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Why Banks Need Adequate Capital Adequacy Ratio? A Study of Lending & Deposit Behaviors of Banking Sector of Pakistan

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ABSTRACT

This study focuses on the impact of Capital Adequacy Ratio on bank’s lending and deposit behavior and also on the importance of maintaining certain level of capital reserve. CAR is examined using two different ratios leverage ratio and risk-based capital ratio. This study is beneficial for the banking industry in determining enough CAR and to make decision for taking deposits and issuing loans. The sample of the study includes 25 banks of Pakistan; 20 conventional and 5 Islamic banks and the study period is of 10 years. Panel data methodology is used. Data is collected from secondary sources. Findings show that CAR has impact on change in capital and change in loans.

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1. Introduction

Economic activity in every country depends on the financial sector. The role of the banking sector is vital in driving public savings to be productively invested that leads to economic growth. In Pakistan, the banking sector comprise of Islamic and conventional banks. In today's global environment, banks that provide multiple functions and provide a range of products and services and offers the most modern facilities to its customers are considered successful. The banks are one of the essential part of the of the country’s growth. A modern bank offers valuable services to the people. To achieve growth there must be a well-developed financial system to upkeep not only the economy but the society as well. Therefore, a modern bank plays an important role in solving the country's socioeconomic problems (Nikhat Fatima 2014).

Pakistani banks fulfil the needs of government agencies, subsidize the budget deficit, participate in trade finance and serve big corporations. Small and medium-sized enterprises, residential construction and agriculture sectors, which have created more growth and employment opportunities in Pakistan were denied loans/financing by the banks. In addition, Pakistan’s financial system was also under political influence, which resulted in more political interference in credit decisions and the appointment of
1. Capital adequacy ratio

Banks hold chunks of capital as required by the central bank and known as minimum capital requirement. Banks are exposed to various kinds of risks, when they advance loans to various sectors. With the intention to keep themselves well balanced and proactively managed it is essential that the banks must have enough capital to cover the losses, if it happens. If the banks have sufficient capital, they can protect their depositors of the unforeseen likelihood and encourage the stability and competence of the financial systems. Is the Capital Adequacy Ratio (CaAR) protects banks from excessive leverage, insolvency and also keeps them safe from any contingency? This is the ratio of banks in relation to their current liabilities and their risk weighted assets. Risk weighted assets are considered as the measure of the volume of the bank assets, adapted for risk. A reasonable amount of capital reserve ensures, the banks have sufficient capital to grow its business, but at the same time have enough to absorb any financial slump without getting insolvent. It is the ratio that determines the banks’ ability to meet the liabilities and all the risks like operational risk, credit risk, market risk, etc. (Nikhat Fatima 2014, Mastura et al 2013)

The capital adequacy ratio can be defined as: \[ \text{CAR} = \frac{\text{Tier I} + \text{Tier II}}{\text{Risk Weighted Assets (RWA)}} \]

1.2 Components of Capital

The elements of the Tier I are paid-up capital (common shares), disclosed free reserves like untaxed reserves, statutory reserves, Perpetual Non-Cumulative Preference Shares (PNCPS) according to the laws in force with time to time, Innovative Perpetual debt instruments (IPDI) and reserves Funds to the excess of the proceeds from the sale of the asset. It is usually referred as the essential capital to absorb the risks and losses suffered by the bank, without stopping the trade/business of the bank and thus ensures better protection to the depositors (Nikhat Fatima 2014).

The Tier II capital includes revaluation reserves, hidden reserves, hybrid capital, general provisions and loss reserves, investment reserve account and subordinated liabilities. It is additional capital, which therefore absorbs losses at the time of liquidation and offers a lesser degree to safeguard depositors. Tier II elements are considered regulatory capital to the degree, as they absorb the risks and losses from the activity of the bank.

