stock index or bonds would have provided a better investment than a bank savings account.

$$C(K, P, \Delta t) = e^{-r,\Delta t} \int_{In(k/p)}^{\delta} (p e^{x} - K) f(x, \Delta t) dx$$

$$+ e^{-r,\Delta t} \int_{In(k/p)}^{\infty} (p e^{x} - K) f(x, \Delta t) dx \quad (13)$$

where $\Delta t = T - t$. Now we have two discounting factors for two separate regions divided by the singular point $x = \delta$. Note finally that because the singular point $P = p_0 e^b$ of the price distribution evolve deterministically, we could depart from the usual no-arbitrage argument to assert that we should identify $\delta = r_0 \Delta t$ where r_0 the risk-free rate is. The weakness in the argument is that it requires $\mu > 0$ and $\delta > 0$, meaning that expected asset returns are always positive which is not necessarily case. The trouble with this line of argument is that the millions of traders are typically not the ones who have the knowledge and information to engage in arbitrage. More commonly, arbitrage is conducted by relatively few professional, highly specialized investors who combine their knowledge with the resources of outside investors to take large positions of these markets.[8][9]

A market made up only of noise is a market in agreement with the efficient market hypothesis). Arbitrage is impossible systematically in a market consisting of pure noise. This is the complete opposite of the neo-classical notion of perfect information (zero entropy)[10]. Rather, financial markets show that 'the neo-classical emperor wears no clothing at all'[11]

No-arbitrage condition does not guarantee market equilibrium, which is defined by vanishing total excess demand for an asset. Consider two spatially separated markets with two different price distributions for the same asset. If enough traders go long in one market and short in the other, then the market price distributions can be brought into agreement. However, if there is positive excess demand for the asset then the average of the asset will continue increasing with time, so that there is no equilibrium,[12]

IV. Concluding Remarks

This paper describes the workings of markets in which arbitrageurs' performance to ascertain their ability to invest profitably is limited. The avoidance of volatility by arbitrageurs suggest an approach to understanding persistent excess returns in security prices. Specifically, we expect problems to reflect not some exposure of securities to difficult-to-handle macroeconomic and statistical risks. The more realistic view of arbitrage can shed light on a variety of observations in securities markets that are difficult to understand in more conventional mathematical models. Unlike in the efficient market model, the risk need not be correlated with any macroeconoimiv factors and can be purely idiosyncratic fundamental or noise trader risk.

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[8] The fundamental feature of such arbitrage is that brains and resources are separated by an agency relationship. The money comes from wealthy individuals, banks, endowments and other investors with only a limited knowledge of individual markets and is invested by arbitrageurs with highly specialized knowledge of these markets.

[9] Scaling exponents and extreme events will not help. If the exponential density in terms of the variable $y = p / p$ (0)

$f(y, t) = f(In\, y, t) / y$

Exhibits fat- tail scaling with time dependent tail price exponents γ - 1 and v + 1. These tail exponents become smaller as Δt increases. From our standpoint the scaling itself is neither useful nor important in application like option pricing, nor is helpful in understanding the underlying dynamics.

[10] If $f(x, t)$ is the empirical return density then the entropy is

$S(t) = \int_{-\infty}^{\infty} f(x, t)\, Inf(x, t)\, dx$ but, again, equilibrium is impossible because this entropy is always increasing. The entropy can never reach a maximum because f, which is exponential in returns x spreads without limit. The same could be said of the Gaussian approximation to the returns distribution. Das (2015), Giles (2016), Lavenda (2010).

[11] In particular, as Lavenda (2010), Das (2015)even the central limit theorem cannot be used to derive a Gaussian without the assumption of a microscopic invariance in the form of step sizes and probabilities for the underlying discrete random walk. If one make other microscopic assumptions about step sizes and corresponding probabilities, then one gets an exponential distribution, a Levy distribution, or some other distributions. There is no universality independent of the microscopic assumptions: different local laws of time –evolution of probability distributions.

[12] The excess demand ξ (p, t) is defined by dp / d t = ξ (p, t)is defined by drift plus pure noise... So markets that are not in equilibrium can satisfy the arbitrage condition. The equilibrium would then be the absence of arbitrage possibilities, that is, there is only one price of an asset. Smith and Foley (2002) have proposed as shown in Das ( ) a thermodynamic interpretation of one price based on utility maximization. In their discussion a quantity labeled as entropy is formally defined in terms of utility, but the quantity so defined cannot represent disorder/uncertainty because there is no liquidity, no analog of the heat bath, in neo-classical equilibrium.

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The Impact of the Macroeconomic and Institutional Environment on LBO Fundraising

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Abstract- The most past studies, analyzing the venture capital investments concluded a strong correlation between macro-economic, institutional and entrepreneurial conditions as well as divestment strategies. The purpose of this study is to find out the economic impact of macroeconomic environment and institutional quality on LBO fundraising, using a panel dataset of 19 European countries over 2001-2010. The empirical results confirm the importance of some factors and show that the unemployment rate, interest rate, trade sale and IPO divestments are important determinants in the European LBO market.

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The Impact of the Macroeconomic and Institutional Environment on LBO Fundraising

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I. Introduction

The development of any country depends on the development of its economy. Sowell developed financial sector can increase investment, which promote economic growth. However, in the current global economy (economic and financial conditions), small and medium enterprises are facing difficulties, especially in terms of financial support. Furthermore, the lack of efficient financial markets can be a problem in allocation credit to profitable investments, which stimulate economic growth (Levine, 1997). Essentially, a country's economic development is related to the existence of banking system-channeling savings into productive employment.

The critics of contemporary finance focus on the behavior of new financial players such as Private Equity (PE). It has different character compared to other traditional sources of financing. It can play a major role in the economy by representing a support of the unlisted company throughout its existence. It directly contributes to the creation of enterprises, to the promotion of innovation and new technologies, to the growth, to the employment and the renewal of economy.

Financial globalization, development of free trade and the revolution in information technology constitute a profound economic transformation that has encouraged the development of PE and its spread (Ouidad Yousfi, 2008). The Private equity has grown significantly in recent years; its penetration is no longer limited to developed economies and spread to emerging economies. Private equity is the ultimate objective of all investors to realize the return on their investment after a certain period, typically between three to seven years after the original transaction took place.

The academic literature for over twenty years documented the correspondence between the macroeconomic environment and the capital investment. However, the economic literature on the determinants of the supply of private equity has been limited to the study of the market PE in Europe and the United State.

The first wave of the phenomenon of capital investment during the late 1980s was mainly in the United States, Canada and to a smaller extent in the UK. From 1985 to 1989, these three countries accounted for 89 percent of transactions of leveraged buyout effect of global and 93 percent of the global value of these transactions. The phenomenon of PE is also expanding rapidly in continental Europe. In the period 2000-2004, the market PE of Western Europe (including the UK) had 48.9 percent of the total value of transactions of global leveraged buyout, compared with 43.7 percent in USA.

The economic literature on the determinants of the supply of private equity was until then limited to the study of the determinants of capital risk in relation to early stage investments or do not distinguish between types of private equity investors (Schwienbacher, 2004). However, few research have interested by LBOs in developing markets. Our study is one of the few to do so. This article focuses on leveraged buyouts; our objective is to analyze the relationship between inflows into these investments and some macroeconomic and institutional factors.

The central issue of our research can be summarized by the following question: what determine *LBO activity* becomes important. The remainder of this paper organized as follows: in Section 2, we discuss relevant literature; in Section 3, we review the data and methodology used to test our hypotheses. Section 4 presents the results of our investigation. Section 5 concludes.

II. Revues of Literatures

a) LBO market

The private equity market is worldwide, measured by the average of its annual business investment flows; it is about 100 billion euro per year compared to 280 billion euro per year of capital raised on all procurement actions. The first number idivided into 20 billion euro for all the countries of Western

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Europe, or 0.3% of its Gross Domestic Product (GDP). Market dynamics is also measured by the new funds raised, the rhythm depends on market conditions (financial market, economic growth, institutional and legal environment,...).

Several studies have attempted to explain why financing by capital investment considered necessary if companies can raise capital by other means. This original financial structure; witch is ideal for supporters of the Theory of Agency (Kaplan, 1989), combined with good management of the operating cycle and an effective governance structure can allow for significant returns on investment, increase the value of long term assets, and reduce conflicts between shareholders and creditors. In short, it can create value. The decline in the share of investment in venture capital and development capital in favor the buyout (LBO) is a strong movement in recent years.

Leveraged buyout transactions represent the late stage of the private equity category, mature and stable firms, while venture capital represents the early stage of the private equity category (Kaplan, 2005).

According to the French Association of Capital Investors (AFIC), a leveraged buy-out Leveraged buyouts (henceforth abbreviated as 'LBOs')is defined as the acquisition of another company, partially financed by debt, using a significant amount of borrowed money in the context of a specific legal and tax optimized schema where managers associated in partnership with expert professional investors.

Definition of LBOs presented in the book of Cherif and Dubreuille in 2005, as «A leveraged buyout is an acquisition operation of a target company (OpCo) through a holding company (NewCo) which, in addition to a contribution of equity, subscribed debt (senior debt, subordinated debt and mezzanine debt) to finance the purchase. The holding company will pay interest on its debt and pay back the principal from cash flows generated by the acquired company.

The 1980s was a period of "overheating" of the LBO market before that market conditions have changed and LBO activity has weakened rather suddenly in the early 1990s. The rapid growth in this market has resulted in conditions of favorable credit market, with this, the emergence of more dynamic financial markets helped the issuance of high-yield debt in particular - a key factor in the previous development of the PE in United States (Gompers and Lerner 2002). Growth in repurchase activity was also enhanced by the dramatic drop in overall asset prices as part the downturn in the global economy led to the decline of the stock market after March 2000.

The recent increase in LBO activity has revived many research efforts. Among the most recent, several papers have considerable contribution in the issue of the determinants of PE investments. Published papers that are most related to our analysis are the Gompers and Lerner (1998), Jagwani (2000), Jeng and Wells (2000), Marti and Balboa (2001), Felix et al. (2007), Cumming et al. (2008) and Cherif and Gazdar (2009).

We discuss in the following sections the various factors identified in the literature to explain the LBO fundraising. These factors will presented in two categories: macro-economic and institutional factors.

b) Macroeconomic and institutional determinants:

Given the importance of identifying the determinants of financial development, there has been more research on the fundamental factors for well-functioning financial systems. Most of this research has emphasized the role of the legal and institutional factors in explaining the levels of development in financial systems. Indeed, the main works are Beck et al. (2003), Ben Naceur and Ghazouani (2007), Law and Habibullah (2009) and Girma and Shortland (2008).

The impact of a good business environment on investment may come through adopting appropriate macroeconomic policies, encouraging competition and developing a legal and institutional framework to promote a strong financial transparency. The changes in the macroeconomic, financial and institutional context are the first explanatory factor for the rapid growth of this market. The literature documents well the correspondence between the macro-financial environment and the flow to the PE (Gompers et al. 2005).

The correlation between the macroeconomic data and good or bad conduct of operations is not certain. However, the LBO directly influences the conduct of the investment policy as well as operational management of the acquired companies.

Jeng and Wells (2000) developed a model to assess the macroeconomic determinants of investment in venture capital. They explain this investment by the value of IPOs, the rate of GDP growth, the growth rate of the market capitalization, the rigidity of the labor market, the level of private pension fund and the financial statements published by country.

Schertler (2003) analyzes the forces acting on the activity of venture capital by the following variables: the liquidity of stock markets as measured by market capitalization, the human capital endowment by the number of people working in unit's research and development or the number of patents registered and rigidity in the labor market.

To test the impact of labor market on private equity investments, Felix et al. (2007), Cherif and Gazdar (2009) used the unemployment factor. Almost all subsequent work suggested a positive relationship between economic growth as measured by GDP growth and the supply of capital investment.

Several methods are available to private equity investors to exit their investment. , the most important and widely used exits routes are: Initial Public Offering

(Gompers and Lerner, 1998; Jeng and Wells, 2000 and Felix et al 2007.), Trade Sale and Leveraged Recapitalization (Marti and Balboa, 2001). The literature on the determinants of venture capital insists on the positive relationship between the amount of money invested in this activity and the financial markets situation.

Black and Gilson (1998) stipulate that well-developed stock market, that offers to the venture capitalists the opportunity to exit via an IPO (IPO: Initial Public Offering), is a key factor in the dynamics of venture capital. They concluded that the development of the capital market is inseparable from the existence of developed and profound financial markets that is able to take up the IPOs of companies. Other studiers like Kaplan and Schoar (2005) show that market liquidity, represented generally by market capitalization, have a positive impact on the development of investments in venture capital.

In addition to macro-economic factors, the institutional environment affects investment. This emphasize the influence that institutional factors can have on investment. Following the clarification of the decree on the rule of prudence that changed in the US in 1978 for new commitments, the venture capital riding abruptly. This reform, by facilitating investment of pension funds in private equity, led to a sharp increase in funds from pension funds dedicated to the capital investment.

Beck et al. (2003) studied, in differences political systems, the relationship between the legal, institutional and financial frameworks. The empirical results found that countries inheriting the civil law tradition have not significantly well-developed financial systems and investor protection, comparable to the countries whose follow a common law legal system.

Jeng and Wells (2000) to study the relationship between the supply of venture capital and the regulatory factor, used an index of quality of financial reporting standards in each country, they find a positive effect since the laws facilitate financial and accounting control of venture capital. Thus, they cited the efficiency of bankruptcy proceedings, but it was not included in their empirical analysis because they had difficulty in finding good measures for this.

Cherif and Gazdar (2009) examine the determinants of institutional venture capital investment using the Index of Economic Freedom as an indicator of institutional quality. The composite index is a simple average of 10 individual freedoms, each of which is essential to the development of personal and national prosperity. They find that the institutional environment plays an important role in determining the investment of European Venture Capital. Through our literature review, we found that various factors which both macro-economic, financial and institutional flows can explain to the capital investment. The results from previous studies on the determinants of the supply of private equity are interested in the venture capital industry only. In this article, we will try to do an empirical study to analyze another aspect of capital investment, operations leverged buyout (LBO). Our empirical methodology is the result of the work of Gompers and Lerner (1998), Jeng and Wells (2000), Marti and Balboa (2001), Romain and al. (2004), Felix et al. (2007) and recently Cherif and Gazdar (2009).

III. Research Methodology

a) Data description

In order to evaluate empirically the determinant of LBO investment, we used cross-country regression on a sample of 19 European countries: Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The data cover the period of ten years, from 2001 to 2010. Thus, we use panel data of 190 observations.

Figure 1 gives an overview of the amount and numbers of LBO investment per years. There are a strong growth especially in 2006. More than 58% of total investment in LBO was in United Kingdom with 28968318 €. In what follows, we try to explain these regional and cross-country differences by means of an econometric model.

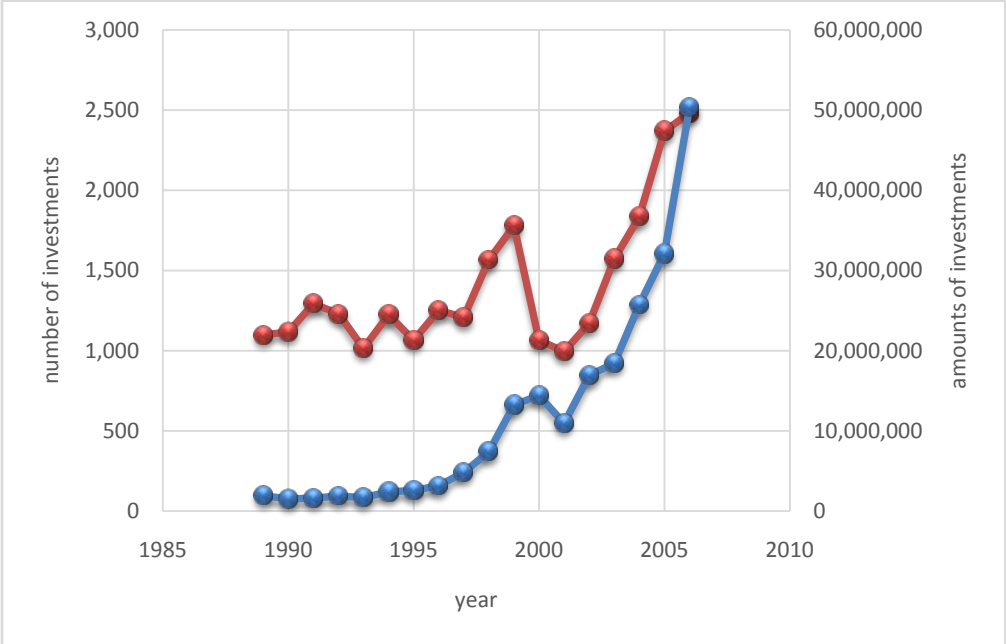

Figure 1: LBO investments in Europe

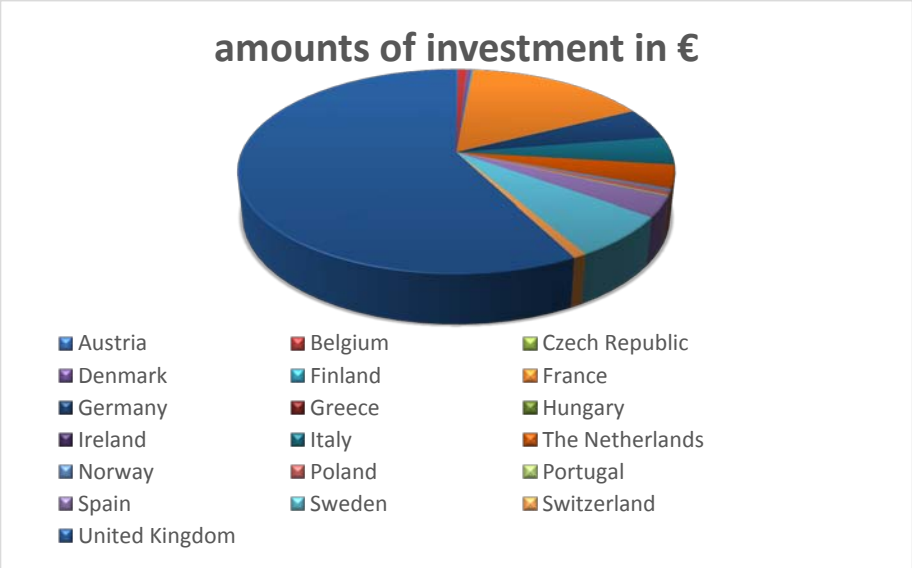

Figure 2: Size of LBO investment by country

The International Financial Statistics (IMF), World Bank (WDI) and the International Monetary Fund (IMF) database used to assess data concerning macro-economic and institutional factors like interest rates, unemployment rates, GDP growth and market capitalization, etc. The information concerning the private equity transactions (the amounts of LBO investment for each country) obtained from Eurost at and the annual reports of the EVCA (The European Private Equity & Venture Capital Association.

Many researchers have focused on studying the impact of certain macroeconomic and institutional variables on investment in private equity. From these studies, we suggested a set of variables for our model to estimate. We will attempt to explain the different variables that could affect investment in LBO. These variables will divided into two categories, the first combines the variables that are macroeconomic and institutional, while the second category includes variables related directly to the private equity process.

Concerning macroeconomic variables, we introduced two economic growth indicators such as GDP growth, the Stock market capitalization (Gompers and Lerner, 1998 and Jeng and Wells, 2000), the interest rate (Gompers and Lerner, 1998; and Romain de La Potterie, 2004 and Felix et al., 2007) and the unemployment rate (Felix et al., 2007).

In addition to several determinants traditionally cited in the literature, with the exception of the recent study Cherif and Gasdar (2009) we use in our study two institutional quality variables (regulation and corruption). As indicators of technological opportunities, we use expenses in Research and Development.

We consider, also, the variables related directly to the private equity process, we test as previous studies Gompers and Lerner, 1998; Jeng and Wells, 2000, Marti and Balboa, 2001, Felix et al., 2007 and Cherif and Gasdar, 2009) three forms of divestment: IPO divestments (DIVESIPO), trade sales divestments (DIVESTRADE) and the write-offs divestments (DIVESWROFF).

b) Econometric Methodology

Considering the nature of the data collected (bivariate), we will use the econometrics of panel data.

The panel data regression based on the following model:

$$Y_{it} = a_{it} + \beta_{it} X_{it} + \varepsilon_{it} \quad (1)$$

Where we defined Yi, the dependent variable (investment in LBO), Xi was a matrix of macroeconomic and institutional variables composed of GDP growth (GROWTH), interest rates (INTERST), unemployment (UNEMPL), stock market capitalization (MCAP), opportunities technological (RD), variables directly related to the process of equity and corruption (CORRP) and regulation (REGLEM) variable. α_{it} was the unobserved country specific fixed effect, and εit was the error term for each observation. We estimated regressions by using Ordinary Least Squares (OLS).

At equilibrium, we have: $Offer\ LBO_{it} = Demand\ LBO_{it} = Investments\ LBO_{it}$ (2)

Consequently, we can estimated the panel model as:

$$Invest\ LBO = a_0 + a_1\ Growth + a_2\ MCAP + a_3\ Interest + a_4\ UNEMPL + a_5\ DIVTrade + a_6\ DIVIPO + a_7\ DIVWOff + a_8\ RD + a_9\ REGLEM + a_{10}\ CORRP \quad (3)$$

In order to judge the quality specification of our model, additional specification tests are necessary to select the appropriate estimator. To verify existence or not of an individual specific effect must be developed before estimating a homogeneity test. We then proceeded to test Hausman (1978) which select the appropriate estimator; it is the panel's techniques (fixed effects and random effects specifications).We can therefore apply the ordinary least squares or generalized to estimate different models and the results will analyzed in the following paragraph.

IV. Empirical Results

Tables 1 and 2 contain descriptive information on the variables. Table 1 gives a summary of the descriptive statistics of the variables. Table2 presents the correlation matrix of the variables, showing the existence of strong correlations. By observing the correlation matrix, we notice that the endogenous variable LBO investment is highly correlated with the explanatory variables divestments. We note the existence of strong correlations (more than 50% coefficient) between LBO investment and divestment IPO and divestment write-off.

Table 1: Summary Statistics

Variables	Description	OBS	MEAN	STD.DV	MIN	MAX
Invest LB	amounts of investment in the LBO operation (relative to the total purchase price)	184	.00086	.002066	0	.01552
Growth	the annual GDP growth rate in local currency	190	.02982	.019075	-.01119	.11681
MCAP	The value of listed domestic company shares on each country's major stock exchanges as a percent of GDP	174	.041863	.03194	-.05977	.14374
Interest	the annual real interest rate	151	.077006	.03851	.025	.206
UNEMPL	total unemployment in percentage of total labor force	152	.077443	.06095	.0772	3.220

DIV Trade	Divestment by trade sale, variables directly related to LBO investment, exit modes	184	.000054	.00012	0	.00111
DIVIPO	Divestment by flotation, variables directly related to LBO investment, exit modes	181	.00028	.00035	0	.0022189
DIVW Off	Divestment by Write-Off, variables directly related to LBO investment exit modes	184	.00010	.00016	0	.0013243
RD	the Research and Development expenditures	179	.01509	.0099	0	.0425
REGLEM	variables measuring respect for property rights, Rescaled from 0 to 1	133	.87709	.11149	.59	1
CORRP	The perception of corruption in the business environment, including levels of governmental legal, judicial, and administrative corruption, Rescaled from 0 to 1	190	.07412	.18212	.3	1

Table 2: Correlation matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
INVLBO (1)	1										
Growth (2)	-0.1395	1									
interest (3)	-0.2460	-0.0199	1								
UNEMPL (4)	-0.2592	-0.2340	-0.2358	1							
CORRUP (5)	0.2931	-0.2532	-0.0714	0.3894	1						
REGLEM (6)	0.2498	0.5121	-0.2695	-0.0527	-0.2878	1					
MCAP (7)	0.4041	0.3676	-0.1571	-0.1559	-0.1787	0.2836	1				
DIVIPO (8)	0.6645	0.4008	-0.0905	-0.1181	-0.1212	0.1307	0.4718	1			
DIVwoff (9)	0.7030	0.1009	-0.3092	-0.0887	-0.3210	0.1568	0.2792	0.2312	1		
DIVtrade (10)	0.3335	0.4330	-0.0942	-0.2219	-0.6012	0.5643	0.1929	0.1618	0.3154	1	
RD (11)	0.2500	0.5152	-0.1247	-0.2621	-0.4182	0.6535	0.3567	0.1630	0.2320	0.7220	1

a) Macroeconomic determinants of LBO fundraising

We will estimate the variable LBO investments in two steps, so we propose 12 models. First, the six models used to determine the effect of macroeconomic variables, divestment variables and the "RD" variable on LBO investment (*Table 3*). Concerning the measure of institutional quality, we introduce the two variables regulation and corruption in models (6) (12) (*Table 4*).

Table 3: Macroeconomic determinant of LBO fundraising

Variables	Y= investLBO											
	Model1		Model 2		Model3		Model 4		Model 5		Model 6	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
Cst	.00164 (4.06)***	.00147 (3.23)***	.00135 (3.16)***	.00107 (2.6)***	.00072 (0.67)	.00083 (1.83)**	.00083 (0.67)	.000655 (1.27)	.00083 (0.67)	.00067 (1.08)	.00061 (0.56)	.00051 (1.1)
GROWTH	.00394 (0.68)	.00261 (0.47)	-.00037 (-0.07)	-.00252 (-0.48)	-.00318 (-0.62)	-.00503 (-1.06)	.000306 (0.05)	-.00212 (-0.4)	.00134 (0.23)	.00021 (0.04)	-.00254 (-0.48)	-.00337 (-0.71)
INTEREST	-.00344 (-1.06)	-.00389 (-1.23)	-.00227 (-0.74)	-.003 (-1)	-.00499 (-1.45)*	-.00613 (-1.85)**	-.00711 (-1.82)**	-.00805 (-2.18)**	-.0066 (-1.69)**	-.0071 (-1.92)**	-.00534 (-1.55)*	-.00627 (-1.95)**
UNEMPL	-.01125 (2.15)***	-.00955 (-2.17)**	-.00843 (-1.7)**	-.0063 (-1.64)**	-.00423 (-0.9)	-.00382 (-1.12)	-.00665 (-1.29)*	-.00466 (-1.28)*	-.00645 (-1.21)	-.00491 (-1.17)	-.00379 (-0.81)	-.00299 (-0.9)
MCAB			-.00002 (-0.11)	.0001 (0.51)	-.00011 (-0.5)	.00039 (0.21)	.0001 (0.43)	.00024 (1.2)	.00014 (0.58)	.00028 (1.33)	-.00007 (-0.35)	.00002 (0.16)
DIVIPO			4.5316 (4.44)***	5.3051 (5.22)***	5.0795 (5.52)***	5.9467 (6.41)***					5.09681 (5.56)***	5.758 (6.42)***
DIVTRADE							.48016 (1.28)*	1.0123 (2.82)***			.50085 (1.5)*	.89322 (2.98)***
DIVWOFF									.2731 (0.6)	.4559 (1.02)	.31435 (0.78)	.48769 (1.23)
RD					.0347 (0.67)	.01848 (1.09)	.03134 (0.46)	.02003 (1.03)	.03077 (0.44)	.02386 (0.98)	.25551 (0.42)	.01402 (0.85)
R^2	.0615	.0563	.218	.4807	.3064	.6136	.0914	.4605	.0794	.2247	.3277	.7344
Hausman Test	*0.7631*	*0.7631*					*0.0148*	*0.0148*	*0.4625*	*0.4625*	*0.2154*	*0.2154*

T-statistics for the coefficient are in parenthesis.
* Significant at 1%, ** significant at 5% and*** significant at 10%.

Table 4: Institutional determinant of LBO fundraising

Variables	Y= investLBO											
	Model 7		Model 8		Model 9		Model 10		Model 11		Model 12	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
Cst	.00224 (0.77)	.00303 (0.56)	.00282 (-1.02)	.00301 (0.55)	-.00313 (-0.61)	.0017 (0.72)	-.00266 (-0.55)	.00132 (0.55)	-.00337 (-0.64)	.00066 (0.24)	-.0028 (-0.6)	.0012 (0.53)
GROWTH	.00172 (0.21)	.00495 (0.57)	-.00557 (-0.65)	.00081 (0.08)	.00245 (0.26)	-.00769 (-1)	-.00313 (-0.36)	-.0058 (-0.84)	.00073 (0.08)	-.00086 (-0.11)	-.0048 (-0.56)	-.0053 (-0.75)
INTEREST	-.00333 (-0.82)	-.00236 (-0.55)	-.0026 (-0.63)	-.00186 (-0.43)	-.00951 (-1.59)*	-.00768 (-1.4)*	-.01150 (-2.07)**	-.0097 (-1.99)**	-.0096 (-1.58)*	-.0075 (-1.39)*	-.0097 (-1.76)**	-.0080 (-1.66)**
UNEMPL	-.01166 (-1.67)**	-.01670 (-1.71)**	-.00918 (-1.4)*	-.01453 (-1.46)*	-.01423 (-1.57)*	-.00569 (-1)	-.1562 (-1.86)**	-.00586 (-1.07)	-.01511 (-1.64)*	-.0056 (-0.9)	-.0134 (-1.61)*	-.0037 (-0.71)
CORRP	.00058 (0.48)	-.00111 (-0.18)	.00106 (0.84)	.00014 (0.11)	.00066 (0.57)	.00091 (0.81)	.00035 (0.33)	-.00007 (-0.08)	.00065 (0.55)	.00037 (0.35)	.00065 (0.61)	.00013 (0.14)
REGL	.00115 (0.34)	-.00001 (-0.18)	-.00263 (-0.79)	-.00142 (-0.24)	.00747 (1.3)*	-.00149 (-0.49)	.00718 (1.34)*	-.00049 (-0.17)	.0079 (1.36)*	-.00003 (-0.01)	.0070 (1.35)*	-.0010 (-0.36)
MCAB			.00031 (0.88)	.00008 (0.2)	-.00015 (-0.41)	.00012 (0.39)	-.00001 (-0.04)	.00023 (0.84)	.00001 (0.04)	.00029 (0.89)	.00014 (0.39)	.00027 (0.92)
DIVIPO			3.699 (2.46)*	2.0018 (1.27)	2.1269 (1.62)*	4.4320 (3.27)***					1.5248 (1.26)	2.5475 (2.12)*
DIVTRADE							1.2493 (3,05)***	1.6718 (4.27)***		.8075 (1.37)*	.12219 (3)***	1.5605 (3.94)***
DIVWOFF									.6231 (1.02)		.7115 (1.29)*	7614 (1.42)*
RD					-.10747 (-0.91)	0.1404 (0.59)	-.1180 (-1.07)	0.1239 (0.49)	-.1290 (-1.05)	0093 (0.31)	-.1485 (-1.34)*	01013 (0.44)
R2	0.0671	0.0668	0.097	0.4066	0.1996	0.5641	0.3057	0.5313	0.1692	0.2063	0.3632	0.6909
Hausman Test	0.4937	0.4937	0.0021	0.0021			0.1552	0.1552			0.0368	0.0368

T-statistics for the coefficient are in parenthesis.
* Significant at 1%, ** significant at 5% and*** significant at 10%.

We can see that both GDP growth and market capitalization variables display insignificant coefficients, whatever we retain the fixed or random effects model. This is adequate for Jeng and Wells (2000) and Groh et al. (2008), but contradictory with the most previous studies (Gompers and Lerner, 1998; Felix et al., 2007; Cherif Gazdar and 2009). We can therefore conclude that the increases in market capitalization does not correspond to the increase in LBO investments, that is to say we cannot mention market capitalization as one of the most important financial market factors influencing the private equity market.

In the majority of cases, the variable interest rate was negative and statistically significant at the 10% and 20%. The study of Jagwani (2000) found the same result. This is adequate to macroeconomic theory suggests a negative relationship between the interest rate and the investment of private equity. If interest rates rise, the relative attractiveness of investment in private equity funds will probably deteriorate. However, this result does not support the conclusions of other previous studies, indicate the positive effect of this variable on this type of investment (Gompers and Lerner (1998) and Romain and La Potterie (2004).

According with our expectations, the UNEMPL rate has a negative and significant impact on investment in LBO in all estimated models. This result corroborates those recently obtained by Cherif and Gazdar (2009) and other studies (Jeng and Wells (2000), Marti and Balboa (2001), Romain and La Potterie (2004)).

Finally, our results confirm the conclusions proposed by Lerner et al. (2008) that affirm the positive relationship between the expenditures in research and development and LBOs. However, this variable cannot further explain our exogenous variable. It shows insignificant coefficients and the only time this variable indicates a statistically significant coefficient it is negative (-0.1458) (when introducing institutional variables).

b) The institutional determinants of LBO fundraising

In addition to macroeconomic factors, the institutional environment affects LBO investments. This involves emphasizing the influence of some institutional qualities.

To explain this form of investment, we have thus conducted regressions on all six models estimated previously by adding two variables regulation and CORRP in our regression. The estimation results summarized in the model (7) to (12) in Table4. We can deduce that the variable CORRP has no effect on investment in LBO that is contradictory to the results found by Cherif and Gazdar (2009).

Following the recommendations of Cherif and Gazdar (2009) who propose that the institutional environment plays an important role in determining European Private Equity investments, we can say that the regulation may have a positive effect on LBO investments.

c) The divestments

The divestment phase constitutes the end of buyout. Academic literature mentions mostly three rote of exit: IPO, trade sale and liquidation of the asset Kaplan and Stromberg (2009). This result is consistent with the recommendations of Giot and Schwienbacher (2007). IPO is widely considered as the most profitable exit route from private equity investments. The models indicate that the variable divestment by IPO has a significant positive impact (at 1% level) on the supply of this type of investment (Gompers and Lerner, 1998; Romain et al. 2004; Felix et al. 2007)

Therefore, IPO or Divestments by trade sale remain one of the strongest determinants of equity financing. However, this result does not support other previous who have argue that all three variables are not statistically significant determinant of LBO fundraising (Marti and Balboa, 2001; Felix et al., 2007; and Cherif Gazdar, 2009).

V. Conclusion

Private equity funds play a major role in the economy. It represents a fundamental support of the unlisted company throughout its existence. It directly contributes to the creation of enterprises, promotion of innovation and new technologies, growth, employment and renewal of the economic base. The presence of strategic role of private equity in the development of the global economy gives it a major character and gives it a special interest in supporting its expansion and essentially its growth. Then it is important to identify and understand the determinants of PE investment offer in an economy.

In this research, we proposed to study the characteristics of private equity and specifically LBO transactions. In other words the determinants of the supply of this type of investment. Our empirical application, including a panel of 19 European countries for the period 2001 to 2010.

About the financial markets, we found statistically significant results, which show that IPOs mentioned as one of the most important factors that positively influence the LBO investment. Among the country-specific factors, country GDP growth does not show any significant impact. However, other determining variables of this investment such as the interest rate and the unemployment rate negatively affect the growth of LBO investments.

Finally, we have shown the relevance of the institutional quality as a determinant of the European funds raised. In contrast to financial theory, coefficients of institutional variables (corruption) through our model regressions are not significant.

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Analysis of Financial Distress and its Determinants in Selected SMEs in Wolaita Zone

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Abstract- The development of SMEs is considered as one of vital determinants of the growth of Ethiopian economy, and for secure equitable distribution of the benefits of the economic growth. However, SMEs in the country are leveled as not performing well and falling short of yielding the much anticipated contribution for the growth of the economy as they are expected. This study is conducted to analyze financial distress level of SMEs in Wolaita Zone and indentify those factors affecting their financial health. In this study 30 firms form three sectors are selected as samples selecting ten samples from each of manufacturing, service and trade sector using purposive sampling method. Accordingly, the results of Altman's Zeta Score Model analysis indicate that three of the ten selected firms in the service sectors are found to be financially distressed, but none of the sampled SMEs in the sector are below the bankruptcy point. In manufacturing sector, one of the ten selected SMEs is found with the Zeta score of below the bankruptcy line and all of the rest of the sampled SMEs are found to be under financial distress though their Zeta score is above the bankruptcy point.

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Strictly as per the compliance and regulations of:

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Ephrem G.Selassie [α], Ganfure Tarekegn [σ] & Andualem Ufo [ρ]

Abstract- The development of SMEs is considered as one of vital determinants of the growth of Ethiopian economy, and for secure equitable distribution of the benefits of the economic growth. However, SMEs in the country are leveled as not performing well and falling short of yielding the much anticipated contribution for the growth of the economy as they are expected. This study is conducted to analyze financial distress level of SMEs in Wolaita Zone and indentify those factors affecting their financial health. In this study 30 firms form three sectors are selected as samples selecting ten samples from each of manufacturing, service and trade sector using purposive sampling method. Accordingly, the results of Altman's Zeta Score Model analysis indicate that three of the ten selected firms in the service sectors are found to be financially distressed, but none of the sampled SMEs in the sector are below the bankruptcy point. In manufacturing sector, one of the ten selected SMEs is found with the Zeta score of below the bankruptcy line and all of the rest of the sampled SMEs are found to be under financial distress though their Zeta score is above the bankruptcy point. On the other hand SMEs in the trade sector has shown preferably good results with high Zeta scores. However the three of the ten samples are found in the distress zone among the selected SMEs in the trade sector as well. Sales ratio, working capital and EBIT are found to be the major variables among the other variables in the model that affects the financial health of the SMEs.

I. Introduction

Ethiopian government is giving due attention for the growth and development of Small and Medium Enterprises both in quantity and quality as they are believed to play very important role in accelerating the country's much anticipated Growth and Transformation Plan by boosting national income and wealth and promoting private sector development. This is also well articulated in the Growth and Transformation Plan which prioritizes and identifies the development of micro and small businesses as catalyst for promoting industrial development. SMEs are believed to be main derives of economic growth in the countries urban areas. They create employment and income generation opportunity for women and youth in urban areas by accommodating large number of young and women population. This in turn makes the economic growth not only sustainable but promotes fair distribution of wealth among the citizens by accommodating the most venerable group of the population such as the youth and the women at large. Thus studies on SMEs are important because SMEs are viewed as the backbone of the economy of many countries all over the world since they are the incubators of employment, innovation and growth (Craig, Jackson and Thomson 2004).

The growth of Small and medium Enterprises however has been challenged by various problems of which lack of fund is found to the significant one (Alemayehu 2007). Small and Medium-sized Enterprises (SMEs), particularly small firms, have historically faced significant difficulties in accessing funding due to the lack of credible information available to potential providers of funds (Ang, 1991). These enterprises are usually found to be informational y more obscure the bigger business organizations since they often have no certified audited financial statements to provide credible financial information on a regular basis(IBD). Difficulties in accessing funding are especially relevant for small firms as they have low assets with which to secure funding. Furthermore it has been difficult for creditors to measure the credit worthiness of these firms, as they have no concrete financial information. As a result studies in the area of financial distress conditions of SMEs are very much rare due to unavailability of financial data. Yet it is very important and reasonable to measure the financial distress conditions for SMEs as they are found to be the key divers of the nation's economic growth.

a) *Objectives of the study*

Therefore the main objective of the study is to measure the financial distress conditions, which is the financial healthiness of Small and Medium Enterprises in Wolaita Zone.

b) *Significance of the study*

Currently, there is an information vacuum on the financial health status of SMES in the study area. The study will strengthen information need in the sector on financial health status and provide a foundation for monitoring and assessing the level of intervention needed in this era of the Nation's much anticipated transformation of the sector.

II. Methodology

The data required for analyzing the financial health status of small scale businesses in Wolaita Zone

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were collected for a year 2015. A sample of 30 small scale businesses was purposively selected for the study. The sampled firms were randomly selected from the list of businesses incorporated as private limited liability companies with the Trade and Industry Department of the Zone. The sample of ten firms was taken from each of three sectors such as service sector, trade and manufacturing. The choice of private limited liability businesses was to ease the problem of data collection since this category of enterprises are required by law to prepare annual financial reports for the purpose of rendering annual returns. Thus data were derived from the financial statements (Balance sheets and income statements) of sampled business enterprises. The financial data extracted include working capital, sales, total assets, earnings before interest and tax, market value of equity and book value of total liability (debts). In order to use Altman's Z-score model in predicting financial health, Z-scores' were computed for each sampled firms for the year. Based on the computed Z-scores and using Altman's criterion, the businesses were then classified into financially healthy, unhealthy or cannot say (Grey).

III. Model Specification

In this study the well known Altman's Z-score model, based on five financial ratios and a bankruptcy predictor model developed by (Teti et. al 2012) used firstly exclusively for small and medium-sized enterprise in Wolaita for the year of 2015 is applied the specified analytical technique for this study is the Altman's discriminant function model and is as follows:

$$Z=0.012X1+0.014X2+0.033X3+0.006X4+0.999X5 \ldots\ldots \quad (1)$$

Where:

XI = Working capital/Total assets
X 2 = Retained Earnings/Total assets
X 3 = Earnings /Total assets
X 4 = Equity/Book value of total debt
X 5 = Sales/Total assets
Z = Overall Index

Working Capital/Total Assets (X1): The Working capital/Total assets ratio is a measure of the net liquid assets of the SMEs relative to the total capitalization. Working capital is defined as the difference between current assets and current liabilities (Sulphey, M. M., & Nisa, S. 2013). However for the SMEs under the study cash will be used as a proxy for working capital as they have only cash in their current assets section, and do not have current liabilities Ordinarily, an SME experiencing consistent operating losses will have shrinking current assets in relation to total assets.

Retained Earnings/Total Assets (X2): This is a measure of cumulative profitability over time. The age of a firm is implicitly considered in this ratio. For example, a relatively young firm will probably show a low RE/TA ratio because it has not had time to build up its cumulative profits (Aremu, M. A., & Adeyemi, S. L. 2011). Therefore, it may be argued that the young firm is somewhat discriminated against in this analysis, and its chance of being classified as bankrupt is relatively higher than another, older firm, ceteris paribus. The incidence of failure is much higher in a firm's earlier years.

Operating Earnings /Total Assets (X3): This ratio is calculated by dividing the total assets of a firm into its earnings before interest and tax reductions. It is a measure of the true productivity of the firm's assets, abstracting from any tax or leverage factors. Since a firm's ultimate existence is based on the earning power of its assets, this ratio appears to be particularly appropriate for studies dealing with corporate insolvency/failure. Furthermore, insolvency in a bankruptcy sense occurs when the total liabilities exceed a fair valuation of the firm's assets with value determined by the earning power of the assets (Teti et. al (2012)).

Book Value of Equity/Book Value of Total Debt (X4): The measure shows how much the firm's assets can decline in value before the liabilities exceed the assets and the farm firm becomes insolvent (Teti et. al (2012).

Sales/Total Assets (X5): The capital-turnover ratio is a standard financial ratio illustrating the sales generating ability of the firm's assets. It is one measure of management's capability in dealing with competitive conditions (Sulphey, M. M., & Nisa, S. 2013).