To make sure banks develop and keep the minimum requirement of capital (CAR) is critical to prevent them from getting failed. A bank with a strong capital position is capable to better track business opportunities and have more time and elasticity to deal with the difficulties arising from unexpected losses and thereby achieve a higher return (Athanassoglou et al., 2008). Bank for International Settlements (BIS) in 1996 when firstly introduced the minimum capital requirement the purpose was to ensure that banks are careful in maintaining a sufficient reserve to protect their depositors and themselves. The idea behind the capital adequacy ratio is to ensure safety of the bank by their own reserve fund. Risker Banks will require more capital to set aside in order protect their depositors. This ensures a more secure investment returns for both depositors and shareholders.

The dependence on bank loans through most of Indonesian companies led to a crisis of mismatch, thus, the banks at that time were using to finance abundant of their short-term deposits as long-term investment on large scales, which later contributed to the economic crunch in Indonesia (Vandenbrink, 2005).

Some researchers believe that the minimum capital adequacy ratio CAR is irrelevant to the Islamic Banks (IBs) because the contract of profits and the sharing of losses supports to reduce overall investment risk faced by the banks (Pellegrina, 2007). The Islamic banking system is an ethical system that based on the non-interest and profit and loss sharing contracts. (Adebayo and Hassan (2013), Farook et al. (2012), Rashid et al (2012).

From theoretical point of view, the profit-and-loss sharing in the IBs should be less dangerous, but the
conceptual theory is hard to explain in real world because of the information asymmetries and market imperfections (Muljawan et al., 2014). This information problem can make bank managers react heterogeneously that could affect efficiency, stability and soundness of banks. Moreover, Hassan et al. (2011), Smolo and Hassan (2010), Hassan and Chowdhury (2010), Grais and Kulathunga (2007), and Hassan and Dicle (2005) suggest that the CAR is important for the safety of the IBs because they have specific risk with their products and their nature as intermediaries.

The purpose of this study is to examine and compare the performance of loans and deposits of banks in relation to the degree of coverage and in different conditions of competition. In fact, to identify the role of the competitive conditions on the relationship between the adequacy of the capital relation and behavior of the bank.

2. Literature review
Santomero (1984) used three ways to explain the existence of banks or financial intermediary. The first involves the role of the bank itself, which is that of transformation assets. Banks work in two different dimensions: asset diversification and financial riskiness of assets.

Secondly, the bank can be described as demand deposit, the bond exchange. The nature of the activities is to borrow money from the depositors and the bank adds its own money and uses it to generate a return for the owners of the bank. There is a description of the third bank by bank Santomero vision combined with the assets and liabilities side.

Asymmetric information is helpful in explaining the theory of Banking, that banks exist to reduce transaction costs. The banks suffer from the high transaction costs hence, unable to hold risky assets themselves. In this case, banks can benefit from their wealth of assets and special knowledge (Leland and Pyle, 1977).

In literature, there are two opposing theories about the impact of competitiveness on the behavior of banks. The first shows that a competitive market may increase the risk behavior/risk appetite of banks in order to maintain their previous levels of profit (Allen & Gale, 2004; Hellman et al, 2000, Kouser et al 2016). This risk behavior can be observed with both the increase in credit risk in the loan portfolio, with the fall of "buffer layer" of the capital or both. These risky policies may lead to an increase in the level of non-performing loans and therefore a high probability of failure of a bank. However, the second theory postulate limits the competitiveness and suggest that competitiveness should encourage banks to protect their "franchise value", very high security by pursuing policies that contribute to the stability of the entire banking system. Therefore, according to the paradigm of "franchise value", banks limit their risk when they have pensions, i.e. when they have market power. This theory has been theoretically and empirically supported in the banking literature.

Special attention to the question of regulation is on the market and the special nature of the effects collected between the borrower and the leader of the deposit. Most importantly, the operation of the effect of higher studies in general and examined the risk of leaving the asymmetry of information. Depending on the choice of when you train, and exit be great distress in the competitiveness of the conditions of the portfolio, variance, emulations, on a letter in character, as far as what is comfortable.