In this model Altman stated Z' Score which is less than 1.21 as financially distressed zone (Zone I) and is Z' score is greater than 2.90 it is called Zone II which is financially not distressed zone. The result of the Z' Score which is in between 1.23 to 2.90 is categorized as a "gray area". A "gray area" as defined by (ALTMAN E. 1983) is an area where there is no clear line between bankruptcy and non-bankruptcy. It is in deeded undesirable condition of financial health of the firms. It is characterized by distress than healthiness.

IV. Data Analysis

In this section the results of the analysis made to determine the financial health position of selected SMEs is presented. To achieve the objective of the study, which is to evaluate financial distress (health) condition of selected SMEs, the data collected are first analyzed with the use of five accounting ratios which are part of the Z –score analysis. These accounting ratios are then combined into a single measure of Altman's Z-score with the help of Multiple Discriminate Analysis (MDA). The result of the analysis for each sector under study is presented as follows.

i. *SMEs in Service sector*

The following table indicates the Z-score of selected SMEs Wolaita zone in service sector in which is calculated based on the (Altman1991) Model.

Table 01: Z-Score of selected SMEs Wolaita zone in service sector

Ratio/ Firms	WC/TA	RE/TA	EQT/TD	EBIT/TA	SAL/TA	Zeta Score
F1	1.2687	1.0286	1.3852	1.1999	2.2740	2.3543
F2	1.3079	1.4487	1.5636	1.2080	2.9046	2.9965
F3	1.3795	1.0532	1.4210	1.3429	3.3705	3.4534
F4	1.3692	0.0920	2.7751	1.0163	2.3581	2.4711
F5	1.4449	0.0388	1.3061	1.1404	3.1854	3.2500
F6	1.4569	0.0799	2.0358	1.2301	2.9236	3.0139
F7	1.4627	1.0956	3.6042	1.2042	3.2577	3.4135
F8	1.4613	1.0713	2.9745	1.2908	2.8727	3.0082
F9	1.4268	1.0578	1.5895	1.2114	2.9847	3.0734
F10	1.3582	0.0960	0.4739	1.2452	2.3311	2.3695

(Source: author competition)

As it can be observed form the above table, the only three of the selected ten small businesses in service scoter are found to be in "gray" of financial health condition indicator. The gray area is undesirable area as it amounts to financial distress. The rest of the firms under study are financially healthy. The highest zeta score is 3.45 and the lowest is 2.35. None of the selected firms is found under the bankruptcy zone. However there are three firms under gray area, which is between the Zeta scores of 1.21 and 2.90, which in turn indicates that those firms are under finical distress.

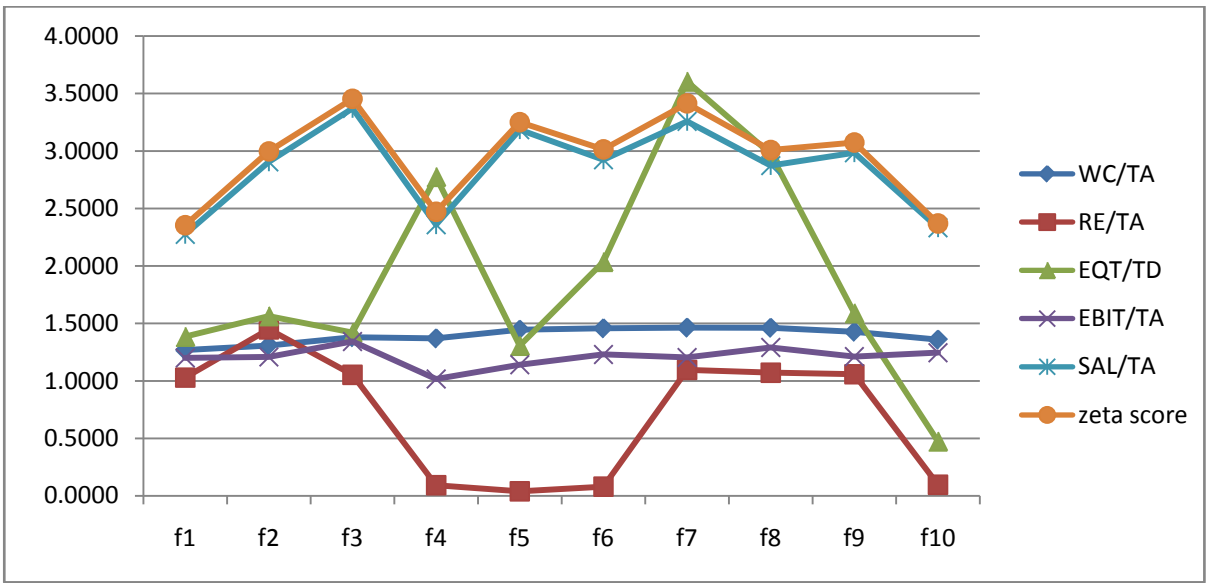

Figure 01: Z-Score of selected SMEs Wolaita zone in service sector (source: author competition)

It can be observed from the above figure that how variables determining financial health of a firm are varying among the selected firms. The first and the most important variable affecting the financial condition of

firms, according to the Altman's model are Sales to Total Asset ratio. There is variation among firms in this ratio. Those firms with lower Z score are those that have lower EBIT to total Asset and sales ratios. Therefore firms with low z score, which are under financial distress should work on increasing their sales and EBIT.

ii. *SMEs in Manufacturing Sector*

The manufacturing sector in Ethiopia recently is given a due attention as the government is working to bring structural transformation in the economy from agrarian based to manufacturing based. The strategic pillars of the GTP II (Growth and Transformation Plan) related to manufacturing include (1) developing light and small manufacturing enterprises that are globally competent and leading in Africa (2) establishing a foundation for further growth of the strategic heavy industries which ultimately enable Ethiopia to become an industrialized country by 2025 (source: GTP II, PP 38). This is, however, seems an over ambitious plan as reports are indicating that despite the sector level growth, the much needed structural transformation has never even showed a sign of change. The industrial base of the country has remained low contributing only 12-14% to GDP of which the medium and large factories as well as the light and small manufacturing shared respectively 4% and 1.2% throughout the past decade.

In light of the above national strategy the performance and growth of SMEs which are have been expected to be graduated and joined the medium and large scale being hampered by various factors. That is what the financial health conditions analysis of some selected manufacturing firms on table below shows.

The following table indicates the Z-score of selected SMEs Wolaita zone in manufacturing sector in which is calculated based on the (Altman1991) Model.

Table 02: Z-Score of selected SMEs Wolaita zone in manufacturing sector

Ratio/ Firms	WC/TA	RE/TA	EQT/TD	EBIT/TA	SAL/TA	Zeta Score
F1	0.28090	0.03828	0.56534	1.30587	1.84093	1.86948
F2	0.29050	0.03352	0.82653	0.31788	1.85028	1.88157
F3	0.30194	0.05251	0.56145	0.20399	1.10747	1.13047
F4	0.23846	0.02527	0.58532	0.25692	1.54405	1.56658
F5	0.32052	0.06055	1.04120	0.12947	1.34615	1.38463
F6	0.33556	0.03712	1.12840	0.08022	1.56990	1.61059
F7	0.26087	0.05646	0.81479	0.18019	1.60894	1.63922
F8	0.46741	0.04005	0.50673	0.18112	1.76555	1.78777
F9	1.37222	1.06121	0.59780	1.71014	1.87620	1.93564
F10	0.39854	0.49633	0.65452	0.57630	1.80587	1.84086

(Source: author competition)

As it can be observed from the above table one of the sampled firms is already below the bankruptcy threshold with the Zeta score of 1.13 which indicates that it is soon going to be bankrupt as the Altman model indicates. It is also least Z-score of all sampled firms. The maximum Z-score is 1.93. This indicates that the remaining firms, though they are above the bankruptcy threshold, all of them are within the area identified as "gray" area in which one cannot exactly determine the exact nature of financial health of the firm. This is not recommendable status for the firms. Therefore, they are not yet free from bankruptcy threat. This indicates that they are financially distressed.

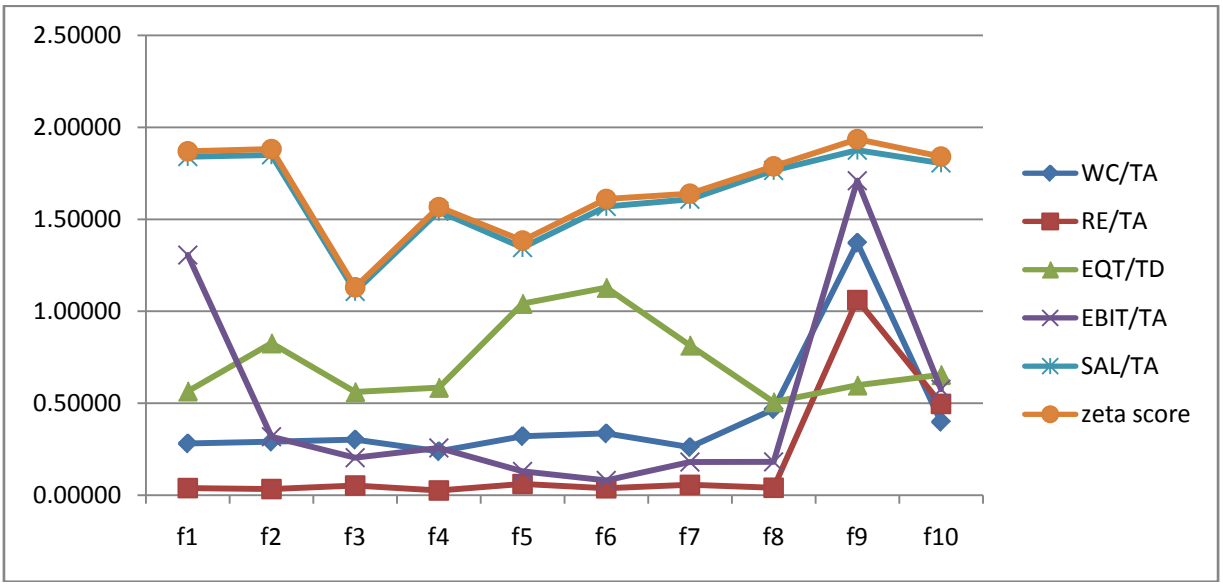

Figure 02: Z-Score of selected SMEs Wolaita zone in manufacturing sector (source: author competition)

The above figure indicates that factors affecting financial health of the firms are observed to be fluctuating among sampled firms. Sales to total assets ratio is the one which significantly affects the financial healthiness of the firms. Particularly for the firm which has the lowest Zeta score, sales to assets ratio is the lowest as it can be observed from the table above. Retained earnings to total assets ration appears to look not changing in the case of most of the selected manufacturing firms. Therefore the firms need to work on increasing sales volumes in ordered to get out out of financial distress.

iii. *SMEs in Trade Sector*

Trade is one of the prominent sectors in the economy of Ethiopia (Tesfayenesh, 2016). The result of the analysis indicates that SMEs in the sector are highly performing. The following table indicates the Altman Zeta score of selected ten SMEs in Wolaita Zone.

Table 03: Z-Score of selected SMEs Wolaita zone in trade sector

Ratio/ Firms	WC/TA	RE/TA	EQT/TD	EBIT/TA	SAL/TA	Zeta Score
F1	1.3364	0.2697	1.5007	1.3299	2.5640	2.6387
F2	1.4001	0.2330	1.3836	1.1556	2.7073	2.7772
F3	1.4736	0.1276	3.3093	0.7792	2.9308	3.0612
F4	1.4814	0.0857	1.8014	0.5804	2.5937	2.6730
F5	1.4844	1.0742	1.1274	1.4003	2.8599	2.9355
F6	1.4885	0.0907	1.4066	1.5778	3.6125	3.6839
F7	1.4926	1.0189	5.0766	0.2816	2.9234	3.1219
F8	1.4941	1.1540	4.5129	0.5880	3.5773	3.7602
F9	1.4848	0.1172	4.1788	0.3978	3.3860	3.5423
F10	1.4763	0.1158	2.7817	0.4988	2.4818	2.5935

(Source: author competition)

The above data indicates that all the sampled firms are way above the bankruptcy threshold, which is 1.23. The individual Zeta score of the firms is also very high. The maximum score is 3.68 whereas the minimum score is 2.59. However, there are still firms that are found in gray area. Four of the ten firms are found in the gray area. Firms which are found gray area need to work hard to join the healthy area which is indicated by the Zeta score of above 2.9. It can be understood from this fact that all the selected firms are financially healthy and way far from bankruptcy threat.

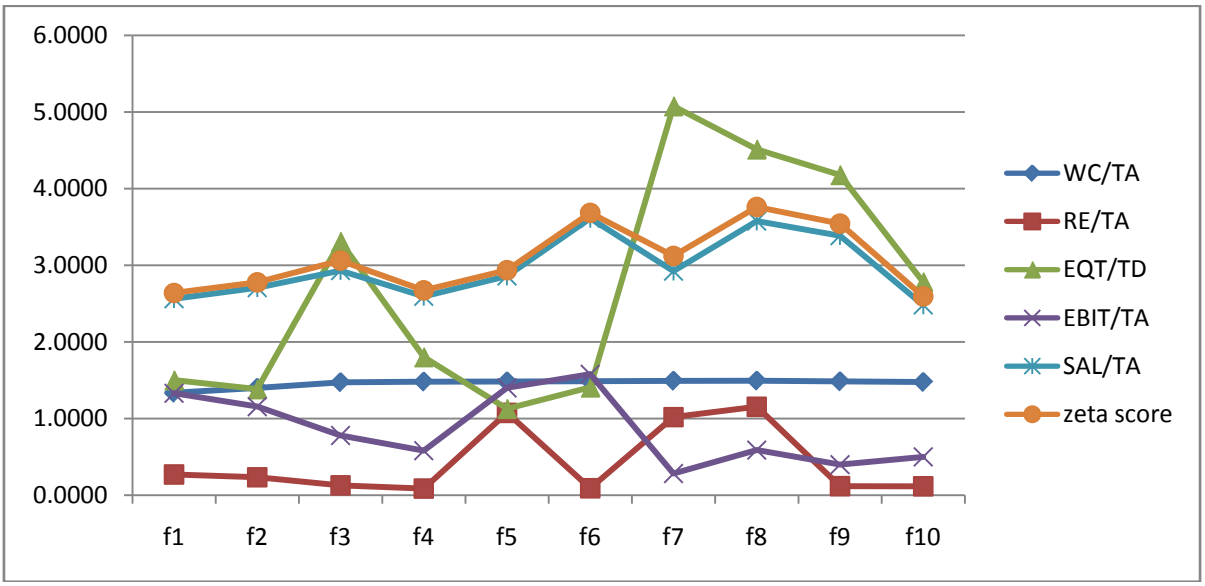

Figure 03: Z-Score of selected SMEs Wolaita zone in trade sector (source: author competition)

The figure above indicates how the variables are affecting the Zeta scores of the firms. Sales ratio, working capital and EBIT are observed to be playing greater role in the financial healthiness of the selected firms in service sector. Accordingly, those forms which are under financial distress need to work on increasing Sales ratio, working capital and EBIT ratios.

V. Conclusion

In this study 30 firms form three sectors are selected as samples selecting ten samples from each of manufacturing, service and trade sector using purposive sampling method. The purpose of the study was to determine the financial healthiness of the SMEs and to determine those firms under financial distress. Accordingly, the results of Altman's Zeta Score Model analysis indicate that three of the ten selected firms in the service sectors are found to be financially distressed, but none of the sampled SMEs in the sector are below the bankruptcy point. In manufacturing sector, one of the ten selected SMEs is found with the Zeta score of below the bankruptcy line and all of the rest of the sampled SMEs are found to be under financial distress though their Zeta score is above the bankruptcy point. On the other hand SMEs in the trade sector has shown preferably good results with high Zeta scores. However the three of the ten samples are found in the distress zone among the selected SMEs in the trade sector as well. Sales ratio, working capital and EBIT are found to be the major variables among the other variables in the model that affects the financial health of the SMEs. Therefore the SMEs under the financial distress are needed to work particularly on increasing their Sales ratio, working capital and EBIT ratios.

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The Impact of Capital Structure on Financial Performance of Commercial Banks in Ethiopia

By Mathewos Woldemariam Birru

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Abstract- Capital structure decisions are among the most important and crucial decisions for any business because of their effect on the performance of firms. The purpose of this paper was to investigate the impact of capital structure on financial performance of selected commercial banks in Ethiopia over the past five (5) year period from 2011 to 2015 using secondary data collected from financial statements of the commercial banks. Data was then analyzed on quantitative approach using multiple regression models. The study used two accounting-based measures of financial performance (i.e. return on equity (ROE) and return on assets (ROA)) as dependent variable and five capital structure measures (including debt ratio, debt to equity ratio, loan to deposit, bank's size and asset tangibility) as independent variable. The results indicate that financial performance, which is measured by both ROA, is significantly and negatively associated with capital structure proxies such as DER, SIZE and TANG whereas DR have negative impact.

Keywords: *capital structure, financial performance, commercial banks.*

GJMBR-C Classification: *JEL Code: G21*

Strictly as per the compliance and regulations of:

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Keywords: capital structure, financial performance, commercial banks.

I. Introduction

To survive and growth of any business the capital or resources must be needed but how can the business organizations get that capital? In the other words what is the source of finances? Capital structure decision should answer this question. An appropriate capital structure is important not only because of the need to survival and growth or maximizing returns of business organizations, but also because of the impact of such decision on firm's ability to deal with its competitive environment.

Financing and investment are two major decision areas in a firm. In the financing decision the manager is concerned with determining the best financing mix or capital structure for his/her firm. Capital structure decision is the mix of debt and equity that a company uses to finance its business (Damodaran, 2001). Capital structure has been a major issue in financial economics ever since Modigliani and Miller showed in 1958 that given frictionless markets, homogeneous expectations; capital structure decision of the firm is irrelevant. Modigliani and Miller (M & M) (1958) wrote a paper on the irrelevance of capital structure that inspired researchers to debate on this subject. This debate is still continuing. However, with the passage of time, new dimensions have been added to the question of relevance or irrelevance of capital structure. MM declared that in a world of frictionless capital markets, there would be no optimal financial structure (Schwartz & Aronson, 1967). This theory later became known as the "Theory of Irrelevance". In MM's over-simplified world, no capital structure mix is better than another. MM's Proposition-II attempted to answer the question of why there was an increased rate of return when the debt ratio was increased. It stated that the increased expected rate of return generated by debt financing is exactly offset by the risk incurred, regardless of the financing mix chosen. The relationship of the capital structure decisions with the firm performance was highlighted by a number of theories mainly, the agency theory, information asymmetry theory, signaling theory and the trade off theory.

The most important among them is the agency problem that exists because ownership (shareholders) and control (management) of firms lies with different people for most of the firms. And for that reason, managers are not motivated to apply maximum efforts and are more interested in personal gains or policies that suit their own interests and thus results in the loss of value for the firm and harm shareholder's interests. Therefore, debt finance act as a controlling tool to restrict the opportunistic behavior for personal gain by managers. It reduces the free cash flows with the firm by paying fixed interest payments and forces managers to avoid negative investments and work in the interest of shareholders (Jensen and Meckling (1976)).

The asymmetric information theory states that the firm's manager (insiders) has more information about their firm compared to the outside investors. The well informed managers try to send positive information to the market or ill informed investors to increase the firm value. Signaling theory states that managers have

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incentives to use various tools to send signals to the market about the difference that exist between them and weaker firms. One of the key tools to send these signals is the use of debt. Employment of debt in capital structure shows that managers have better expectations about the future performance whereas equity sends a bad news about the firm performance in the future (Ross (1977)).

Trade-off theory allows bankruptcy cost to exist. It states that there is an advantage to financing with debt (the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade -off when choosing how much debt and equity to use for financing (Modigliani and Miller (1963)).

Pecking Order Theory tries to capture the costs of asymmetric information. It states that companies prioritize their sources of financing (from internal financing to issuing shares of equity) according to least resistance, preferring to raise equity for financing as a last resort. Internal financing is used first. When that is depleted, debt is issued. When it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, while debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The Pecking Order Theory is popularized by Myers (1984), when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors)issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.

In finance, capital structure refers to the way in which an organization is financed a combination of long term capital(ordinary shares and reserves, preference shares, debentures, bank loans, convertible loan stock and so on) and short term liabilities such as a bank overdraft and trade creditors. A firm's capital structure is then the composition or structure of its liabilities.

The financing or capital structure decision is significant managerial decision, as it influences the shareholder return and risk. The market of the share also is affected by the capital structure decision (Harris and Raviv (1991)). The company has to plan its capital structure initially at the time of its promotion. Subsequently, whether the funds have to be raised, a capital structure decision is involved. A demand for raising funds generates a new capital structure which needs a critical analysis (Ruzbeh J. Bodhanwala (2003)).

The notion of performance is a controversial issue in finance largely because of its multi-dimensional meanings. Many experts define financial performance in different ways. According to (Metcalf and Titard, 1976) financial performance refers the act of performing financial activity. In broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished or it is used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation (Metcalf and Tetrad, 1976).

The purpose of this paper is to investigate the relationship that exists between the capital structure and financial performance in case of selected commercial banks in Ethiopia between the years of 2011-2015.

II. Objectives

The general objective of this study will be to investigate the impact of capital structure on the financial performance of selected commercial banks in Ethiopia.

The Specific Objectives of the study are:

1. To investigate the relationship between capital structure and financial performance of selected commercial banks in Ethiopia.
2. To evaluate the effect of debt ratio, total debt to equity and loan to deposit in the capital structure on financial performance of selected commercial banks.
3. To examine the effect of bank's size and tangibility on financial performance.