To make sure that banks develop and keep the minimum requirement of capital (CAR) is critical to prevent them from failing. The economic crisis in the late 1990s, which occurred in many countries in East Asia and the credit crises of 2007 in the United States, were partly due to the weaknesses of banks, conventional banks were affected most significantly. After the crisis the need for enough capital was found; a bank with a strong capital position is capable to better track business opportunities and have more time and elasticity to deal with the difficulties arising from unexpected losses and thereby achieve a higher return (Athanassoglou et al., 2008, Kouser et al 2011, 2012). So, it is necessary to maintain
minimum CAR for both deposits and lending. The banks’ maturity mismatch causes the interest rate risk; these are the important issues that needs to be addressed. There is literature on this concept in OIC countries (Mastura et al. 2013) and several other empirical studies have considered this issue in different developed countries (Chernykh and Cole, 2015; Flannery and Giacomini, 2015) but no study is done in developing countries specially countries like Pakistan. This paper will investigate this issue taking in account the country of Pakistan. The purpose of the study are: (i) To explore how deposit and lending patterns respond Banking sector with a particular capital adequacy ratio. (ii) To investigate the impact of macroeconomic factors on deposit and lending growth of Banking sector.

Allen and Santomero (1997) analyzed the role and performance of the banks as financial intermediations in the context of today, which has been neglected by the traditional banking theory. They said emphasis should be given to the important role of the bank related to the transfer of the risk and the cost of reducing the role and not just to reduce transaction costs and information asymmetry, which is underlined by traditional theories. Banks focus and provide the borrower’s demand for money, and this allows banks to share the risks, thereby enhancing the market competitiveness. In Islamic banking, there are few theories to explain the existence of Islamic Banking in the industry. Many scholars using conventional banking system tried to explain the contemporary Islamic banking model. Aggarwal and Yousef (2000) model of Islamic banking profit share a vision and decided that this model is used more, because of the agency, and concluded that the model to work properly only when the risk of behavior is low. Frost (2004) categorizes bank capital into four parts: i) Support shareholders’ capital need ii) Capital risk capital to clearly understand where losses can occur ahead of time as these losses lead to insolvency iii) Capital Economic capital investment made by the shareholders in the business (share capital, retained earnings and premium account) iv) Regulatory capital-capital that must be maintained to protect investments from losses resulting from the failure of loan.

Capital Management includes all needs to be done to ensure the best possible combination of the best in the capital instruments. Banks among the most important institutions, as they provide liquidity to markets (Diamond and Rajan, 2000). Lower capital has been identified as the main reason for the decline in bank credit. However, this does not mean that you will not really be in bank debt and capitalization. Bank Islam Malaysia, for example, became bankrupt in 2006 in spite of having CAR of 31% in 2004 (Chong and Liu, 2009). A low level of CAR means that banks have additional capital more investors. However, if the banks are not selective in their investments and do not risk an open mind, they may be exposed to risk than they can manage. Bank loan supply has shown to be a powerful influence on real banking activities Heuvel (2004) and Gambacorta and Mistrulli (2004) suggests that lack the desired level of capital which will supply loan move down.

One way to gauge the impact of bank capital requirements is to look at the main bank account as administrator of property. From this point of view, the impact of capital improvement system is dangerous to encourage banks to select a strategic portfolio. Results of Koehn and Santomero (1980) and Kim and Santomero (1988) analyzed the effect of capital requirements on the folder options. Items first two account design folders chosen on the analysis request hostile in the price of the property bag and heart designs data and identify the folder very well to increase the benefits expected from time saving, in turn, depends on the risk aversion of the bank.

### 2.1 Impact of prudential regulations on the banking behavior

Most of today's theorists make use of the traditional banking system to explain the pattern of Islamic banks. Aggarwal and Yousef (2000) defines the Islamic financial model as the perspective of risk and profit sharing and concludes that this model is not widespread because of problems with moral hazard and
agencies.

The theoretical model of Islamic banks is different from the conventional banks. Contracts based on interest conventional banks replace their conventional counterparts, for profit, based on contracts where profits and losses are shared between the bank and the borrower. Moreover, Islamic banks have the right to deposit mainly in the form of current accounts, without interest, except when the bank is obliged to pay the principal holders on demand, and investment accounts (savings) as defined generate as accounts based on (Iqbal, Ausaf & Khan, 1998) performance on profit, so it can be adjusted based on the profit, even in the loss, which would later be split between the Islamic bank and investment accounts holders.

Previous studies have confirmed that Islamic banks differ from their theoretical models by adopting conventional banking strategies. In this context that the activities of Islamic banks are based on the sale of instruments rather than in association. Bourkis and Nabi (2013) found that Islamic banks will imitate traditional banks, and therefore there is no difference in the behavior of the two banks. It is Khediri et al. (2015) that sync both types of banks operate in the same competitive position and is regulated in the same way in most countries, is likely to be similar behavior, and similar strategies.

In economics, Islamic banks play the same role as conventional banks. They claim that savers and investors benefit from their capital through credit allocation and financial management. Islamic banks are therefore subject to a number of risk categories, as is common with conventional banks and other risks that are specific to Islamic financial institutions. In this context, the regulatory capital for better risk coverage and focuses on monitoring and risk management.

Mastura et al (2014) argues that capital management must be done in a way that ensures an optimal combination of capital instruments. Banks are the leading institutions that provide market liquidity (Diamond and Rajan, 2000). The optimal level of capital allocation of banks should be considered as mandatory controls imposed by regulators as the banking sector is one of the most regulated industries in the world. Bank regulation is mainly based on minimum capital requirements. Although the required legal capital is determined by the ratio of minimum requirements, Berger (1995) argues that the capital adequacy ratio of banks should increase to ensure better stability conditions.

Several studies have examined the relationship between CapitaLand risk. In the case of United States, a series of studies; Jacques & Nigro (1997) found that bank has responded to the new regulatory capital excessive risks. Ghosh (2014) examines the relationship between capital and risk in banks and 57 conventional banks in the period 1996 to 2011. The results show that banks stab at their capitalization level as a reaction to a higher risk than the other way around. In this context, Mastura et al. (2014) suggests that there is a positive and significant relationship between the solvency index and the banking system. Their study was carried out on a sample of 18652 Islamic banks and conventional banks in 14 countries in the period 1999-2009.

Cebenoyan and Strahan (2004) says that the banks with the credit markets (securitization) for risk management has less capital, and thus are profitable but also riskier.

Although most previous studies support the positive relationship between the bank’s capital and risk behavior, and the other showed the contrary studies. For example, consider the British banks, Alfon et al(2004) and a negative relationship between capital and risk during the period 1998/2003. In addition, Ghosh was and (2004), Indian banks and the Pride (2007) for German banks themselves. Ghosh (2014) suggest that the lack of correlation between these different studies using different measures of risk may be due to the variables. Francis and Osborne (2012) of the financial crisis resulting from a better understanding of how to develop the impact of the behavior of capital adequacy rules for banks. It has been said that the low bank capitalization, the principal for the decline in loans and default by the bank.
The theoretical and experimental studies of banking showed that credit has a significant impact on real banking activities. Van den Heuvel and Gambacorta and Mistrulli (2004) suggest that the deficit in the financing ratio may cause a decrease in the loans granted by the bank. Adrian and Shin (2008) said, that a negative shock to the capital, result in a decline in the supply of credit, that banks adjust their balance sheets. Peek and Rosengren (1995) argue that credit problems can arise if the bank's capital is reduced, which also leads to difficulties in meeting capital requirements. It describes this situation as a crisis of capitalism, in which pushed the liabilities of banks to limit the contraction of their assets. During the Asian financial crisis, Korean banks cut lending for investment and increased their investments in risk-free assets, in order to meet capital requirements granted by regulatory authorities. Berger and Udell (1994) consider this scenario from the supply side of credit, that banks are not prepared as a result of the decline in the supply of credit and the depletion of the bank's capital to provide credit.