III. Literature Review

Under favorable economic conditions, the financial performance increase with financial leverage. But leverage also increases the financial risk of shareholders. As a result, it cannot be stated definitely whether or not the firm's value will increase with leverage. The objective of a firm should be directed towards the maximization of the firm's value. The capital structure or financial leverage decision should be examined from the point of its impact on the value of the firm. If capital structure decision can affect a firm's value, then it would like to have a capital structure, which maximizes its market value. However, there exist conflicting theories on the relationship between capital structure and the value of a firm. The traditionalists believe that capital structure affects the firm's value while Modigliani and Miller (MM), under the assumptions of perfect capital markets and no taxes, argue that capital structure decision is

irrelevant. MM reverses their position when they consider corporate taxes.

a) Theoretical literature review

One of the most insightful and important concerns in corporate finance is to determine how firms should finance their investments and operations. This is known as the capital structure‖ problem. Capital structure, in finance, according to the Modigliani Miller refers to the technique a corporation finances its assets through combination of equity, debt, or hybrid securities. Firm's capital structure is then the composition or structure of its debt and equity or the capital structure of a business is the mix of types of debt and equity the company has on its balance sheet. The capital or ownership of a business can be evaluated by knowing how much of the ownership is in debt and how much in equity. The company's debt might include both short - term debt and long-term debt (such as mortgages), and equity, including common stock, preferred shares, and retained earnings. Capital structure is considered as one of the main factors that have an impact on firm performance. Central to this argument is the agency theory, which explains the conflict of interest between shareholders and managers as well as the shareholders and bondholders.

In their pioneering work, Jensen and Meckling (1976) argue that the choice of capital structure may help mitigate agency costs. They claim that higher use of debt capital may reduce agency costs through the threat of liquidation, which causes personal losses to managers' salaries, reputation, and through pressure to generate cash flow to pay interest expenses (Grossman and Hart 1982, Jensen 1986, Williams 1987). A testable hypothesis that can be drawn from this argument is that increasing the leverage results in lower agency costs and improved firm performance, ceteris paribus. Conversely, when leverage becomes relatively high, further increases generate significant agency costs such as bankruptcy cost or financial distress resulting in negative impact on performance (Berger and Bonaccorsi di Patti, 2006).

Harris and Raviv (1991) argue that the debt instruments in the capital structure provide more power to investors and thereby can discipline management by reducing the discretionary power of the management on free cash flow of the firm. Emanating from this argument, leveraging is considered an appropriate method to mitigate conflicts between shareholders and managers and thereby reduce the agency cost (Jensen and Meckling,1976). The relationship between agency cost and firm performance under agency cost hypothesis has been examined by Berger and Bonaccorsi di Patti (2006). They employ profit efficiency as an indicator of firm performance and estimate a simultaneous-equations model to account for reverse causality from performance to capital structure. They find statistically significant relationship between higher leverage and higher profit efficiency. Their findings are consistent with agency cost hypothesis.

b) Review of related empirical studies

Since the pioneering work of Modigliani and Miller (1958), the financing decision of capital structure and their impact on financial performance has been a major field in the corporate finance literature. Since then, numerous studies have attempted to investigate the relationship between capital structure and financial performance of the firms. Even though, the area of capital structure and its impacts on financial performance need extreme investigation and analyzed and investigated in the other countries, it is not yet investigated in Ethiopia but some of the attempt has been made to investigate the determinants of capital structure:

The study made by Daniel Kebede (2011), is to investigate the determinants of capital structure in Ethiopia small scale manufacturing co operatives the research method which employed in the study is quantitative approach method specifically survey method. The data is collected from the financial statement of 13 small scale manufacturing co-operatives for the period from 1998 to 2002 E.C. the researcher also made unstructured interview method to collect data from concerned bodies. In the study the researcher used leverage as dependent variable whereas size, tangibility, profitability, earning volatility, growth and age are used as independent variables. The finding of the study revile that size and tangibility has positive relationship with leverage while profitability, earning volatility, growth and age has an inverse relationship with leverage. Finally the researcher conclude that even though the three most dominant capital structure theories are appear in Ethiopian small scale manufacturing cooperatives, the best theory that explain the capital structure theory of the sector is trade off theory.

The main objective of the study made by Woldemikael Shibru (2012) is to examine the relationship between leverage and determinants of capital structure decision and to explore which capital structure theory is applicable in commercial banks in Ethiopia.

He uses profitability, tangibility, growth, risk, size and liquidity as a factor that determine the mix of debt equity ratio. The researcher use mixed research methods by combining qualitative and quantitative approach together to achieve the stated objective. The data source for the study is documentary analysis and depth interviews. The study uses eight banks data for twelve consecutive years (2000-2011). The results of the analysis indicate that profitability, tangibility, liquidity and growth have negative relationship with leverage. Size and leverage has a positive relationship. There is no

support to identify the level of leverage is affected by risk. The conclusion of the study made by Shibru (2012) is that profitability, liquidity, tangibility and bank size are the major factor to determine capital structure of commercial banks in Ethiopia and the predominant capital structure theory applied in Ethiopian banking industry is pecking order theory.

Stulz (1990) noted that debt can have both a positive and negative effect on the value of the firm (even in the absence of corporate taxes and bankruptcy cost). He built a model in which over investment and under investment can be alleviated by debt financing. His model assumes that managers have no equity ownership in the firm and receive utility by managing a larger firm. The power of manager‖ may motivate the self-interested managers to undertake negative present value project. In order to solve this problem, shareholders force firms to issue debt.

Ebaid (2009) aimed to investigate the impact of capital structure on performance of companies listed at Egyptian stock exchange. In order to meet its objectives the researcher considered short term debt (STD), long term debt (LTD) and total debt (TD) data over the period of 1999 to 2005 and analyzed them by using least square regression model. The expected impact of the independent variables were return on asset (ROA), return on equity (ROE) and gross profit margin (GPM). The study by Ebaid (2009) revealed that short term debt and total debt are significantly negative influence or impact on the financial performance measured by return on asset but no significant relationship found between long term debt and return on asset. He also proposed that there is not significant impact of the debt (STD, LTD and TD) on financial performance measured by both gross profit margin (GPM) and return on equity (ROE). He also indicated that the firm size has no significant effect on financial performance.

Ibrahim (2009) examined the impact of capital structure choice on firm performance in Egypt, using a multiple regression analysis in estimating the relationship between leverage level and firm‘s performance, the study cover between 1997 and 2005. Three accounting based measures of financial performance (return on Equity, return on Assets and gross profit margin) were used. The result revealed that capital structure choice decision in general, has a weak-to-no impact on firm‘s performance.

B. Nimalathasan & Valeriu Brabete (2010) pointed out capital structure and its impact on profitability: a study of listed manufacturing companies in Sri Lanka. The analysis of listed manufacturing companies shows that Debt equity ratio is positively and strongly associated to all profitability ratios (Gross Profit, Operating Profit & Net Profit Ratios).

Chowdhury and Chowdhury (2010), empirically support the argument of Modigliani and Miller (MM). Their work test the influence of debt-equity structure on the value of shares given different sizes, industries and growth opportunities with the companies incorporated in the Dhaka Stock exchange (DSE) and Chittagong Stock Exchange (CSE) of Bangladesh. Prashat Gupta, Aman Srivastava and Dinesh Sharma (2011) investigated the impact of financing decisions on capital structure and financial performance of 100 companies listed on stock exchange (NSE) of India for the time period of 5 year from 2006 to 2010 and they concluded that the capital structure influences financial performance significantly which is measured by adjusted value, market value and book value.

Pratheepkanth (2011) conducted a study his finding regarding the capital structure (CS) and its impact on financial performance during 2005 to 2009 of business organizations in Sri Lanka. The result of research validated a negative relationship between capital structure measured by debt to equity ratio and financial performances measured by gross profit, net profit, ROA and ROE of the Sri Lankan companies.

San and Heng (2011) they examined that the relationship of capital structure and corporate performance of firms before and during 2007 crisis, all 49 construction companies are taken from Malaysia which were listed in Main board of Bursa Malaysia from 2005 to 2008, these forty nine companies are divided in three units like small, medium and large or big size. Always financial crisis are occurred by the poor corporate performance, in the Malaysia construction industries and construction activates are the major source of growth and development in Malaysia, in this research (capital structure) independent variables are used Long term debt to capital (LDC),debt to capital (DC), debt to asset (DA), debt to equity market value (DEMV), debt to common equity (DCE), long term debt to common equity (LDCE) and (Corporate performance) dependent variables are return on capital (ROC), return on equity (ROE), return on asset (ROA), earnings per share (EPS), operating margin (OM) and net margin (NM). The pooling regression model is employed to test the influence of capital structure on the company‘s performance method of ordinary least square (OLS) is used to estimate the regression line (OLS) is used to minimize the error in estimated and actual points. The result shows that, there is relationship between capital structure and corporate performance; in the interim the results also indicate that there are no relationships between the various variables that are examined in this study. For the big construction companies only return on capital (ROC) and Earnings per share (EPS) for large construction companies have significant relationship with capital structure, mean while Return on capital (ROC) and Debt equity to market value (DEMV) are the most correlated and showing the strongest relationship among all the variables examined. Basically, debt equity to market

value (DEMV), long term debt to capital (LDC) and debt to capital (DC) have direct influence on corporate performance of the large companies and other independent variables don't affect the dependant variables. Debt to capital (DC) has direct impact on corporate performance of small companies and yet other independent variables don't affect the dependent variables.

Ahmad and Abdullah and Roslan (2012) investigated the impact of capital structure on firm performance by analyzing the relationship between operating performance of Malaysian firms. Modigliani and Miller (1958) have theoretically argued and proved that capital structure is irrelevant in a perfect market condition, characterized by the capital market with no taxes, no transaction costs and homogenous expectations; other works that assume several market imperfections on the contrary suggested that capital structure decisions are relevant since it can affect shareholders wealth. Modigliani and Miller (1963) in existence of corporate taxes suggested that firms should use as much debt capital as possible in order to maximize their value by maximizing the interest tax shield. The dependent variables used in this research are ROA(Return on asset), ROE (return on equity) and control variable are firm size (SIZE), sales growth (SG), growth (AG), firm efficiency and independent variables are long-term debt (LTD), short-term debt (STD) and total debt (TD). All the companies are public listed organizations in the Malaysia, specifically the Modigliani-Miller theorem; trade-off theory nd pecking order theory were reviewed to provide sufficient understanding of how much capital structure could affect firm's performance. This study covers tow major sectors consumers and industrials sectors 58 firm's sample starting from 2005 to 2010 with total of 358 observations and two general pooled regression models are used. Findings of the study validated that STD and TD have significant relationship with return on asset (ROA) while Return on equity (ROE) and all capital structure indicators have significant relationship.

Khan (2012); and Saaedi and Mahmoodi (2011) use panel data techniques to investigate the relationship between firm's capital structure and its performance. Khan (2012) applies a pooled ordinary least square regression on 36 engineering sector firms in Pakistan. Results indicate a significantly negative relationship between the firm's performance measured by the return on assets, gross profit margin and Tobin's Q, while a negative but not statistical significant relationship between financial leverage and firm performance measured by the return on equity. Saaedi and Mahmoodi (2011) use pooling panel model to test how different capital structure indicators affect the firm's performance indicators finding a positive relationship between the capital structure and performance measured by earnings per share and Tobin's Q.

An empirical study made by Khalaf Al-Taani (2013), on the relationships between capital structure and firm performance in the Jordan with the aim of investigating the relationships between capital structure and firm performance across different industries using a sample of Jordanian manufacturing firms in Jordan. He was employed a multiple regression method of data analysis and analyze performance indicators such as return on asset (ROA), profit margin (PM) as well as short term debt to total asset (STDTA), long term debt to total asset (LTDTA) and total debt to equity (TDE) as a capital structure variables over the period of five (5) from 2005-2009. The study found that there is a negative and insignificant relationship between short term debts to total asset (STDTA) and long term debts to total asset (LTDTA) and return on asset (ROA) and profit margin (PM), while total debt to total equity (TDE) is positively related with return to asset and negatively related with profit margin. Short term debt to total asset is significant using return on equity (ROE) while long term debt to total asset is significant using profit margin. Generally the result concludes that statistically, capital structure is not a major determinant of firm performance.

An empirical analysis of capital structure on firm performance in Nigeria for the time horizon of 5 year with panel least square regression was analyzed by Taiwo Adewale Muritala (2013). The study was aimed to analyze the firms operational performance affected by capital structure decision and he concludes that the results from panel least square confirm that asset turn over, sizes, firms age and firms asset tangibility are positively related to firms performance and he also found there is negatively significant relationship between asset tangibility and return on asset (ROA) and he recommends that asset tangibility should be a driven factor to capital structure because firms with more tangible assets are less likely to be financially constrained.

A study by Saeed, M, Gull, A, Rasheed, M (2013) which assessed the impact of capital structure on the performance of banks in Pakistani for the period (2007-2011) found a positive relationship between determinants of capital structure and performance of banking industry. The Performance was measured by return on assets (ROA), return on equity (ROE) and earnings per share (EPS). Determinants of capital structure included long term debt to capital ratio, short term debt to capital ratio and total debt to capital ratio.

An empirical analysis of capital structure on financial performance in Nigerian bank for the time horizon of 8 year with Ordinary least square regression analysis was analyzed by Julius B. Adesina and Nwidobie (2015). This study aims to determine the impact of post consolidation capital structure on the

financial performance of Nigeria quoted banks. The study used profit before tax as a dependent variable and two capital structure variables (equity and debt) as independent variables. The findings of this study shows that capital structure has a significant positive relationship with the financial performance of Nigeria quoted banks.

Cheruyot Ronoh (2015) carried a study on effect of capital structure on financial performance of listed commercial banks in Kenya and found that capital structure of listed commercial banks in Kenya is significant and affects financial performance of commercial banks negatively.

c) Research Gaps

Since Modigliani and Miller (M & M) (1958 and 1963), wrote a paper on irrelevance theory of capital structure, many research have been carried out to determine the impact of capital structure on firm's financial performance. For instance Cheruyot Ronoh (2015), Titman and Wessels (1988), Kester(1986), Pratheepkanth (2011), Khan(2012) and Rajan and Zingalas (1995) found a significantly negative relationship between financial performance and capital structure.

Despite the above empirical works some authors have absorbed a different opinion on the relationship between financial performance and capital structure. For example Abor (2005), Taub (1975), B. Nimalathason and Valeriu Brabete(2010), Julius B. Adesina and Nwidobie (2015), San and Heng (2011) and Saaedi and Mahmoodi (2011) found profitability or financial performance and capital structure have a positively significant relationship. Apart from the above empirical works, some of authors found that there is a weak or no impact of capital structure on firm's financial performance. For instance Ibrahim (2009) and Khalaf Al- Taani (2013) confirm this assumption. From the above discussions based on the results of empirical literature, it is clear that investigation in the relationship between capital structure and financial performance are inconclusive and requires more empirical works.

IV. Data, Model Specification, and Methodology

The researcher intention or objective is to obtain data needed to generalize about the impact of capital structure on financial performance of selected commercial banks in Ethiopia. To achieve this objective the researcher used quantitative research approach because it is the best approach to use to test a theory or explanation (Creswell, 2003). Specifically, this study employed a survey design that was administered through structured review of documents from selected commercial bank's financial statements for five years, because surveys are relatively inexpensive (especially self-administered surveys), it enables to gather enough information which may not available from other sources and it's high-speed in data collection.

The study relied on of Secondary sources to collect the required data from selected commercial banks. The sample banks were selected from commercial banks registered by national bank by using purposive sampling technique because the researcher only selects the banks that have five year experience of preparing annual financial report. Data collected for the study was compiled, sorted, edited, classified, coded and analyzed using a computerized data analysis package known as stata12

The study employs return on Assets (ROA) and Return on Equity (ROE) as dependent variables, and measures of firm's financial performance. Although there is no unique measurement of firm performance in the literature, ROA and ROE were chosen because they are important accounting based and widely accepted measures of financial performance.

The independent (explanatory) variables in this study are the Debt ratio (DR), debt/ equity ratio, loan to deposit, size and tangibility.

Thus, the general model for this study as is mostly found in the literature is represented by,

$$y_{i\,t} = \alpha + \beta x_{i\,t} + u_{i\,t}$$

With subscript i denote the cross-section and t representing the time-series dimension.

The left-hand variable $y_{i\,t}$ is the dependent variable, α is the intercept term, β is a $k\times1$ vector of parameters to be estimated on the explanatory variables, and $x_{i\,t}$ is a $1 \times k$ vector of observations on the explanatory variables, $t = 1, \ldots, T$; $i = 1, \ldots, N$, and μ_{it} represents the error vector. Therefore the general models which incorporate all of the variables to test the hypotheses of the study were:

$$\text{Model 1} \quad ROA_{i,t} = \alpha + \beta1(DR) + \beta2(DER) + \beta3\,(LD) + \beta\,4(SIZE) + \beta5(TANG) + \mu it$$

$$\text{Model 2} \quad ROE_{i,t} = \alpha + \beta1(DR) + \beta2(DER) + \beta3\,(LD) + \beta\,4(SIZE) + \beta5(TANG) + \mu it$$

Where:

α.....constant
$\beta1$.....$\beta5$ .....coefficient of independent variable
$ROA_{i,\,t}$ .....return on asset of i^{th} on the year t
$ROE_{i,\,t}$ .....return on equity of i^{th} on the year t

DR……debt ratio
DER……debt to equity ratio
LD……loan to deposit ratio
SIZE……firm's size
TANG……tangibility of asset
μit……..Error tem which is assumed to have a normal distribution.

V. Analysis and Findings

a) Descriptive Statistics

The Table 1 below shows the descriptive statistics. The results indicate that the mean return on equity (ROE) of the sampled firms is about 21.3%, while that of the ROA is about 27.5%.The results indicate that on the average, for every one birr worth of total assets of the firms, mere 27.5% was earned as profit after tax, while 21.3% was earned as after tax profit on every one birr total equity. The minimum ROE and ROA are -0.024 and -0.008 respectively, while the highest ROE and ROA are 0.391 and 0.052 respectively. The maximum and minimum values for each performance measures indicate that the performance varies substantially among banks. The mean for the total debt to total assets (DR) is 0.856, indicating that more than 85% of the total assets are financed with debt, which indicates that most of the firms are highly levered and the maximum and minimum are 0.938 and 0.655 respectively. Debt to equity ratio (DER) on the other hand had a minimum and maximum value of 1.899 and 15.027 respectively with a mean of 6.696. Loan to deposits (LD) had a mean of 0.563 with a minimum and maximum value of 0.43 and 0.705 respectively. The mean value of bank size (SIZE) is equal to 22.74 with maximum of 23.95 and minimum value of 19.94 indicates that most of the sample firms are close in term of size. Tangibility of assets (TANG) on the other hand had a minimum and a maximum value of 0.008 and 0.063 respectively with a mean value of 0.023.

Table 1: Descriptive Statistics

	ROA	ROE	DR	DER	LD	SIZE	TANG
Mean	0.275	0.213	0.856	6.696	0.563	22.736	0.023
Maximum	0.052	0.391	0.938	15.027	0.705	23.95	0.063
Minimum	-0.008	-0.024	0.655	1.899	0.429	19.94	0.008
Std. Dev.	0.009	0.817	0.049	2.614	0.062	0.935	0.112
Observations	40	40	40	40	40	40	40

Source: Financial statements of sample commercial banks and own computation

b) Correlation analysis

Correlation is a way to index the degree to which two or more variables are associated with or related to each other. Table 2 below shows that the bank's financial performance measured by both ROA and ROE is positively correlated with DER, DR and SIZE. To study the mutual disparities of these relationships, multiple correlations analysis have been taking up. If there is high degree of correlation (i.e. greater than 80% correlation coefficient) between variables, there will be a multicollinearity problem in the model (Guajarati, 2004). As table 2 below reveals that there is multicollinearity problem which affect the model power and its ability in explaining the results.

Table 2: Partial correlation results

	ROA	ROE	DER	DR	LD	SIZE	TANG
ROA	1						
ROE	0.6304	1					
DER	0.0292	0.7573	1				
DR	0.3205	0.7928	0.8715	1			
LD	-0.0865	-0.1873	-0.1638	-0.2024	1		
SIZE	0.3183	0.5138	0.4965	0.6268	0.2309	1	
TANG	-0.3237	-0.2478	0.0463	-0.0018	0.1493	0.2853	1

Source: Financial statements of sample commercial banks and own computation

c) Multicollinearity test

Multicollinearity refers to a situation with a high correlation among the explanatory variables within a multiple regression model or is the lack of independence among the explanatory variables in a data set. The researcher used Variance Inflation Factor (VIF) to test multicollinearity which refers to actual disparity percentage to total disparity. The result in table 3 shows that VIF test is below 10 which means that the value were above the minimum tolerance value (1/VIF) of 0.1 below which multicollinearity is considered to be a problem.

Table 3: Multicollineality test

Variable	VIF	1/VIF
DR	6.42	0.156
DER	4.39	0.228
SIZE	2.49	0.401
LD	1.35	0.740
TANG	1.17	0.842

Source: Financial statements of sample commercial banks and own computation

d) Heteroskedasticity test

The classical assumption required for the OLS estimator to be efficient states that the variance of the error term has to be constant and the same for all observations or the error terms are uncorrelated with mean zero and constant variance σ2. This is referred to as a homoskedastic error term. When that assumption is violated and the variance is different for different observations we refer to this as heteroskedasticity (Thomas Andren, 2007). The table 4 below shows that there is no heteroskedasticity because the p-values for both ROA and ROE were above 0.05.

Table 4: Heteroskedasticity test

Breusch-Pagan Cook Weisberg test for heteroskedasticity		
	ROA	ROE
Chi^2	1.46	0.61
$Prob.chi^2$	0.2264	0.4363

Source: Financial statements of sample commercial banks and own computation

e) Selection of Random effect (RE) versus Fixed effect (FE) versus pooled OLS

There are two major classes of panel estimator approaches that can be employed. Namely, the fixed effects model and random effects model. In order to select the appropriate model which provide consistent estimates for this study, Breusch-Pagan lagrangian multiplier test was employed. Table below suggests the fixed effects model was better than random effects model as the p-value for both ROA and ROE are less than 0.05 for dependent variables which imply that the random effects model should be rejected and thus, the analysis is based on the fixed effects estimates.

Table 5: Breusch-Pagan lagrangian multiplier test for random effects

Breusch-Pagan lagrangian multiplier test for random effects		
	ROA	ROE
Chi^2	7.75	4.83
$Prob.chi^2$	0.0027	0.0139

Source: Financial statements of sample commercial banks and own computation

f) Regression Analysis

Regression analysis is used to investigate the relationship between capital structure and financial performance measured by ROA and ROE. The regression result on table shows that R-square statistics of the model was 62 % and 78% respectively. The result indicates that about 62% and 78% of the variability in the dependent variable are explained by the independent variables used in the model (debt ratio, debt to equity ratio, loan to deposit ratio, size of firm and tangibility).

Table 6: Fixed Effect Panel Regression Results: Summary

Variable	Coefficient		Std. Error		t-Statistic		Prob.	
	ROA	ROE	ROA	ROE	ROA	ROE	ROA	ROE
C	-0.028	0.355	0.042	0.253	-0.68	1.40	0.302	0.172
DR	0.281	1.135	0.034	0.325	3.24	3.49	0.000*	0.002*
DER	-0.003	0.014	0.001	0.008	-2.32	1.78	0.018*	0.087***
LD	0.022	0.176	0.020	0.120	1.12	1.47	0.274	0.153
SIZE	-0.007	-0.056	0.003	0.017	-2.68	-3.29	0.012*	0.003*
TANG	-0.197	-1.411	0.114	0.690	-1.73	-2.04	0.093***	0.051**
R^2	62%	78%						
* Significant at 1%, ** significant at 5% and *** significant at 10%								

Source: computed from the financial statement of commercial banks using stata 12

The regression result in the above table shows that DR, DER, SIZE and TANG were the statistically significant factors affecting financial performance measured by ROA; while LD has an insignificant relationship with the performance of the bank measured by ROA. The regression results also indicate that there is a significant effect of DR, DER, SIZE and TANG on financial performance measured by ROE; while LD has an insignificant effect on ROE.

The debt ratio (DR) is used as a proxy for capital structure and it has a positive and significant relationship with the dependent variables (ROA and ROE) which means that, when debt ratio of the bank increases, it will result in increasing of bank's financial performance.

Regression results suggest that DER is statistically significant negative association with return

on asset (ROA) and is statistically positive association with return on equity (ROE) with P-value of 0.018 and 0.087. This result implies that as a bank's debt level increases its return on asset is expected to decline because the excessive use of the leverage might impose high interest costs. The positive relationship between DER and ROE reveals that as debt equity ratio increases it will result in increasing return on equity

The bank size which measures log of total asset has negative and significantly affects the financial performance of banks at 1% significant level for both ROA and ROE which indicates that large commercial banks performs lower than small commercial banks because of the loss of control by top managers over strategic and operational activities within the bank. This shows that small banks utilize their resources efficiently. The composition of the asset structure (TANG) has a negative and significant impact on the accounting measure of performance (ROA) at 10% significant level and ROE at 5% significant level. This result indicates that banks with a high ratio of TANG have a lower performance ratio, which implies that banks invest too much in fixed assets in a way that does not improve their performance, or that they do not use their fixed assets efficiently, so it has a negative impact on their performance.

VI. Conclusion and Recommendations

The objective of this study was to assess the impact of capital structure on financial performance of selected commercial banks in Ethiopia. The study used panel data for the period of 5 years and 8 banks operating in the country. The study used fixed effect regression model to estimate the relationship between the capital structure and firm performance measured by ROA and ROE.

The findings of the study shows that DR, DER, SIZE and TANG have statistically significant factors affecting financial performance measured by return on assets and return on equity at 1%,5% and10% significant level and LD is statically insignificant with its respective nature of impact. Based on the findings obtained from the results, the study suggests recommendations that the commercial banks of Ethiopia should focus on the proportion of debt used by the bank, the manner of utilizing the resources while expanding the banks and the amount of investment on fixed asset.

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Selection Abilities of Select Indian Mutual Fund Managers

By Bilal Ahmad Pandow

Abstract- The stock selection is considered to be the core of the investment process. This involves identifying and selecting undervalued securities which are expected yield good results in the future. In practice fund managers are expected to earn superior returns for unit holders consistently as being professionals therefore possession of superior skills to collect and analyze the data with the purpose to select the right type of securities for the portfolio is a must for them. The present work is based on the review of many studies both foreign and Indian studies relating to mutual funds. The mutual fund industry in India consists of public sector, private sector and foreign funds. All the three sectors are studied to analyse the selectivity performance on the basis of sponsorship of funds. However, from these only active funds belongings to Growth, Income, Balanced and Tax-Saving Schemes were selected for the study. In this paper stock selectivity skills of sample fund managers were tested using Jensen's Alpha and Fama's net selectivity measures models.

Keywords: *stock selection, mutual funds, growth, income, balanced and tax-saving schemes.*

GJMBR-C Classification: *JEL Code: G20*

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The present work is based on the review of tens of studies both foreign and Indian studies relating to mutual funds. The mutual fund industry in India consists of public sector, private sector and foreign funds. All the three sectors were studied to compare the selectivity and timing performance on the basis of sponsorship of funds. However, from these only active funds belongings to Growth, Income, Balanced and Tax-Saving Schemes were selected for the study. In this paper stock selectivity skills of sample fund managers were tested by using Jensen's Alpha and Fama's net selectivity measure.

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I. Introduction

Indian Mutual Fund Industry consists of public sector, private sector and foreign funds. In the present paper all the three sectors were studied to compare the selectivity and timing performance on the basis of sponsorship of funds. However, from these only active funds belongings to Growth, Income, Balanced and Tax-Saving Schemes were selected for the study.

The period of study is five years from April 2007 to 31st March 2011. The rationale for selecting the study period of 5-years from 1st April 2007 to 31st March 2011 stems from two reasons. Firstly, during this period, the stock market experienced higher volatility, as such chosen to find-out whether the funds have succeeded in surpassing the market performance even under depressed market conditions. Secondly, the five years were long enough to capture different market phases and to draw meaningful conclusions.

Since large number of schemes were in existence during the period of the study, as such due to time and other constraints, it was not possible to study all the schemes. It is in view of this fact, an adequate and representative sample was drawn from the universe using convenience sampling method. Initially, the study viewed 76 schemes out of 587 schemes existing as on 1st April 2007, however, the availability of consistent data during the study period (April 2007 to March 2011) was available for 40 schemes only, as such the final sample size for the present study was reduced to 40 schemes, accounting for around 7 percent of the total schemes. These schemes belonged to 19 fund houses consisting of all the three sectors viz. public sector, private sector foreign funds, Of the total sample size of 40 schemes, 33 schemes belonged to the private sector and 7 to the public sector including UTI. Further, 37 schemes are open-ended and 3 schemes are close-ended in nature. Aim wise, the sample consisted of 28 Growth Schemes, 3 Income Schemes, 3 Balanced Funds and 6 Tax-Saving Schemes.

Stock selectivity skills of sample fund managers were tested by using Jensen's Alpha and Fama's net selectivity measure. Jensen (1968) developed an absolute measure based on Capital Asset Pricing Model (CAPM) to regress the excess returns of a portfolio on the market factor. Assuming that market beta or slope co-efficient is constant then the unconditional Alpha is a measure of average performance as in Jensen (1968). The absolute regression equation is based on the assumption that the funds systematic risk is stationary over time. Owing to this assumption, Jensen's measurement model attributes funds overall performance to manager's selectivity performance exclusively.

As such mutual funds are expected to perform better than the market, therefore calls for a continuous evaluation of the performance of funds. The assessment of fund manager's performance is important for two reasons: one it enables investors to allocate investible funds into different funds efficiently second it influences the compensation of fund managers. From an academic perspective, the goal of identifying superior fund managers is interesting because it challenges the efficient market hypothesis. The present study analyses stock selectivity skills of Mutual Fund Managers in India.

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II. Literature Review

On this subject many studies have been conducted world over to examine the investment performance of managed portfolio. The ability of mutual fund managers to time the market, that is, to increase a fund's exposure to the market index prior to market advances and to decrease exposure prior to market declines has remained the subject matter for researchers. A critical review of the studies on stock selection ability of mutual funds has been undertaken which becomes essential to know what the existing literature has to say about the stock selectivity skills of fund managers.

An extensive and systematic study was made by Friend, et al., (1962) of 152 mutual funds and found that mutual fund schemes earned an average annual return of 12.4 percent, while their composite benchmark earned a return of 12.6 percent. Their alpha was negative with 20 basis points. Overall results did not suggest widespread inefficiency in the industry. Further comparison of fund returns with turnover and expense categories did not reveal a strong relationship.

Irwin, Brown, FE (1965) analyzed issues relating to investment policy, portfolio turnover rate, performance of mutual funds and its impact on the stock markets. The study has revealed that mutual funds had a significant impact on the price movement in the stock market. Also concludes that, on an average, funds did not perform better than the composite markets and there was no persistent relationship between portfolio turnover and fund performance.

The performance of 57 fund managers was evaluated by Treynor and Mazuy (1966) in terms of their market timing abilities and have found that fund managers had not successfully outguessed the market. The results suggested that, investors were completely dependent on fluctuations in the market. Further found that the improvement in the rates of return was due to the fund managers' ability to identify under-priced industries and companies. The study adopted Treynor's (1965) methodology for reviewing the performance of mutual funds.

A composite portfolio evaluation technique concerning risk-adjusted returns was developed by Jensen (1968). He evaluated the ability of 115 fund managers in selecting securities during the period 1945-66. Analysis of net returns indicated that, 39 funds had above average returns, while 76 funds yielded abnormally poor returns. Using gross returns, 48 funds showed above average results and 67 funds below average results. On the basis of this study Jensen has concluded that, there was very little evidence that funds were able to perform significantly better than expected as fund managers were not able to forecast securities price movements.

The methods to distinguish observed return due to the ability to pick up the best securities at a given level of risk from that of predictions of price movements in the market was developed by Fama (1972). He introduced a multi-period model allowing evaluation on a period-by-period and on a cumulative basis. He branded that, return on a portfolio constitutes return for security selection and return for bearing risk. His contributions combined the concepts from modern theories of portfolio selection and capital market equilibrium with more traditional concepts of good portfolio management. The investment performance of 40 funds was analyzed by Klemosky (1973) based on quarterly returns during the period 1966-71. He acknowledged that, biases in Sharpe, Treynor, and Jensen's measures, could be removed by using mean absolute deviation and semi-standard deviation as risk surrogates compared to the composite measures derived from the CAPM.

Gupta Ramesh (1989) evaluated fund performance in India comparing the returns earned by schemes of similar risk and similar constraints. An explicit risk-return relationship was developed to make comparison across funds with different risk levels. His study decomposed total return into return from investors risk, return from managers' risk and target risk. Mutual fund return due to selectivity was decomposed into return due to selection of securities and timing of investment in a particular class of securities.

The present work is based on the review of tens of studies both foreign and Indian studies relating to mutual funds. The review of foreign studies ensures that, mutual funds have a significant impact on the price movement in the stock market, the average return from the schemes were below that of their benchmark, all the three models provided identical results, good performance were associated with low expense ratio and not with the size.

The aforementioned studies indicate that the evaluation of mutual funds has been a matter of concern in India for the researchers, academicians, fund managers and financial analysts to a greater extent after 1985. The reviews bring to light the importance of mutual funds in the Indian financial scenario; highlight the need for adequate investor protection, single regulatory authority, higher return for a given risk as per investors' expectation, greater convenience and liquidity, and the expectations that mutual funds should act as a catalytic agent of economic growth and foster investors' interest.

III. Objectives of the Study

The study is aimed to achieve the following specific objectives:

1. To assess whether the Indian fund managers possess the stock selection ability.

2. To study the consistency in the selectivity of fund managers.
3. To examine whether the selectivity varies with the fund characteristics.
4. To find out whether there exists relationship between different evaluation criterions used to measure selectivity performance.

IV. Hypotheses

In line with the above stated objectives, the following hypotheses are laid in order to provide a direction to the study:

a) Stock Selection Skills

H1: There is no positive selectivity performance among Indian Fund Managers across measurement criteria

H2: There is short term persistence in the selectivity performance of fund managers across the various measurement criteria, but in the long run no such persistence exists across the two measurement criteria

H3: There is no significant difference in the selectivity performance across different fund characteristics

H4: There exists significant relationship between different selectivity evaluation criterions

V. Methodology

To test the above hypothesis, the data set used is secondary in nature which was collected from the database of AMFI for Net Asset Value (NAV), National Stock Exchange (NSE) for S&P CNX Nifty and RBI for risk free rate. Fund returns were calculated on the basis of daily NAVs rather than monthly NAVs for the reason that research has revealed that the high frequency data such as daily NAVs have more revealing power than less frequency data. Further, the daily returns so obtained were annualized using geometric averaging to obtain average annual fund return.

The yields on 91-day treasury bills issued by Reserve Bank of India (RBI) have been used as a proxy for risk-free return. Besides, S&P CNX Nifty is used as surrogate for the market portfolio/return as well as for bench-mark variability.

VI. Scope and Reference Period of the Study

The mutual fund industry in India consists of public sector, private sector and foreign funds. All the three sectors were studied to compare the selectivity and timing performance on the basis of sponsorship of funds. However, from these only active funds belongings to growth, Income, Balanced and Tax-Saving Schemes were selected for the present study.

The period of study is five years from April 2007 to 31st March 2011. The rationale for selecting the study period of 5-years from 1st April 2007 to 31st March 2011 stems from two reasons. Firstly, during this period, the stock market experienced higher volatility, as such chosen to find-out whether the funds have succeeded in surpassing the market performance even under depressed market conditions. Secondly, the five years were long enough to capture different market phases and to draw meaningful conclusions.

VII. Sample Design

Since large number of schemes were in existence during the period of the study, as such due to time and other constraints, it was not possible to study all the schemes. It is in view of this fact, an adequate and representative sample was drawn from the universe using convenience sampling method. Initially, the study viewed 76 schemes out of 587 schemes existing as on 1st April 2007, however, the availability of consistent data during the study period (April 2007 to March 2011) was available for 40 schemes only, as such the final sample size for the present study was reduced to 40 schemes, accounting for around 70 percent of the total schemes. These schemes belonged to 19 fund houses consisting of all the three sectors viz. public sector, private sector foreign funds, of the total sample size of 40 schemes, 33 schemes belonged to the private sector and 7 to the public sector including UTI. Further, 37 schemes are open-ended and 3 schemes are close-ended in nature. Aim wise, the sample consisted of 28 Growth Schemes, 3 Income Schemes, 3 Balanced Funds and 6 Tax-Saving Schemes.

VIII. Data Analysis

Initially we have assessed the overall performance of the sample funds by analyzing their excess return, (R_p-R_f), abnormal excess return, (R_p-R_m), and riskiness of funds viz. a viz. market portfolio. Then the poor or superior performance was decomposed by assessing whether the fund performance is due to the stock selectivity skills or market timing abilities of fund managers. The daily returns for each of the sample schemes and the market portfolio have been calculated after making proper adjustments for the dividend, if any, paid by the schemes, as follows:

$$\text{Fund Return (Rpt)} = \frac{NAV_t - NAV_{t-1}}{NAV_{t-1}}$$

Where:

R_{pt}= Return of a scheme at the end of day t

NAV_t= Net assets value of the scheme at the end of day‘t’

NAV_{t-1}= Net assets value of the scheme at the beginning of day‘t’

Similarly the daily returns for the market Index i.e. for S&P CNX Nifty have been calculated using the following formula:

$$\text{Market Index Return (Rmt)} = \frac{MI_t - MI_{t-1}}{S\&P\ CNX\ Nifty t_{t-1}}$$

Where:
R_{mt}= Return of the market Index for the day't'
MI_t= Market value of the market index i.e. S&P CNX Nifty at the end of day't'
MI_{t-1}= Market value of the Market Index i.e. S&P CNX Nifty in the beginning of day't'

The daily returns are then annualized to obtain mean annual daily returns of each sample scheme and the market Index as follows:

Mean Annual Daily Portfolio Return (R_{pt}-a) = (R_{p1}+R_{p2}+R_{p3}+.....R_{pn})/N

Mean Annual Daily Market Return (R_{mt}-a)=(R_{m1}+R_{m2}+ R_{m3}.....R_{mn})/N

a) Selectivity Performance Measurement Models

Stock selectivity skills of sample fund managers were tested by using Jensen's Alpha and Fama's net selectivity measure. Jensen (1968) developed an absolute measure based on Capital Asset Pricing Model (CAPM) to regress the excess returns of a portfolio on the market factor. Assuming that market beta or slope co-efficient is constant then the unconditional Alpha is a measure of average performance as in Jensen (1968). The absolute regression equation is based on the assumption that the funds systematic risk is stationary over time. Owing to this assumption, Jensen's measurement model attributes funds overall performance to manager's selectivity performance exclusively. This model is shown by the following regression specifications:

$$R_{pt}-R_{ft} = \alpha + \beta\,(R_{mt}-R_{ft}) + e_t$$

Where:

R_{pt}= The average return of the fund at time't'
R_{ft}= The risk-free return at time't'
α = The Jensen performance co-efficient
β = The estimate co-efficient for the systematic risk level of the fund
R_{mt}= Average return on the market portfolio
e_t = An error term

Here, the intercept α in the above equation is the Jensen's performance co-efficient indicating risk-adjusted selectivity performance of the fund. A positive and significant Alpha (α) indicates average extra return yielded by a scheme over the benchmark market portfolio return after considering the level of systematic risk of the scheme, thus reflecting the superior performance of the scheme due to the fund manager's selectivity abilities.

b) Fama's Decomposition Measure

Eugene F.Fama (1972) developed another selectivity performance measurement criterion which decomposes the fund's performance into three components viz: risk free return, compensation for systematic risk, and the return due to the stock selectivity performance of the fund manager as revealed by the Fama's decomposition model. The model further segregates the selectivity performance into two parts viz. compensation for diversification and net selectivity. Greater the diversification of the fund less would be the compensation for inadequate diversification and vice versa. As such for a well-diversified portfolio, the compensation for inadequate diversification would be close to zero and will always take a non-negative value otherwise. Therefore, net selectivity which is the difference between the compensation for selectivity and compensation for inadequate diversification can always be less than or equal to that of selectivity Fama's (1972) decomposition measure is expressed as:

$$R_{pt} = R_{ft} + \beta\,(R_{mt}-R_{ft}) + (R_{mt}-R_{ft})\,(\sigma_p/\sigma_m - \beta) + (R_{pt}-R_{ft}) - (\sigma_p/\sigma_m)\,(R_{mt}-R_{ft})$$

Where
Rpt= The average return of the fund at time 't'
R_{ft} = The risk free return at time 't'
β = The estimate co-efficient for the systematic risk level of the fund
Rmt = Average return on the market portfolio
β (Rmt– Rft) = Compensation for systematic risk
(Rmt– Rft) (σp/ σm- β) = Compensation for inadequate diversification
(Rpt– Rft)-(σp/ σm) (Rmt– Rft) = Net selectivity or excess return after adjusting for all risks.

Here, selectivity is equal to the net selectivity plus compensation for systematic risk and for compensation for inadequate diversification. However, the selectivity performance is measured on the basis of net selectivity rather than the total selectivity. A positive net selectivity is indicates that the fund has been able to earn extra return even after taking into account the compensation required for inadequate diversification, thus better selectivity performance of the fund manager. Conversely, a negative net selectivity indicates that the fund has not been able to earn even a part of the compensation required for inadequate diversification, thus reflects poor selectivity on the part of fund managers.

IX. Hypotheses Testing

To provide a direction to the study, hypotheses were set which were tested by using relevant statistical tools. To test whether Jensen alpha (a), Fama's net selectivity and Henrickson and Merton's 'γ' co-efficient (Gamma) are statistically significant for each of the sample individual funds, paired two-tailed t-test has been used. For the sample as a whole, whose size was 40 schemes, Z-test has been used to test the statistical

significance of Jensen's alpha, Fama's net selectivity and HM's 'γ' co-efficient to know whether the sample fund managers have superior selectivity and timing performance. Besides, spearman's rank co- relation co-efficient technique has been used to assess the association between two selectivity performance measurement models viz. Jensen alpha and Fama's selectivity and between two selectivity and one timing models. To assess the riskiness of the sample funds and bench mark market index, standard deviation and Beta co-efficient has been used. Standard deviation has been used to assess the total risk while as Beta co-efficient has been used to determine the component of systematic risk.

X. Stock Selection Performance

Stock selection is the nucleus in the investment management process. It involves identifying and selecting undervalued securities which among other things requires the successful forecasting of the company specific events or an ability to predict the general behavior of security prices in the future. If the fund manager is able to identify and select the undervalued securities for the portfolio, then it will be possible for the fund manager to increase the returns of the schemes and vice versa. In practice fund managers are expected to earn superior returns for unit holders consistently as being professionals therefore possess superior skills to collect and analyze the data with the purpose to select the right type of securities for the portfolio.