Carlson and Warusa (2013) believe that the gap between supply and demand is the main problem in credit growth before facing the effects of capital. For example, changes in the economic environment that affect the bank's capital may affect the potential demand for loans. Damage to the economic environment can lead to losses of banks leading to the reduction of the bank's capital. Declining capital of banks can lead to increasingly powerful regulatory requirements and cause the bank to reduce lending. At the same time, the change in economic activity also reduces the number of borrowers seeking loans.

2.2 Hypothesis

H1: Capital ratio have positive association with deposit and lending growth of banking sector
H2: Capital adequacy ratio has positive association with deposit and lending growth of banking sector
H3: Change in bank equity has positive association with deposit and lending growth banking sector
H4: Bank size has positive association with deposit and lending growth of banking sector
H5: Liquidity has positive association with deposit and lending growth of Islamic banks and Conventional banks.
H6: Fee income has positive association with deposit and lending growth of banking sector
H7: Inflation has positive association with deposit and lending growth of banking sector
H8: GDP has positive association with deposit and lending growth of banking sector

3. Research Methodology

3.1 Sample selection and data source

Financial sector of Pakistan is the overall data population. This sector is consisting of 8 different financial institutions named Development Financial Institutions, Exchange Companies, Insurance Companies, Housing Finance and Venture, Investment Banks, Modaraba Companies, Leasing Companies, Mutual Funds. Further going specific the study sample is based on banking sector. Although, the State Banks of Pakistan (SBP) has segregated the banking sector in 4 parts; public sector commercial banks, domestic private banks, foreign banks and specialized institution. Currently 35 banks are listed in stock exchange, out of that 20 Conventional Banks (CBs) and 5 Islamic Banks (IBs) are selected as sample. Rest of the banks are not selected as the data relevant to my dependent and independent variables is unavailable in the financial statements of those banks. Data is collected through 2006 to 2015.

Data relevant to the study is of secondary nature. That’s why the audited banking annual financial statements related to each bank of Pakistan are the major source of data collection. Data relevant to the bank reports is taken from the site of State Bank of Pakistan and the web sites of each bank. Furthermore, here are also some macroeconomic variables (GDP, Inflation). Data related to these indicators is obtained from the web site of World Bank.

3.2. Research model

Bank behavior is studied using two dependent variables, first is change in deposit (ΔDeposit) and second is change in loans (ΔLoans). Both of these variables are examined with same independent variables which
are categorized in two fragments one is capital adequacy ratios and other is set of control variables (bank specific variables as well as economic indicators). For estimation study practices the Multivariate analysis. Purpose of the selection of Multivariate analysis is to avoid multiple univariate tests applied on the variables. The two dependent variables are separately analyzed. The estimation model used follows Peek and Rosengren (1995) and Chiuri et al. (2002), Mastura et al 2013). with some modification in the variables.

By following the literature, the study uses a panel data methodology.

### 3.2.1 Deposit Model (DM)
DM model consists of 1 dependent variable and 10 independent variables. The dependent variable is Change in deposits (ΔDeposits) whereas the independent variables are Leverage ratio (CR), Risk-weighted ratio (CAR), Interactive term of CR using leverage ratio (CMCR), Interactive term of CAR using risk-weighted ratio (CMCAR), Change in equity (ΔEQT), Bank size (SIZE), Liquidity ratio (LQDT), Fee income (FEE), Inflation (INF), Log of Real GDP (ΔlnGDP). The model equation signifies all the factors which effect the dependent variable. Following is the equation for DM model:

\[
\Delta \text{Deposits}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{CMCR}_{it} + \beta_3 \text{CAR}_{it} + \beta_4 \text{CMCAR}_{it} + \beta_5 \Delta \text{EQT}_{it} + \beta_6 \text{SIZE}_{it} + \beta_7 \text{LQDT}_{it} + \beta_8 \text{FEE}_{it} + \beta_9 \text{INF}_{it} + \beta_{10} \Delta \text{lnGDP}_{it} + \epsilon_{it}
\]

Description for variables like measurement and symbols are given in following table:

<table>
<thead>
<tr>
<th>Variable Description</th>
<th>Proxy</th>
<th>Variable Measurement</th>
</tr>
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<tbody>
<tr>
<td>Change in deposits</td>
<td>∆Deposits</td>
<td>=Log of current year – Log of previous year</td>
</tr>
<tr>
<td>leverage ratio</td>
<td>CR</td>
<td>=TIER-1/Weighted average assets</td>
</tr>
<tr>
<td>Leverage Ratio using risk-weighted ratio</td>
<td>CAR</td>
<td>=TIER-1+ TIER-2/Weighted average assets</td>
</tr>
<tr>
<td>Interactive terms using leverage ratio</td>
<td>CMCR</td>
<td>(CR * ∆EQT/TAt - 1)</td>
</tr>
<tr>
<td>Interactive terms using risk-weighted ratio</td>
<td>CMCAR</td>
<td>(CAR * ∆EQT/TAt - 1)</td>
</tr>
<tr>
<td>Change in equity</td>
<td>ΔEQT</td>
<td>=Log of current year – Log of previous year</td>
</tr>
<tr>
<td>Bank size</td>
<td>SIZE</td>
<td>Log of Total Assets</td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>LQDT</td>
<td>= Cash + Cash equivalent/Total asset</td>
</tr>
<tr>
<td>Fee income</td>
<td>FEE</td>
<td>=Log of current year – Log of previous year</td>
</tr>
<tr>
<td>Inflation</td>
<td>INF</td>
<td>Inflation Rate</td>
</tr>
<tr>
<td>Log of Real GDP</td>
<td>∆lnGDP</td>
<td>Change in natural log of Real GDP</td>
</tr>
</tbody>
</table>

### 3.2.2 Loan Model (LM)
LM model has 1 regressed variable and 10 regressor variables. The name of regressed is Change in loans (∆Loans) while the regressors are Leverage ratio (CR), Risk-weighted ratio (CAR), Interactive term of CR using leverage ratio (CMCR), Interactive term of CAR using risk-weighted ratio (CMCAR), Change in equity (∆EQT), Bank size (SIZE), Liquidity ratio (LQDT), Fee income (FEE), Inflation (INF), Log of Real GDP (ΔlnGDP). The model equation shows that all regressors have influence on the regressand. Following is the equation for LM model:

\[
\Delta \text{Loans}_{it} = \alpha + \beta_1 \text{CR}_{it} + \beta_2 \text{CMCR}_{it} + \beta_3 \text{CAR}_{it} + \beta_4 \text{CMCAR}_{it} + \beta_5 \Delta \text{EQT}_{it} + \beta_6 \text{SIZE}_{it} + \beta_7 \text{LQDT}_{it} + \beta_8 \text{FEE}_{it} + \beta_9 \text{INF}_{it} + \beta_{10} \Delta \text{lnGDP}_{it} + \epsilon_{it}
\]

Depiction for variables like their measurement and symbols are given in following table:

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<th>Variable Description</th>
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<tbody>
<tr>
<td>Change in loans</td>
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</tr>
<tr>
<td>leverage ratio</td>
<td>CR</td>
<td>=TIER-1/Weighted average assets</td>
</tr>
<tr>
<td>Leverage Ratio using risk-weighted ratio</td>
<td>CAR</td>
<td>=TIER-1+ TIER-2/Weighted average assets</td>
</tr>
<tr>
<td>Interactive terms using leverage ratio</td>
<td>CMCR</td>
<td>(CR * ∆EQT/TAt - 1)</td>
</tr>
<tr>
<td>Interactive terms using risk-weighted ratio</td>
<td>CMCAR</td>
<td>(CAR * ∆EQT/TAt - 1)</td>
</tr>
<tr>
<td>Change in equity</td>
<td>ΔEQT</td>
<td>=Log of current year – Log of previous year</td>
</tr>
<tr>
<td>Bank size</td>
<td>SIZE</td>
<td>Log of Total Assets</td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>LQDT</td>
<td>= Cash + Cash equivalent/Total asset</td>
</tr>
<tr>
<td>Fee income</td>
<td>FEE</td>
<td>=Log of current year – Log of previous year</td>
</tr>
<tr>
<td>Inflation</td>
<td>INF</td>
<td>Inflation Rate</td>
</tr>
<tr>
<td>Log of Real GDP</td>
<td>∆lnGDP</td>
<td>Change in natural log of Real GDP</td>
</tr>
</tbody>
</table>
3.3 Variables Definition