As already stated earlier that to measure stock selection performance of fund managers, Jensen (1968) and Fama (1972) criterion has been used. Jensen (1968) developed an absolute measure based on CAPM to find out the selectivity performance of fund managers by regressing excess fund returns with the excess market returns. The superior return earned due to the ability of superior stock selection is known from Jensen's Alpha (α) which is an intercept of the equation it indicates a fund return when the return on the market portfolio is zero. Therefore, a positive and significant Alpha (α) value indicates average extra return earned over the bench mark return after considering the level of systematic risk assumed by the fund. Thus, reflects the superior selectivity performance of the fund manager. Conversely negative alpha (α) indicates to poor stock selectivity skills on the part of the fund manager.

In order to comment on the stock selectivity performance of the fund managers of the sample schemes during the period under study (2007-2011). Alpha's (α) using the Jensen's measure have been calculated which have been presented in Table 4.3. Besides, ranks were assigned to the sample funds on the basis of their alphas with the purpose to classify the funds into best and worst ranking funds. Alpha values of the sample funds so obtained were also tested for one percent significance level in order to know whether positive stock picking performance of the fund manager is statistically significant or not.

Table 4.3: Stock Selectivity Performance of Fund Managers using Jensen Model

Scheme	Jensen Alpha (α)	SD	T-Stat	P-Value	Ranking
ICICI Prudential Discovery Fund – Growth	0.3553	0.8314	0.9556	0.3934	1
HDFC Equity Fund	0.3023	0.6015	1.1238	0.324	2
ICICI Pru Tax Plan	0.2964	0.6828	0.9707	0.3867	3
Reliance Growth Fund	0.2928	0.6651	0.9844	0.3807	4
Franklin India Bluechip Fund	0.2813	0.5789	1.0866	0.3383	5
Baroda Pioneer Growth	0.2744	0.5978	1.0264	0.3627	6
Reliance Regular Savings Fund	0.2735	0.6043	1.012	0.3688	7
Birla Sun Life Frontline Equity	0.2663	0.5819	1.0233	0.364	8
HDFC Tax Saver Fund	0.2622	0.6086	0.9634	0.3899	9
Tata Pure Equity Fund	0.2451	0.5687	0.9637	0.3898	10
Tata Tax Advantage Fund	0.2441	0.5220	1.0456	0.3548	11
Principal Index Fund	0.2409	0.5409	0.9959	0.3757	12
Quantum Long-Term Equity Fund	0.2391	0.4931	1.0843	0.3392	13
Sundaram Growth Fund	0.2358	0.5519	0.9554	0.3935	14
UTI - Opportunities Fund	0.2354	0.5305	0.9922	0.3773	15
Fidelity Equity Fund	0.2326	0.5444	0.9554	0.3935	16
L&T Growth Fund	0.2324	0.5477	0.9488	0.3964	17

ING Core Equity Fund –Growth	0.2238	0.5381	0.93	0.405	18
Birla Sun Life Top 100 Fund – Growth	0.2110	0.5284	0.8929	0.4224	19
Sundaram Select Focus	0.2098	0.5332	0.8798	0.4286	20
Morgan Stanley Growth Fund	0.2063	0.5955	0.7746	0.4818	21
ING Tax Savings Fund	0.2048	0.6025	0.7601	0.4895	22
Baroda Pioneer ELSS	0.2033	0.5806	0.783	0.4774	23
UTI - Growth Retail	0.2016	0.5071	0.889	0.4243	24
HSBC Equity Fund	0.1924	0.4943	0.8704	0.4332	25
LIC Nomura Mf Equity Fund	0.1821	0.5388	0.7719	0.4832	26
Sahara Growth Fund	0.1674	0.5299	0.7064	0.5189	27
ING Balanced Fund (D)	0.1606	0.4803	0.7477	0.4962	28
LIC Nomura Mf India Vision Fund (D)	0.1502	0.4643	0.7234	0.5095	29
SBI Magnum NRI Investment Fund-Flexi Asset (D) Balanced	0.1406	0.4823	0.6519	0.5501	30
SBI One India Fund	0.1067	0.5275	0.4523	0.6745	31
Kotak 50 Growth	0.1009	0.6075	0.3714	0.7292	32
JM Balanced Fund - (D)	0.0529	0.4141	0.2857	0.7893	33
Principal Personal Tax Saver Fund	0.0118	0.6967	0.0379	0.9716	34
Quantum Liquid Fund – Growth	-0.0012	0.3455	0.0078	0.9942	35
Kotak Equity Arbitrage Growth	-0.0019	0.3394	0.0125	0.9906	36
Templeton India TMA	-0.0034	0.3467	0.0219	0.9836	37
SBI Arbitrage Opportunities Fund	-0.0036	0.3405	0.0236	0.9823	38
HSBC Cash Fund	-0.0131	0.3451	0.0849	0.9364	39
Sahara Growth Fund – Div	-0.0199	0.6382	0.0697	0.9478	40

Note:

- SD: Standard Deviation

Source: AMC reports, NSE historical data and RBI reports

Table 4.3.a: Z-Value of Jensen Alpha

P value and statistical significance:

The two-tailed P value is less than 0.0001
By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The hypothetical mean is 0.000000
The actual mean is 0.179825
The difference between these two values is 0.179825
The 95 percent confidence interval of this difference:
From 0.146750 to 0.212900

Intermediate values used in calculations:

t = 10.9971
df = 39
standard error of difference = 0.016

Perusal of the data presented in Table 4.3 brings to fore that out of the total sample of 40 schemes, majority of the schemes i.e. 34 schemes accounting for 85 percent of the sample size have positive Alpha values, which indicates superior stock selectivity performance of their fund managers at their respective levels of systematic risk. On the other hand fund managers of six schemes namely Quantum Liquid Fund - Growth, Kotak Equity Arbitrage Growth, Templeton India TMA, SBI Arbitrage Opportunities Fund, HSBC Cash Fund, and Sahara Growth Fund – Divaccounting for 15 percent of the sample size have demonstrated poor selectivity performance as these schemes are having negative alpha's which means that

their returns were negative when the returns on the market portfolio were zero. Compared to these schemes, the alpha's of other funds reveals positive abnormal returns (Excess return over the market portfolio) ranging between 1.18 percent to 35.53 percent. It can also be seen from the table that from the sample schemes with positive alphas, only two schemes viz. JM Balanced Fund and Principal Personal Tax Saver Fund have recorded alphas less than 5 percent, whereas the alphas of all other schemes has ranged between 10.09 percent to 35.53 percent which is indicative of the fact that these funds have earned abnormal returns ranging between 10.09 percent to 35.53 percent which is more than sufficient by all standards.

But, it is difficult to infer whether this is due to random chance or superior stock selectivity skills of the sample fund managers. To resolve this, the statistical significance of the estimated performance measure (alpha) has been assessed using 't' test and 'z' test, the details of which have been shown in the above referred table. A closer look into the t-values and their corresponding P values presented in Table 4.3.a reveals that although 34 funds or 85 percent of sample funds have positive alphas, but looking at their t-ratio and their corresponding P-values, it is found that the alphas of all the sample funds are not statistically significant even at 1 percent level. This is indicative of the poor stock selection performance of sample fund managers. But when testing significance for all the funds taken together using Z-test, the two tailed P-value is found less than 0.0001 which by conventional criteria implies extremely statistically significant difference even at 5 percent level. This is in total contrast to the significance of Alpha when found on individual basis, this can be attributed to the significant difference in the standard deviations of two data sets. As such, it can be concluded that either the sample fund managers have contributed a very insignificant amount to the extra return of 8.356 percent or have failed to contribute to abnormal excess return (8.3566 percent) by their active selection exercise.

Since the study reveals lack of stock selection skills among the sample fund managers as such the hypothesis laid down about selectivity/performance is accepted. This finding accords with that of Jensen (1968), Shah and Thomas (1994), Gupta and Gupta (2004), Tripathy (2004), Anand and Murugaiah (2006) and Abhijt Khundn (2009). However, there are other studies like Goggin*et.al* (1993), Debatal (2005), Barua and Verma (1991), Chander (2005), Sehgal and Jhanwar (2008) Anggrinblatt and Titman (1994) which have found superior or better selectivity performance of fund managers. The failure of the sample Indian fund Manager to use selectivity skills to earn superior returns perhaps can be attributed to the recession conditions in the capital market due to the global financial crisis which not only affected Indian equity market but to the equity markets world-over for quite some period particularly in the years 2008-2010. The markets also witnessed very high volatility which is reflected in the higher standard deviation of sample funds. In statistical terms, more the standard deviation less will be the t-ratio. The similar situation happened with the t-ratios of the funds under study while accessing the significance of alpha.

a) Fama's Decomposition Model

Eugene F.Fama (1972) has developed another stock selectivity performance evaluation framework, which however, finer breakdown of the fund's performance. It decomposes the total performance into risk-free return (R_f), premium for systematic risk and return due to stock selection ability of the fund manager at a given level of risk. Fama (1972) has further decomposed the stock selection ability of the fund managers into two parts, viz. Compensation for diversification and net selectivity. In fact, greater the diversification achieved by a fund, lesser would be the compensation for inadequate diversification and vice versa. As such, the compensation for inadequate diversification may be close to zero for a well-diversified fund and will always take a non-negative value otherwise. As such, net selectivity, which is the difference between the selectivity and the compensation for inadequate diversification can always be less than or equal to that of the selectivity. Therefore, a positive net selectivity represents superior return even after the extra return required for inadequate diversification. On the other hand, negative net selectivity denotes that the fund manager has failed to earn even a part of the return required for inadequate diversification thus implies poor net selectivity performance.

Table 4.4: Fama's Selectivity & Net Selectivity of Sample Funds

Schemes	Compensation for systematic risk β (Rmt - Rft)	Portfolio SD (σp)	Market SD (σm)	Compensation For Inadequate Diversification (Rmt-Rft) (σp/σm-β)	Net Selectivity (Rp-Rf)-(σp/σm) (Rmt-Rft)	Fams's Selectivity
Baroda Pioneer ELSS	-0.0124	0.0165	0.0202	0.0329	0.0800	0.1006
Baroda Pioneer Growth	-0.0129	0.0172	0.0202	0.0343	0.1374	0.1588
Birla Sun Life Frontline Equity	-0.0122	0.0162	0.0202	0.0324	0.1446	0.1648
Birla Sun Life Top 100 Fund – Growth	-0.0119	0.0158	0.0202	0.0315	0.1046	0.1242
Fidelity Equity Fund	-0.0113	0.0145	0.0202	0.0294	0.1191	0.1372
Franklin India Bluechip Fund	-0.0119	0.0153	0.0202	0.0309	0.1524	0.1714
HDFC Equity Fund	-0.0123	0.0156	0.0202	0.0318	0.2040	0.2235
HDFC Tax Saver Fund	-0.0115	0.0141	0.0202	0.0291	0.1657	0.1833
HSBC Cash Fund	0.0000	0.0003	0.0202	0.0004	-0.0135	-0.0131
HSBC Equity Fund	-0.0112	0.0147	0.0202	0.0296	0.0840	0.1023
ICICI Pru Tax Plan	-0.0105	0.0142	0.0202	0.0281	0.1821	0.1997
ICICI Prudential Discovery Fund – Growth	-0.0099	0.0142	0.0202	0.0276	0.2507	0.2684
ING Balanced Fund (D)	-0.0091	0.0119	0.0202	0.0238	0.0639	0.0787
ING Core Equity Fund –Growth	-0.0126	0.0162	0.0202	0.0328	0.0841	0.1043
ING Tax Savings Fund	-0.0114	0.0162	0.0202	0.0315	0.0794	0.0996
JM Balanced Fund - (D)	-0.0099	0.0139	0.0202	0.0272	-0.0374	-0.0201
Kotak 50 Growth	-0.0130	0.0154	0.0202	0.0321	0.0866	0.1057
Kotak Equity Arbitrage Growth	0.0003	0.0012	0.0202	0.0012	0.0005	0.0019
L&T Growth Fund	-0.0135	0.0177	0.0202	0.0356	0.0935	0.1155
LIC Nomura Mf Equity Fund	-0.0136	0.0183	0.0202	0.0364	0.0451	0.0678
LIC Nomura Mf India Vision Fund (D)	-0.0125	0.0174	0.0202	0.0341	0.0260	0.0477
Morgan Stanley Growth Fund	-0.0122	0.0164	0.0202	0.0326	0.0824	0.1028

Principal Index Fund	-0.0139	0.0180	0.0202	0.0362	0.0925	0.1149
Principal Personal Tax Saver Fund	-0.0124	0.0181	0.0202	0.0349	-0.0103	0.0122
Quantum Liquid Fund – Growth	0.0000	0.0002	0.0202	0.0002	-0.0013	-0.0011
Quantum Long-Term Equity Fund	-0.0114	0.0144	0.0202	0.0293	0.1345	0.1524
Reliance Growth Fund	-0.0110	0.0152	0.0202	0.0300	0.1943	0.2132
Reliance Regular Savings Fund	-0.0090	0.0122	0.0202	0.0242	0.1804	0.1956
Sahara Growth Fund	-0.0119	0.0187	0.0202	0.0352	0.0880	0.1113
Sahara Growth Fund - Div	-0.0107	0.0354	0.0202	0.0548	-0.1231	-0.0790
SBI Arbitrage Opportunities Fund	0.0003	0.0011	0.0202	0.0010	-0.0015	-0.0002
SBI Magnum NRI Investment Fund-Flexi Asset (D) Balanced	-0.0108	0.0134	0.0202	0.0275	0.0570	0.0737
SBI One India Fund	-0.0124	0.0149	0.0202	0.0309	0.0123	0.0308
Sundaram Growth Fund	-0.0133	0.0175	0.0202	0.0351	0.1255	0.1474
Sundaram Select Focus	-0.0130	0.0173	0.0202	0.0345	0.1184	0.1400
Tata Pure Equity Fund	-0.0116	0.0154	0.0202	0.0308	0.1423	0.1614
Tata Tax Advantage Fund	-0.0103	0.0140	0.0202	0.0278	0.1511	0.1686
Templeton India TMA	0.0000	0.0002	0.0202	0.0002	-0.0036	-0.0034
UTI - Growth Retail	-0.0100	0.0135	0.0202	0.0268	0.1135	0.1303
UTI - Opportunities Fund	-0.0051	0.0154	0.0202	0.0243	0.2343	0.2534

Note:

- **Rpt:** Mean Daily Annual Fund Return
- **Rft :** Risk Free Return
- **Rmt:** Mean Daily Annual Market Return
- **σp:** Standard Deviation Portfolio
- **σm:** Standard Deviation Market
- **β:** Portfolio Beta

Source: AMC reports, NSE historical data and RBI reports

Results of Fama's decomposition measure have been detailed out in Table 4.4 which among other things presents market risk premium, Compensation for inadequate diversification and net selectivity. It is evident from the table that out of 40 sample schemes, 35 schemes which account for 87.5 percent of the sample size have negative risk premium which implies that the systematic risk to which these schemes were exposed was less than the average market portfolio risk. The risk premium for other three sample schemes was zero and for the remaining two schemes very negligible, i.e. 0.0003. As such it becomes quite clear from the above that the sample schemes were having less than the market risk which is also evident from their beta values which for most of the schemes was either negative or very low. Negative are very insignificant market risk for the sample schemes implies that no portion of actual return will be eaten- up by the market risk premium.

While looking at the compensation for inadequate diversification $(R_m-R_f)(\sigma_p/\sigma_m-\beta)$, it become clear from the data presented in the above referred table that no sample scheme has been found to be well diversified as none of their schemes have scored zero value for compensation for inadequate diversification. However, compensation for inadequate diversification on five sample schemes is very low, ranging between 0.0002 to 0.0012 which implies that these schemes were almost well diversified. It can be also seen from the table that the average compensation for inadequate diversification for all the sample schemes has been 2.77 percent which in no way is more given the mean return of 18.39 percent for all the schemes during the reference period. As such it can be concluded that though the majority of the sample schemes were not well diversified yet their level of their inadequate diversification was not significant.

Table 4.4 also presents the data on net selectivity. According to Fama, Selectivity as revealed by (alpha) also includes compensation for inadequate diversification. Therefore, to conclude about the stock selection skills of fund managers, the need is to look into the selectivity net of compensation for inadequate diversification. Given this fact, the net selectivity co-efficient of the sample funds has been calculated using Fama's metric and the details of which have been presented in the above referred table. Perusal of the data about net selectivity reveals that 33 schemes out of the total sample of 40 schemes i.e. 82.5 percent of the sample schemes have reported positive net selectivity there by indicating superior stock selection performance. However seven sample schemes i.e. 17.5 percent of the sample size have shown poor selectivity performance as these have reported negative values for net selectivity ranging between -0.0013 to -0.0374. It can also be observed from the above table that 16 sample schemes namely Baroda Pioneer Growth, Birla Sun Life Frontline Equity, Birla Sun Life Top 100 Fund–Growth, Fidelity Equity Fund, Franklin India Bluechip Fund, HDFC Equity Fund, HDFC Tax Saver Fund, ICICI PRU Tax Plan, ICICI Prudential Discovery Fund–Growth, Quantum Long-Term Equity Fund, Reliance Growth Fund, Reliance Regular Savings Fund, Sundaram Growth Fund, Sundaram Select Focus, Principal Index Fund and L&T Growth Fund have reported better selectivity performance than the average selectivity performance of the sample as a whole as these have scored more than the average value of 9.10 percent of all schemes. While looking at the ranking of different funds as shown in Table 4.4, it can be observed that among the funds which have reported positive selectivity performance, ICICI Prudential Discovery Fund is at the top followed by UTI-Opportunities Fund and HDFC Equity Fund. The schemes that rank at the bottom with positive selectivity performance includes Kotak Equity Arbitage Growth, SBI one Indian Fund, LIC Nomura MF, India vision fund, LIC Nomura MF Equity Fund and SBI Magnum NRI Invest Fund. It can also be observed that though Kotak Equity Arbitrage Growth, SBI One Indian Fund and LIC Nomura MF India Vision Fund have scored positive scores for net selectivity yet these scores are very low ranging between 0.0005 to 0.0256 only. Further to state that among the sample seven funds namely HSBC Cash Fund, JM Balanced Fund-(D), Principal Personal Tax Saver Fund, Quantum Liquid Fund–Growth, Sahara Growth Fund-Div, SBI Arbitrage Opportunities Fund, and Templeton India TMA , which have reported negative selectivity performance, Sahara Growth Funds-Div. with -12.31 percent was the worst performing fund among all funds followed by J.M Balanced Fund, HSBC Cash Fund, Principal Personal Tax Saver Fund, Templeton India TMA, SBI Arbitrage Opportunities Fund And Quantum Liquid Fund-Growth.

While comparing with the Jensen criterion, it can be observed from Table 4.4 and 4.3 that all those schemes which have reported positive selectivity performance under Jensen criterion have shown similar results except with respect to three schemes viz. JM Balanced Fund (D), Kotak Equity Arbitrage Growth and Principal Personal Tax Saver Fund. As such it can be inferred that the result as shown by the Fama's net selectivity metric can be different from that of Jensen criterion. This in other words means that the selectivity performance as revealed by Jensen metric cannot be a final word on selectivity performance. Given the superiority of the Fama's criterion, in order to conclude about the selectivity performance, it would be appropriate to use Fama's net selectivity criterion, which decomposes selectivity into compensation for inadequate diversification and net selectivity.

Table 4.5: Z Value for Fama's Alpha

P value and statistical significance:

The two-tailed P value is less than 0.0001
By conventional criteria, this difference is considered to be extremely statistically significant.

Confidence interval:

The hypothetical mean is 0.000000
The actual mean is 0.108663
The difference between these two values is 0.108663
The 95 percent confidence interval of this difference:
From 0.082976 to 0.134349

Intermediate values used in calculations:

t = 8.5565
df = 39
standard error of difference =0.013

Presence of positive alpha or net selectivity only hints at better selectivity performance. But to conclude about the superior selectivity performance, there is a need to test the statistical significance of Fama's net selectivity. For this purpose T-test has been used to test the significance of individual funds and Z-test for assessing the significance of all the funds taken together. The results of these two tests of significance have been presented in table 4.5 which reveals that Fama Alpha for none of the funds has been found statistically significant even at 5 percent level which becomes clear from their T-ratios and their corresponding P-values. This in other words means that the managers of the sample funds have failed to identify and pick-up under-valued stocks. So the excess abnormal return of the sample funds cannot be attributed to the selectivity performance of sample fund managers but may be either due to timing performance or by chance. But when significance has been assessed for all the sample funds together using Z-test, Fama's alpha (Net Selectivity) has been found statistically significant. As can be seen from Table 4.5 the two tailed P-value is found less than 0.0001 which by conventional criteria implies extremely statistically significant difference even at 5 percent level. The difference in result is perhaps due to the difference in standard deviations of two data sets.

Using Jensen Alpha & Fama's net selectivity it has been found that the fund managers of sample schemes lack selectivity performance across the two measurement criterions, thus the null hypothesis laid down for selectivity skills of fund managers in India is accepted. This finding corresponds with the finding of Jensen (1968) chen, Lee, Rahman and Chan (1992), Coggin, Fabozzi and Rehman (1993), Lee and Rahman (1990), Irissapaneetal (2000), Sehgal and Jhanwar (2008), Barua and Verma(1991) Chander (2005), Sehgal and Jhanwar (2008), Abhijit Kundu(2009) and Zabiulla (2013), there are equal number of studies whose results are contrary to the findings of the present study. The important such studies includes; Grinblatt and Titman (1994) Shah and Thomas (1994), Jaydev (1996), Gupta (2004), Tripathy (2004), and Anand and Murugaiah (2006). Differences in the findings of various studies are bound to exist for the reasons that the studies differ on various parameters like sample size, period of study etc. It is also that the sample fund managers perhaps have shown no selectivity performance for the reason that during the 3 years of reference period i.e. 2008-2010, the equity market in India had witnessed deep recession due to global financial crisis. Under deep recession it is unlikely even for the best managers to perform well or outperform the market. The same is perhaps true about the fund managers of sample schemes studied in the present study.

b) Stock Selection Performance across the Measurement Criteria

In addition to the study of stock selection performance of Indian Fund Managers during the period under study (2007-11) using different measurement criterion, an effort has also been made to study the extent of relationship that exists between Jensen's and Fama's selectivity performance measurement criterions. For this purpose, Spearman's Rank Correlation Coefficients between the ranks under each selectivity measurement criteria have been calculated, the details of which have been presented in Table 4.6.

Table 4.6: Spearman's Rank Correlation between the Ranks under Selectivity Measurement Models

			Jenson Alpha	Fama Selectivity	Net Selectivity
Spearman's rho	Jenson Alpha	Correlation Coefficient	1.000	.939**	.937**
		Sig. (2-tailed)		.000	.000
	Fama Selectivity	Correlation Coefficient		1.000	.998**
		Sig. (2-tailed)			.000
	Net Selectivity	Correlation Coefficient			1.000
		Sig. (2-tailed)			

*Note:** stands for Correlation is significant at the 0.01 level (2-tailed)*

Perusal of the data contained in the Table 4.6 reveals significant level of association between the rankings assigned under the two measurement criterion across all possible combinations viz. rs(1,3), rs(1,2) and rs(2,3) respectively. It can be observed that the correlation coefficients between the rankings under Jensen (1968) and Fama's (1972) selectivity criterion [rs(1,2)], and between the rankings under Jensen (1968) and Fama's (1972) net selectivity criterion [rs(1,3)] are 0.939 and 0.937 respectively which are high by all standards thus indicating significant correlation between the results of the two criterions. Similarly under Fama's (1972) Net selectivity criterion and Fama's (1972) selectivity criterion [rs(2,3)] is 0.998 which again signifies higher degree of correlation between the two criterion. It can also be seen from the data contained in table that the degree of correlation between the rankings under the two measurement criterion is statistically significant even at 0.01 level of significance. It implies fund manager's uniform stock selection performance across the measurement criteria. At the same time, highly significant correlation between the two criteria's i.e. [rs(1,2)] and [rs(2,3)] denotes that the compensation for inadequate diversification has not impacted selectivity performance anyway.

The presence of significant correlation between the ranks under each measurement criteria used the hypothesis that there is positive relationship between the two measurement criterions but statistically insignificant is rejected. This finding across with the findings of many other studies like: Odean (1999); Barber, Lee, Liu, and Odean (2009); and Markowitz (1952).

XI. Persistence Inselectivity Performance

To comment about the selectivity performance of fund managers using mean Jensen Alpha or mean Fama's net selectivity for the study period as a whole is meaningful. But more important issue is the persistence in manager's ability to select stocks and to time risk factors. A fund manager who comes out successful today, whether he/she will be able to repeat the same performance in future consistently, is a matter of concern to the fund investors and other stake holders. Rather to conclude about the stock picking ability of fund managers, one would be interested in knowing whether there is consistency in selectivity performance or not. If a fund manager is able to deliver better performance consistently i.e. quarter-after-quarter or year-after-year, then his or her performance in selecting the right type of stocks for the portfolio would be considered satisfactory. Conversely if the fund manager's performance varies significantly from period to period, then it would be an indication that there is something wrong with his/her stock selection skills or market timing ability. As per the standard practice, a fund manager is expected to perform better than the market and more importantly perform consistently. Hence it is imperative to analyze the persistence in the stock selection performance of fund managers.

Table 4.7: Persistence in Selectivity Performance of Sample Fund Managers

Jensen Model					
Scheme	2007	2008	2009	2010	2011
ICICI Prudential Discovery Fund – Growth	0.0653	0.5510	1.8581	-0.5527	-0.1452
HDFC Equity Fund	0.2832	0.6752	1.2158	-0.4587	-0.2041
ICICI Pru Tax Plan	0.1790	0.6133	1.4186	-0.5690	-0.1600
Reliance Growth Fund	0.3920	0.5733	1.3139	-0.6307	-0.1846
Franklin India Bluechip Fund	0.2566	0.8182	1.0142	-0.5342	-0.1483
Baroda Pioneer Growth	0.4731	0.8285	0.9159	-0.5911	-0.2545

Reliance Regular Savings Fund	0.2963	0.7375	1.0888	-0.5985	-0.1567
Birla Sun Life Frontline Equity	0.2520	0.7401	1.0576	-0.5324	-0.1855
HDFC Tax Saver Fund	0.2202	0.6212	1.1964	-0.5451	-0.1816
Tata Pure Equity Fund	0.3556	0.6783	0.9619	-0.6182	-0.1522
Tata Tax Advantage Fund	0.3562	0.5946	0.9392	-0.5268	-0.1428
Principal Index Fund	0.3243	0.8755	0.7372	-0.5528	-0.1794
Quantum Long-Term Equity Fund	0.1459	0.4503	1.0377	-0.4478	0.0095
Sundaram Growth Fund	0.3984	0.6005	0.9542	-0.5768	-0.1970
UTI - Opportunities Fund	0.4719	0.1874	1.0678	-0.5344	-0.0160
Fidelity Equity Fund	0.1644	0.7111	0.9713	-0.4881	-0.1955
L&T Growth Fund	0.2107	0.7761	0.8958	-0.5355	-0.1850
ING Core Equity Fund –Growth	0.2148	0.7515	0.8770	-0.5294	-0.1947
Birla Sun Life Top 100 Fund – Growth	0.1131	0.6959	0.9134	-0.5134	-0.1540
Sundaram Select Focus	0.4836	0.6001	0.7937	-0.6077	-0.2206
Morgan Stanley Growth Fund	0.1657	0.7097	1.0100	-0.6142	-0.2399
ING Tax Savings Fund	0.0028	0.5740	1.1793	-0.5002	-0.2322
Baroda Pioneer ELSS	0.3099	0.6164	0.9686	-0.6539	-0.2245
UTI - Growth Retail	0.2348	0.5806	0.8917	-0.5186	-0.1805
HSBC Equity Fund	0.4195	0.6708	0.6449	-0.5682	-0.2050
LIC Nomura Mf Equity Fund	0.1117	0.8036	0.7742	-0.5572	-0.2220
Sahara Growth Fund	0.2827	0.6151	0.7923	-0.6433	-0.2101
ING Balanced Fund (D)	0.2667	0.6385	0.6575	-0.5827	-0.1773
LIC Nomura Mf India Vision Fund (D)	0.4904	0.5047	0.5528	-0.5890	-0.2078
SBI Magnum NRI Investment Fund-Flexi Asset (D) Balanced	0.2205	0.5622	0.7168	-0.5802	-0.2162
SBI One India Fund	-0.0542	0.5556	0.8404	-0.6320	-0.1764
Kotak 50 Growth	0.3298	0.6074	0.7128	-0.9292	-0.2164
JM Balanced Fund - (D)	0.0896	0.4635	0.4940	-0.6130	-0.1695
Principal Personal Tax Saver Fund	-0.1842	0.4525	1.0608	-0.9938	-0.2761
Quantum Liquid Fund – Growth	0.1687	0.4055	0.1604	-0.5981	-0.1425
Kotak Equity Arbitrage Growth	0.1867	0.3730	0.1698	-0.5934	-0.1454
Templeton India TMA	0.1712	0.4012	0.1586	-0.6040	-0.1440
SBI Arbitrage Opportunities Fund	0.1845	0.3694	0.1692	-0.6007	-0.1403
HSBC Cash Fund	0.1705	0.3893	0.1392	-0.6104	-0.1540
Sahara Growth Fund - Div	-0.3704	0.6038	0.7926	-0.9336	-0.1917
Average	**0.2213**	**0.5994**	**0.8529**	**-0.5965**	**-0.1780**

Source: AMC reports, NSE historical data and RBI reports

Table 4.8: Persistence in Selectivity Performance of Sample Fund Managers

Fama Model					
Scheme	2007	2008	2009	2010	2011
UTI - Opportunities Fund	0.5519	-0.507	1.5996	-0.1627	-0.2395
ICICI Prudential Discovery Fund – Growth	0.184	-0.6616	2.2403	-0.2033	-0.3746
Reliance Growth Fund	0.52	-0.6086	1.7914	-0.2323	-0.438
HDFC Equity Fund	0.4054	-0.6668	1.7858	-0.1051	-0.4684
Reliance Regular Savings Fund	0.3939	-0.3728	1.452	-0.2858	-0.3453
Tata Tax Advantage Fund	0.4765	-0.5346	1.4165	-0.1965	-0.3529
ICICI Pru Tax Plan	0.2923	-0.6847	1.8179	-0.2298	-0.3999
Sundaram Select Focus	0.6439	-0.6298	1.4416	-0.2	-0.4665
Tata Pure Equity Fund	0.4922	-0.6007	1.4748	-0.2313	-0.3654

HDFC Tax Saver Fund	0.3382	-0.6693	1.7004	-0.2233	-0.3942
Birla Sun Life Frontline Equity	0.3868	-0.6835	1.5855	-0.1603	-0.4347
Sundaram Growth Fund	0.557	-0.7981	1.5515	-0.1627	-0.456
Franklin India Bluechip Fund	0.383	-0.6495	1.4801	-0.193	-0.3852
Baroda Pioneer Growth	0.6088	-0.7254	1.4646	-0.1836	-0.5313
UTI - Growth Retail	0.3507	-0.5018	1.3163	-0.1547	-0.3961
Sahara Growth Fund	0.4919	-0.5262	1.3115	-0.2403	-0.4355
Fidelity Equity Fund	0.2846	-0.6111	1.4443	-0.1405	-0.4219
Birla Sun Life Top 100 Fund – Growth	0.2491	-0.5996	1.4276	-0.1267	-0.4018
Quantum Long-Term Equity Fund	0.2547	-0.9189	1.5115	-0.1203	-0.2351
HSBC Equity Fund	0.5447	-0.5864	1.0873	-0.1812	-0.4518
Kotak 50 Growth	0.4239	-0.6696	1.2299	-0.1888	-0.3934
Baroda Pioneer ELSS	0.4289	-0.8203	1.5164	-0.2193	-0.5126
Morgan Stanley Growth Fund	0.2967	-0.7946	1.5467	-0.2028	-0.4685
L&T Growth Fund	0.3625	-0.8747	1.4664	-0.1492	-0.4325
Principal Index Fund	0.4675	-0.8154	1.3121	-0.1351	-0.4645
ING Tax Savings Fund	0.1339	-0.9205	1.6704	-0.1207	-0.4468
ING Core Equity Fund -Growth	0.3523	-0.8214	1.3472	-0.1413	-0.4433
SBI Magnum NRI Investment Fund-Flexi Asset (D) Balanced	0.3281	-0.7255	1.2858	-0.2642	-0.3416
Sahara Growth Fund - Div	0.1003	-0.5236	1.3108	-0.2118	-0.4211
ING Balanced Fund (D)	0.3678	-0.4882	1.0184	-0.325	-0.351
LIC Nomura Mf Equity Fund	0.2766	-0.8012	1.3256	-0.1457	-0.4881
LIC Nomura Mf India Vision Fund (D)	0.6523	-0.8912	1.0179	-0.1696	-0.4951
SBI One India Fund	0.0598	-0.797	1.4278	-0.2464	-0.396
Equity Arbitrage Growth	0.1899	0.3506	0.184	-0.5557	-0.1608
SBI Arbitrage Opportunities Fund	0.1872	0.3505	0.1786	-0.5602	-0.1534
Quantum Liquid Fund – Growth	0.1694	0.3992	0.1625	-0.5928	-0.1449
Templeton India TMA	0.1719	0.3952	0.1607	-0.5988	-0.1465
Principal Personal Tax Saver Fund	-0.0377	-0.794	1.4852	-0.2181	-0.4756
HSBC Cash Fund	0.1719	0.3778	0.1431	-0.5994	-0.158
JM Balanced Fund - (D)	0.1928	-0.7073	0.985	-0.2569	-0.3668
Average	**0.34264**	**-0.55269**	**1.291875**	**-0.24088**	**-0.38137**

Source: AMC reports, NSE historical data and RBI reports

The issue of persistence in fund manager's ability to select undervalued stocks has two dimensions. First, one can ask if some managers who did particularly well or poorly in the past quarter/year continues to do so in the next, that is, one can examine if there is persistence in general. The second question is if managers exhibit persistence in general, that is, no matter what the performance over the previous quarter/year was, it remains unchanged or is better in the next. In this study we check persistence by addressing both of these questions.

To test for persistence in the stock selectivity performance of sample fund managers, across the two measurement criterion namely Jensen (1968) and Fama (1972), we have calculated yearly Alpha's and also assigned ranks to each fund on the basis of the excess return (Alpha). The said data is presented in Table 4.7, the perusal of which reveals short term persistence (i.e. in the first three years) in terms of first question defined above i.e. whether the managers repeat the past performance with positive selectivity performance, in case of all the sample 40 funds except three funds namely: SBI One India, Principal Personal Tax Saver Fund and Sahara Growth Fund-Div. However, with respect to the long term persistence i.e. for all the five years, none of the sample funds have shown persistence in their performance as during the first three years most of the sample funds have reported positive alpha's and in the last two years of the period under study i.e. for 2010 and 2011, all the sample funds have reported negative alpha's. As such it can be inferred that fund managers have failed to perform well consistently in the long run.

As already stated that the other way to look into the persistence in performance is that if managers exhibit persistence in performance in general i.e. no matter what the performance over the previous year was, it improves or remains unchanged in the next, In

terms of this question, during the short run i.e. first 3-years of the period under study 30 sample funds i.e. 75 percent of the sample fund have exhibited persistence in general. But in the long run i.e. during the entire study period, none of the sample funds have exhibited persistence in general as in case of all the sample funds the alpha's were positive in the first three years then negative in the last two years. What emerges from the above is that 75 percent of the sample funds have exhibited persistence in general in first three years of the time series but no such persistence for the entire time series.

Table 4.8 presents year-wise Fama's Net Selectivity along with the ranks occupied by each fund. It can be observed from the data contained in the above referred table that all the sample 40 funds except four funds namely: SBI Arbitrage Opportunity Fund, HSBC Cash Fund, Templeton India TMA and Quantum Liquid Fund- Growth have reported neither short term (2007-09) nor long run i.e. for the entire study period persistence in stock selectivity performance based on Fama's Net Selectivity. The above mentioned four sample funds have reported persistence only for the first three years of the study period (2006-2011). But when one looks into the entire period of study, these four funds have also exhibited either little or no persistence. With respect to the persistence in general terms; none of the funds have exhibited persistence in general terms (i.e. no matter what the performance over the previous year was, it remains unchanged in the next). It can also be seen from the above referred table that on the basis of Fama's Net Selectivity, none of the sample funds have shown persistence in selectivity performance but during the last two years of time series, all the sample funds have consistently reported negative net selectivity performance.

What emerges from the above discussion on persistence of selectivity performance is that on the basis of Jensen Alpha majority of the funds reported persistence in selectivity performance in the short run. But in the longer run i.e. for the entire time series (2006-2011) no such persistence in selectivity performance has been observed for the sample funds. However, on the basis of Fama's Net selectivity, no persistence neither in the short run nor in the long run in the selectivity of performance of fund managers of sample funds has been observed. Lack of persistence is indicative of the fact that the fund managers have failed in picking up under -valued stocks consistently which in turn implies poor selectivity performance on the part of sample fund managers during the period under study.
Short run persistence was observed on the basis of Jensen alpha but no such persistence has been found with respect to Fama's Net Selectivity, as such the hypothesis set in this regard for the study is rejected. Besides, no relative persistence over the longer run has been observed across both the measurement criterion, therefore the hypothesis that there is no persistence in the selectivity performance of fund managers across both the criterion is accepted.

The finding about the existence of short term persistence in selectivity performance based on Jensen alpha corresponds with the findings of Benjamini and Hochberg 1995; Benjamini and Yekutieli 2001; and Storey 2002 There seems to be more evidence for relative short term persistence in selectivity performance (Evangeloselal, 2009). A common conclusion in the literature, however, is that expect for the very best fund managers, persistence primarily exists among poor performers Grinber (1996); Carhart(1997), Bolhen and Busse (2004). The similar finding emerges from the present study i.e. poor performers namely HSBC Cash, Quantum Liquid fund-growth, SBI Arbitrage Opportunity Fund and Templeton India. TNA which have performed poorly compared to other sample funds, have been found to report persistence in selectivity performance, however, in the short run only.

With regard to the long run persistence, the finding of the absence of relative long term persistence in selectivity performance of the sample funds across both the measurement criterion is line with the findings of other studies like: Chander (2005), Joyti Dhar(2004) Berk and Green (2004), Elton *et.al* (1992), Treynor and Mazuy (1996), Henrikson (1984). This lack of persistence in the long run could potentially be attributed to several factors. One is the diminishing investment opportunities of well performing funds Evangelos (2009). Another possibility is that management fee rise over- time so as to capitalize on a good performance record. Finally, the performing managers may simply wish to exploit their reputation and find a more lucrative job, perhaps in a hedge fund Evagelos (2009).

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The following benefits can be availed by you only for next three years from the date of certification:

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We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

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As FARSBA, you will be given a renowned, secure and free professional email address with 100 GB of space e.g. johnhall@globaljournals.org. This will include Webmail, Spam Assassin, Email Forwarders,Auto-Responders, Email Delivery Route tracing, etc.

The FARSBA will be eligible for a free application of standardization of their researches. Standardization of research will be subject to acceptability within stipulated norms as the next step after publishing in a journal. We shall depute a team of specialized research professionals who will render their services for elevating your researches to next higher level, which is worldwide open standardization.

The FARSBA member can apply for grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A. Once you are designated as FARSBA, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria. After certification of all your credentials by OARS, they will be published on your Fellow Profile link on website https://associationofresearch.org which will be helpful to upgrade the dignity.

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The FARSBA is eligible to earn from sales proceeds of his/her researches/reference/review Books or literature, while publishing with Global Journals. The FARSBA can decide whether he/she would like to publish his/her research in a closed manner. In this case, whenever readers purchase that individual research paper for reading, maximum 60% of its profit earned as royalty by Global Journals, will be credited to his/her bank account. The entire entitled amount will be credited to his/her bank account exceeding limit of minimum fixed balance. There is no minimum time limit for collection. The FARSC member can decide its price and we can help in making the right decision.

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The "MARSBA" is a dignified ornament which is accorded to a person's name viz. Dr. John E. Hall, Ph.D., MARSBA or William Walldroff, M.S., MARSBA.

MARSB accrediting is an honor. It authenticates your research activities. After becoming MARSBA, you can add 'MARSBA' title with your name as you use this recognition as additional suffix to your status. This will definitely enhance and add more value and repute to your name. You may use it on your professional Counseling Materials such as CV, Resume, Visiting Card and Name Plate etc.

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We shall provide you intimation regarding launching of e-version of journal of your stream time to time.This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

The MARSBA member can apply for approval, grading and certification of standards of their educational and Institutional Degrees to Open Association of Research, Society U.S.A.

Once you are designated as MARSBA, you may send us a scanned copy of all of your credentials. OARS will verify, grade and certify them. This will be based on your academic records, quality of research papers published by you, and some more criteria.

It is mandatory to read all terms and conditions carefully.

AUXILIARY MEMBERSHIPS

Institutional Fellow of Open Association of Research Society (USA)-OARS (USA)

Global Journals Incorporation (USA) is accredited by Open Association of Research Society, U.S.A (OARS) and in turn, affiliates research institutions as "Institutional Fellow of Open Association of Research Society" (IFOARS).

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The IFOARS institution is entitled to form a Board comprised of one Chairperson and three to five board members preferably from different streams. The Board will be recognized as "Institutional Board of Open Association of Research Society"-(IBOARS).

The Institute will be entitled to following benefits:

The IBOARS can initially review research papers of their institute and recommend them to publish with respective journal of Global Journals. It can also review the papers of other institutions after obtaining our consent. The second review will be done by peer reviewer of Global Journals Incorporation (USA) The Board is at liberty to appoint a peer reviewer with the approval of chairperson after consulting us.

The author fees of such paper may be waived off up to 40%.

The Global Journals Incorporation (USA) at its discretion can also refer double blind peer reviewed paper at their end to the board for the verification and to get recommendation for final stage of acceptance of publication.

The IBOARS can organize symposium/seminar/conference in their country on behalf of Global Journals Incorporation (USA)-OARS (USA). The terms and conditions can be discussed separately.

The Board can also play vital role by exploring and giving valuable suggestions regarding the Standards of "Open Association of Research Society, U.S.A (OARS)" so that proper amendment can take place for the benefit of entire research community. We shall provide details of particular standard only on receipt of request from the Board.

The board members can also join us as Individual Fellow with 40% discount on total fees applicable to Individual Fellow. They will be entitled to avail all the benefits as declared. Please visit Individual Fellow-sub menu of GlobalJournals.org to have more relevant details.

We shall provide you intimation regarding launching of e-version of journal of your stream time to time. This may be utilized in your library for the enrichment of knowledge of your students as well as it can also be helpful for the concerned faculty members.