Change in deposit ($\Delta$ Deposits)
Money kept by depositors in banks for safekeeping is known as bank deposits. Money is deposited in different bank accounts like checking accounts, saving accounts and money market accounts. Change in loans tell us that how much more or less money is being deposited in bank’s accounts as compared to last year. In this study it is calculated as:

$$\Delta \text{Deposits} = \text{Log of current year deposit} - \text{Log of previous year deposit}$$

Change in loans ($\Delta$ Loans)
Bank uses the depositor’s funds for issuing loans. This concept in called lending which provides money to repay in future. There is a fixed time period and a certain interest rate charged on loans. Bank provide short term (1 year), medium term (1 to 5 year) and long-term loan (5 to 10 year). Change in bank loans shows that how much money bank lend more than the previous year or less than the previous year. Change in loans is calculated as:

$$\Delta \text{Loans} = \text{Log of current year deposit} - \text{Log of previous year deposit}$$

Capital Adequacy Ratio (Car)
Is the ratio that protects banks from excessive leverage, insolvency and also keeps them save from any contingency. This is the ratio of banks in relation to their current liabilities and their risk weighted assets. Risk weighted assets is considered as the measure of volume of the bank assets, adapted for risk. A reasonable amount of capital reserve ensures, the banks have sufficient enough capital to grow its business but at the same time its wealth is enough that can absorb any financial slump without getting insolvent. It is the ratio that determines banks’ ability to meet the liabilities and all the risks like operational risk, credit risk, market risk etc.
Capital adequacy ratio is defined as: $\text{CAR} = \frac{\text{Tier I} + \text{Tier II}}{\text{Risk Weighted Assets (RWA)}}$

![Fig 1. Comparison of Capitalization Ratio](image-url)
Components of Capital

**Tier I Capital:** Tier I capital has elements of the paid-up capital (common shares), disclosed free reserves like untaxed reserves, statutory reserves, Perpetual Non-Cumulative Preference Shares (PNCPS) according to the laws in force with time to time, Innovative Perpetual debt instruments (IPDI) and reserves Funds to the excess of the proceeds from the sale of the asset. It is usually referred to as essential capital to absorb risks and losses without a bank needed to stop the trade and thus ensures better protection to the depositors.

**Tier II Capital:** The Tier II capital has elements of revaluation reserves, hidden reserves, hybrid capital, general provisions and loss reserves, investment reserve account and subordinated liabilities. It is additional capital, which therefore absorbs losses at the time of liquidation and offers a lesser degree to safeguard their depositors. Tier II elements are considered regulatory capital to the degree, as they absorb risks and losses from the activity of the bank.

**Change in equity (ΔEQT)** In balance sheet it is the amount or funds contributed by stockholders. It also includes retained earnings. In margin accounts it is the value of securities. In real estate it is the difference of a property’s current market value or the amount in form of mortgage. Its equation is: Equity = Assets – Liabilities. Change in equity shows the increase or decrease in capital with respect to time. It can be calculated as: ΔEquity = Log of current year deposit – Log of previous year deposit

**Bank size (SIZE)** As the bank size is the value of all the securities or total the assets of banks. Bank size can be calculated as: Bank size = Log of Total Assets