After nomination of your institution as "Institutional Fellow" and constantly functioning successfully for one year, we can consider giving recognition to your institute to function as Regional/Zonal office on our behalf.
The board can also take up the additional allied activities for betterment after our consultation.

The following entitlements are applicable to individual Fellows:

Open Association of Research Society, U.S.A (OARS) By-laws states that an individual Fellow may use the designations as applicable, or the corresponding initials. The Credentials of individual Fellow and Associate designations signify that the individual has gained knowledge of the fundamental concepts. One is magnanimous and proficient in an expertise course covering the professional code of conduct, and follows recognized standards of practice.

Open Association of Research Society (US)/ Global Journals Incorporation (USA), as described in Corporate Statements, are educational, research publishing and professional membership organizations. Achieving our individual Fellow or Associate status is based mainly on meeting stated educational research requirements.

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- The professional accredited with Fellow honor, is entitled to various benefits viz. name, fame, honor, regular flow of income, secured bright future, social status etc.

- In addition to above, if one is single author, then entitled to 40% discount on publishing research paper and can get 10%discount if one is co-author or main author among group of authors.
- The Fellow can organize symposium/seminar/conference on behalf of Global Journals Incorporation (USA) and he/she can also attend the same organized by other institutes on behalf of Global Journals.
- The Fellow can become member of Editorial Board Member after completing 3yrs.
- The Fellow can earn 60% of sales proceeds from the sale of reference/review books/literature/publishing of research paper.
- Fellow can also join as paid peer reviewer and earn 15% remuneration of author charges and can also get an opportunity to join as member of the Editorial Board of Global Journals Incorporation (USA)
- • This individual has learned the basic methods of applying those concepts and techniques to common challenging situations. This individual has further demonstrated an in–depth understanding of the application of suitable techniques to a particular area of research practice.

Note :

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- In future, if the board feels the necessity to change any board member, the same can be done with the consent of the chairperson along with anyone board member without our approval.
- In case, the chairperson needs to be replaced then consent of 2/3rd board members are required and they are also required to jointly pass the resolution copy of which should be sent to us. In such case, it will be compulsory to obtain our approval before replacement.
- In case of "Difference of Opinion [if any]" among the Board members, our decision will be final and binding to everyone.

"

Process of submission of Research Paper

The Area or field of specialization may or may not be of any category as mentioned in 'Scope of Journal' menu of the GlobalJournals.org website. There are 37 Research Journal categorized with Six parental Journals GJCST, GJMR, GJRE, GJMBR, GJSFR, GJHSS. For Authors should prefer the mentioned categories. There are three widely used systems UDC, DDC and LCC. The details are available as 'Knowledge Abstract' at Home page. The major advantage of this coding is that, the research work will be exposed to and shared with all over the world as we are being abstracted and indexed worldwide.

The paper should be in proper format. The format can be downloaded from first page of 'Author Guideline' Menu. The Author is expected to follow the general rules as mentioned in this menu. The paper should be written in MS-Word Format (*.DOC,*.DOCX).

The Author can submit the paper either online or offline. The authors should prefer online submission.Online Submission: There are three ways to submit your paper:

(A) (I) First, register yourself using top right corner of Home page then Login. If you are already registered, then login using your username and password.

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1. General,

2. Ethical Guidelines,

3. Submission of Manuscripts,

4. Manuscript's Category,

5. Structure and Format of Manuscript,

6. After Acceptance.

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All authors should have been credited according to their appropriate contribution in research activity and preparing paper. Contributors who do not match the criteria as authors may be mentioned under Acknowledgement.

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Complete support for both authors and co-author is provided.

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Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

Research letters: The letters are small and concise comments on previously published matters.

5.STRUCTURE AND FORMAT OF MANUSCRIPT

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

Papers: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

Authors should very cautiously consider the preparation of papers to ensure that they communicate efficiently. Papers are much more likely to be accepted, if they are cautiously designed and laid out, contain few or no errors, are summarizing, and be conventional to the approach and instructions. They will in addition, be published with much less delays than those that require much technical and editorial correction.

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It is vital, that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

Format

Language: The language of publication is UK English. Authors, for whom English is a second language, must have their manuscript efficiently edited by an English-speaking person before submission to make sure that, the English is of high excellence. It is preferable, that manuscripts should be professionally edited.

Standard Usage, Abbreviations, and Units: Spelling and hyphenation should be conventional to The Concise Oxford English Dictionary. Statistics and measurements should at all times be given in figures, e.g. 16 min, except for when the number begins a sentence. When the number does not refer to a unit of measurement it should be spelt in full unless, it is 160 or greater.

Abbreviations supposed to be used carefully. The abbreviated name or expression is supposed to be cited in full at first usage, followed by the conventional abbreviation in parentheses.

Metric SI units are supposed to generally be used excluding where they conflict with current practice or are confusing. For illustration, 1.4 l rather than 1.4 × 10-3 m3, or 4 mm somewhat than 4 × 10-3 m. Chemical formula and solutions must identify the form used, e.g. anhydrous or hydrated, and the concentration must be in clearly defined units. Common species names should be followed by underlines at the first mention. For following use the generic name should be constricted to a single letter, if it is clear.

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Many researchers searching for information online will use search engines such as Google, Yahoo or similar. By optimizing your paper for search engines, you will amplify the chance of someone finding it. This in turn will make it more likely to be viewed and/or cited in a further work. Global Journals Inc. (US) have compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Key Words

A major linchpin in research work for the writing research paper is the keyword search, which one will employ to find both library and Internet resources.

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Search engines for most searches, use Boolean searching, which is somewhat different from Internet searches. The Boolean search uses "operators," words (and, or, not, and near) that enable you to expand or narrow your affords. Tips for research paper while preparing research paper are very helpful guideline of research paper.

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- One should start brainstorming lists of possible keywords before even begin searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in research paper?" Then consider synonyms for the important words.
- It may take the discovery of only one relevant paper to let steer in the right keyword direction because in most databases, the keywords under which a research paper is abstracted are listed with the paper.
- One should avoid outdated words.

Keywords are the key that opens a door to research work sources. Keyword searching is an art in which researcher's skills are bound to improve with experience and time.

Numerical Methods: Numerical methods used should be clear and, where appropriate, supported by references.

Acknowledgements: Please make these as concise as possible.

References

References follow the Harvard scheme of referencing. References in the text should cite the authors' names followed by the time of their publication, unless there are three or more authors when simply the first author's name is quoted followed by et al. unpublished work has to only be cited where necessary, and only in the text. Copies of references in press in other journals have to be supplied with submitted typescripts. It is necessary that all citations and references be carefully checked before submission, as mistakes or omissions will cause delays.

References to information on the World Wide Web can be given, but only if the information is available without charge to readers on an official site. Wikipedia and Similar websites are not allowed where anyone can change the information. Authors will be asked to make available electronic copies of the cited information for inclusion on the Global Journals Inc. (US) homepage at the judgment of the Editorial Board.

The Editorial Board and Global Journals Inc. (US) recommend that, citation of online-published papers and other material should be done via a DOI (digital object identifier). If an author cites anything, which does not have a DOI, they run the risk of the cited material not being noticeable.

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Before start writing a good quality Computer Science Research Paper, let us first understand what is Computer Science Research Paper? So, Computer Science Research Paper is the paper which is written by professionals or scientists who are associated to Computer Science and Information Technology, or doing research study in these areas. If you are novel to this field then you can consult about this field from your supervisor or guide.

TECHNIQUES FOR WRITING A GOOD QUALITY RESEARCH PAPER:

1. Choosing the topic: In most cases, the topic is searched by the interest of author but it can be also suggested by the guides. You can have several topics and then you can judge that in which topic or subject you are finding yourself most comfortable. This can be done by asking several questions to yourself, like Will I be able to carry our search in this area? Will I find all necessary recourses to accomplish the search? Will I be able to find all information in this field area? If the answer of these types of questions will be "Yes" then you can choose that topic. In most of the cases, you may have to conduct the surveys and have to visit several places because this field is related to Computer Science and Information Technology. Also, you may have to do a lot of work to find all rise and falls regarding the various data of that subject. Sometimes, detailed information plays a vital role, instead of short information.

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3. Think Like Evaluators: If you are in a confusion or getting demotivated that your paper will be accepted by evaluators or not, then think and try to evaluate your paper like an Evaluator. Try to understand that what an evaluator wants in your research paper and automatically you will have your answer.

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5. Ask your Guides: If you are having any difficulty in your research, then do not hesitate to share your difficulty to your guide (if you have any). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work then ask the supervisor to help you with the alternative. He might also provide you the list of essential readings.

6. Use of computer is recommended: As you are doing research in the field of Computer Science, then this point is quite obvious.

7. Use right software: Always use good quality software packages. If you are not capable to judge good software then you can lose quality of your paper unknowingly. There are various software programs available to help you, which you can get through Internet.

8. Use the Internet for help: An excellent start for your paper can be by using the Google. It is an excellent search engine, where you can have your doubts resolved. You may also read some answers for the frequent question how to write my research paper or find model research paper. From the internet library you can download books. If you have all required books make important reading selecting and analyzing the specified information. Then put together research paper sketch out.

9. Use and get big pictures: Always use encyclopedias, Wikipedia to get pictures so that you can go into the depth.

10. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right! It is a good habit, which helps to not to lose your continuity. You should always use bookmarks while searching on Internet also, which will make your search easier.

11. Revise what you wrote: When you write anything, always read it, summarize it and then finalize it.

12. Make all efforts: Make all efforts to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in introduction, that what is the need of a particular research paper. Polish your work by good skill of writing and always give an evaluator, what he wants.

13. Have backups: When you are going to do any important thing like making research paper, you should always have backup copies of it either in your computer or in paper. This will help you to not to lose any of your important.

14. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several and unnecessary diagrams will degrade the quality of your paper by creating "hotchpotch." So always, try to make and include those diagrams, which are made by your own to improve readability and understandability of your paper.

15. Use of direct quotes: When you do research relevant to literature, history or current affairs then use of quotes become essential but if study is relevant to science then use of quotes is not preferable.

16. Use proper verb tense: Use proper verb tenses in your paper. Use past tense, to present those events that happened. Use present tense to indicate events that are going on. Use future tense to indicate future happening events. Use of improper and wrong tenses will confuse the evaluator. Avoid the sentences that are incomplete.

17. Never use online paper: If you are getting any paper on Internet, then never use it as your research paper because it might be possible that evaluator has already seen it or maybe it is outdated version.

18. Pick a good study spot: To do your research studies always try to pick a spot, which is quiet. Every spot is not for studies. Spot that suits you choose it and proceed further.

19. Know what you know: Always try to know, what you know by making objectives. Else, you will be confused and cannot achieve your target.

20. Use good quality grammar: Always use a good quality grammar and use words that will throw positive impact on evaluator. Use of good quality grammar does not mean to use tough words, that for each word the evaluator has to go through dictionary. Do not start sentence with a conjunction. Do not fragment sentences. Eliminate one-word sentences. Ignore passive voice. Do not ever use a big word when a diminutive one would suffice. Verbs have to be in agreement with their subjects. Prepositions are not expressions to finish sentences with. It is incorrect to ever divide an infinitive. Avoid clichés like the disease. Also, always shun irritating alliteration. Use language that is simple and straight forward. put together a neat summary.

21. Arrangement of information: Each section of the main body should start with an opening sentence and there should be a changeover at the end of the section. Give only valid and powerful arguments to your topic. You may also maintain your arguments with records.

22. Never start in last minute: Always start at right time and give enough time to research work. Leaving everything to the last minute will degrade your paper and spoil your work.

23. Multitasking in research is not good: Doing several things at the same time proves bad habit in case of research activity. Research is an area, where everything has a particular time slot. Divide your research work in parts and do particular part in particular time slot.

24. Never copy others' work: Never copy others' work and give it your name because if evaluator has seen it anywhere you will be in trouble.

25. Take proper rest and food: No matter how many hours you spend for your research activity, if you are not taking care of your health then all your efforts will be in vain. For a quality research, study is must, and this can be done by taking proper rest and food.

26. Go for seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

27. Refresh your mind after intervals: Try to give rest to your mind by listening to soft music or by sleeping in intervals. This will also improve your memory.

28. Make colleagues: Always try to make colleagues. No matter how sharper or intelligent you are, if you make colleagues you can have several ideas, which will be helpful for your research.

29. Think technically: Always think technically. If anything happens, then search its reasons, its benefits, and demerits.

30. Think and then print: When you will go to print your paper, notice that tables are not be split, headings are not detached from their descriptions, and page sequence is maintained.

31. Adding unnecessary information: Do not add unnecessary information, like, I have used MS Excel to draw graph. Do not add irrelevant and inappropriate material. These all will create superfluous. Foreign terminology and phrases are not apropos. One should NEVER take a broad view. Analogy in script is like feathers on a snake. Not at all use a large word when a very small one would be sufficient. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Amplification is a billion times of inferior quality than sarcasm.

32. Never oversimplify everything: To add material in your research paper, never go for oversimplification. This will definitely irritate the evaluator. Be more or less specific. Also too, by no means, ever use rhythmic redundancies. Contractions aren't essential and shouldn't be there used. Comparisons are as terrible as clichés. Give up ampersands and abbreviations, and so on. Remove commas, that are, not necessary. Parenthetical words however should be together with this in commas. Understatement is all the time the complete best way to put onward earth-shaking thoughts. Give a detailed literary review.

33. Report concluded results: Use concluded results. From raw data, filter the results and then conclude your studies based on measurements and observations taken. Significant figures and appropriate number of decimal places should be used. Parenthetical remarks are prohibitive. Proofread carefully at final stage. In the end give outline to your arguments. Spot out perspectives of further study of this subject. Justify your conclusion by at the bottom of them with sufficient justifications and examples.

34. After conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print to the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects in your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form, which is presented in the guidelines using the template.
- Please note the criterion for grading the final paper by peer-reviewers.

Final Points:

A purpose of organizing a research paper is to let people to interpret your effort selectively. The journal requires the following sections, submitted in the order listed, each section to start on a new page.

The introduction will be compiled from reference matter and will reflect the design processes or outline of basis that direct you to make study. As you will carry out the process of study, the method and process section will be constructed as like that. The result segment will show related statistics in nearly sequential order and will direct the reviewers next to the similar intellectual paths throughout the data that you took to carry out your study. The discussion section will provide understanding of the data and projections as to the implication of the results. The use of good quality references all through the paper will give the effort trustworthiness by representing an alertness of prior workings.

Writing a research paper is not an easy job no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record keeping are the only means to make straightforward the progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear

· Adhere to recommended page limits

Mistakes to evade

- Insertion a title at the foot of a page with the subsequent text on the next page
- Separating a table/chart or figure - impound each figure/table to a single page
- Submitting a manuscript with pages out of sequence

In every sections of your document

· Use standard writing style including articles ("a", "the," etc.)

· Keep on paying attention on the research topic of the paper

· Use paragraphs to split each significant point (excluding for the abstract)

· Align the primary line of each section

· Present your points in sound order

· Use present tense to report well accepted

· Use past tense to describe specific results

· Shun familiar wording, don't address the reviewer directly, and don't use slang, slang language, or superlatives

· Shun use of extra pictures - include only those figures essential to presenting results

Title Page:

Choose a revealing title. It should be short. It should not have non-standard acronyms or abbreviations. It should not exceed two printed lines. It should include the name(s) and address (es) of all authors.

Abstract:

The summary should be two hundred words or less. It should briefly and clearly explain the key findings reported in the manuscript--must have precise statistics. It should not have abnormal acronyms or abbreviations. It should be logical in itself. Shun citing references at this point.

An abstract is a brief distinct paragraph summary of finished work or work in development. In a minute or less a reviewer can be taught the foundation behind the study, common approach to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Yet, use comprehensive sentences and do not let go readability for briefness. You can maintain it succinct by phrasing sentences so that they provide more than lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study, with the subsequent elements in any summary. Try to maintain the initial two items to no more than one ruling each.

- Reason of the study - theory, overall issue, purpose
- Fundamental goal
- To the point depiction of the research
- Consequences, including definite statistics - if the consequences are quantitative in nature, account quantitative data; results of any numerical analysis should be reported
- Significant conclusions or questions that track from the research(es)

Approach:

- Single section, and succinct
- As a outline of job done, it is always written in past tense
- A conceptual should situate on its own, and not submit to any other part of the paper such as a form or table
- Center on shortening results - bound background information to a verdict or two, if completely necessary
- What you account in an conceptual must be regular with what you reported in the manuscript
- Exact spelling, clearness of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else

Introduction:

The **Introduction** should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable to comprehend and calculate the purpose of your study without having to submit to other works. The basis for the study should be offered. Give most important references but shun difficult to make a comprehensive appraisal of the topic. In the introduction, describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will have no attention in your result. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here. Following approach can create a valuable beginning:

- Explain the value (significance) of the study
- Shield the model - why did you employ this particular system or method? What is its compensation? You strength remark on its appropriateness from a abstract point of vision as well as point out sensible reasons for using it.
- Present a justification. Status your particular theory (es) or aim(s), and describe the logic that led you to choose them.
- Very for a short time explain the tentative propose and how it skilled the declared objectives.

Approach:

- Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done.
- Sort out your thoughts; manufacture one key point with every section. If you make the four points listed above, you will need a least of four paragraphs.

- Present surroundings information only as desirable in order hold up a situation. The reviewer does not desire to read the whole thing you know about a topic.
- Shape the theory/purpose specifically - do not take a broad view.
- As always, give awareness to spelling, simplicity and correctness of sentences and phrases.

Procedures (Methods and Materials):

This part is supposed to be the easiest to carve if you have good skills. A sound written Procedures segment allows a capable scientist to replacement your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt for the least amount of information that would permit another capable scientist to spare your outcome but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section. When a technique is used that has been well described in another object, mention the specific item describing a way but draw the basic principle while stating the situation. The purpose is to text all particular resources and broad procedures, so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step by step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

- Explain materials individually only if the study is so complex that it saves liberty this way.
- Embrace particular materials, and any tools or provisions that are not frequently found in laboratories.
- Do not take in frequently found.
- If use of a definite type of tools.
- Materials may be reported in a part section or else they may be recognized along with your measures.

Methods:

- Report the method (not particulars of each process that engaged the same methodology)
- Describe the method entirely
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures
- Simplify - details how procedures were completed not how they were exclusively performed on a particular day.
- If well known procedures were used, account the procedure by name, possibly with reference, and that's all.

Approach:

- It is embarrassed or not possible to use vigorous voice when documenting methods with no using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result when script up the methods most authors use third person passive voice.
- Use standard style in this and in every other part of the paper - avoid familiar lists, and use full sentences.

What to keep away from

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings - save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part a entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Carry on to be to the point, by means of statistics and tables, if suitable, to present consequences most efficiently.You must obviously differentiate material that would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matter should not be submitted at all except requested by the instructor.

Content

- Sum up your conclusion in text and demonstrate them, if suitable, with figures and tables.
- In manuscript, explain each of your consequences, point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation an exacting study.
- Explain results of control experiments and comprise remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or in manuscript form.

What to stay away from

- Do not discuss or infer your outcome, report surroundings information, or try to explain anything.
- Not at all, take in raw data or intermediate calculations in a research manuscript.
- Do not present the similar data more than once.
- Manuscript should complement any figures or tables, not duplicate the identical information.
- Never confuse figures with tables - there is a difference.

Approach

- As forever, use past tense when you submit to your results, and put the whole thing in a reasonable order.
- Put figures and tables, appropriately numbered, in order at the end of the report
- If you desire, you may place your figures and tables properly within the text of your results part.

Figures and tables

- If you put figures and tables at the end of the details, make certain that they are visibly distinguished from any attach appendix materials, such as raw facts
- Despite of position, each figure must be numbered one after the other and complete with subtitle
- In spite of position, each table must be titled, numbered one after the other and complete with heading
- All figure and table must be adequately complete that it could situate on its own, divide from text

Discussion:

The Discussion is expected the trickiest segment to write and describe. A lot of papers submitted for journal are discarded based on problems with the Discussion. There is no head of state for how long a argument should be. Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implication of the study. The purpose here is to offer an understanding of your results and hold up for all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of result should be visibly described. Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved with prospect, and let it drop at that.

- Make a decision if each premise is supported, discarded, or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."
- Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work
- You may propose future guidelines, such as how the experiment might be personalized to accomplish a new idea.
- Give details all of your remarks as much as possible, focus on mechanisms.
- Make a decision if the tentative design sufficiently addressed the theory, and whether or not it was correctly restricted.
- Try to present substitute explanations if sensible alternatives be present.
- One research will not counter an overall question, so maintain the large picture in mind, where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

- When you refer to information, differentiate data generated by your own studies from available information
- Submit to work done by specific persons (including you) in past tense.
- Submit to generally acknowledged facts and main beliefs in present tense.

Please carefully note down following rules and regulation before submitting your Research Paper to Global Journals Inc. (US):

Segment Draft and Final Research Paper: You have to strictly follow the template of research paper. If it is not done your paper may get rejected.

- The **major constraint** is that you must independently make all content, tables, graphs, and facts that are offered in the paper. You must write each part of the paper wholly on your own. The Peer-reviewers need to identify your own perceptive of the concepts in your own terms. NEVER extract straight from any foundation, and never rephrase someone else's analysis.

- Do not give permission to anyone else to "PROOFREAD" your manuscript.

- Methods to avoid Plagiarism is applied by us on every paper, if found guilty, you will be blacklisted by all of our collaborated research groups, your institution will be informed for this and strict legal actions will be taken immediately.)
- To guard yourself and others from possible illegal use please do not permit anyone right to use to your paper and files.

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Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

Index

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