**Liquidity ratio (LQDT)**

It includes cash in bank accounts, liquid short-term investments, assets available for sale and any other relevant amounts in balance sheet. Valued at market value on closing date. All these are easily converted in cash that’s why are known as liquid assets. This research contains liquidity ratio which is consists of cash and cash equivalents and total assets. Can be calculated as:

\[
\text{Liquidity ratio} = \frac{\text{Cash and Cash equivalents}}{\text{Total Assets}}
\]

**Fee income (FEE)** It is revenues earned by bank from depositors; the money which they are charged against their accounts. Following are the charges that generate fee income:

1. Amount charged on overdrafts
2. Non-sufficient funds fee
3. Over-the-limit-fee
4. Monthly service charges
5. Wire transfer fees
6. Account research fees
7. Late fees and more

**Inflation (INF)** Due to the change in demand and supply of money a general increase in price of goods and services is termed as inflation. In result the purchasing power for currency fall. Central bank uses monetary policy to control inflation and also to save from deflation for the smooth working of economy.

**Log of Real GDP (ΔlnGDP)** It is the monetary value of total services and finished goods that are produced in a country in a particular time period. It is calculated annually but can also be calculated on quarterly basis. It includes all public and private consumption, expenditures of government, investments and balance of payment means exports minus imports within specific country. It is the measure of overall economic activity of a nation in a broader sense.

It is calculated by using formula: \[ GDP = C + G + I + NX \]

Real GDP is calculated as: \[ \text{Real GDP} = \text{Nominal GDP} - \text{Inflation} \]

Or \[ \text{Real GDP} = \frac{\text{Nominal GDP}}{\text{GDP deflator}} \]

In this study the real GDP is taken from SBP site. And the change is calculated by taking natural log of Real GDP and then taking its change as log of current minus log of previous.

### 4. Results and Discussions

This study contains two models i.e. Deposit Model (DM) and Loan Model (LM). These two models have their own independent variables i.e. Leverage ratio (CR), Risk-weighted ratio (CAR), Interactive term of
CR using leverage ratio (CMCR), Interactive term of CAR using risk-weighted ratio (CMCAR), Change in equity (ΔEQT), Bank size (SIZE), Liquidity ratio (LQDT), Fee income (FEE), Inflation (INF), Log of Real GDP (ΔlnGDP) Change in deposits (ΔDeposits) and Change in loans (ΔLoans); and to analyze their impacts on them. To test these models empirically different kinds of tests are applied like: Descriptive Statistics, coefficient diagnostics, and Panel Data Regression Analysis. Where all these tests are applied using Eviews 9.

4.1 Descriptive statistics
These are used to explain the basic features and to measure the simple summary of the data sample. Table 1-2 shows the descriptive statistics of total and capital wise data set. From these table it is noted that the variables of low capitalized Bank are more variated then high capitalized banks. This variation of low capitalized bank is added in overall data that’s why table 1 also shows large amount of variation.

Table 3: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ deposit</td>
<td>0.024</td>
<td>0.215</td>
<td>-1</td>
<td>0.45</td>
</tr>
<tr>
<td>Δ loans</td>
<td>0.021</td>
<td>0.207</td>
<td>-0.89</td>
<td>0.47</td>
</tr>
<tr>
<td>Δ real GDP</td>
<td>0.018</td>
<td>0.014</td>
<td>0</td>
<td>0.05</td>
</tr>
<tr>
<td>Fee income</td>
<td>0.588</td>
<td>2.469</td>
<td>-0.98</td>
<td>16.93</td>
</tr>
<tr>
<td>Δ equity</td>
<td>0.006</td>
<td>0.143</td>
<td>-0.6</td>
<td>0.23</td>
</tr>
<tr>
<td>Bank size</td>
<td>11.102</td>
<td>0.616</td>
<td>9.4</td>
<td>12.07</td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>0.094</td>
<td>0.038</td>
<td>0.05</td>
<td>0.25</td>
</tr>
<tr>
<td>CR</td>
<td>0.177</td>
<td>0.171</td>
<td>0.01</td>
<td>1.12</td>
</tr>
<tr>
<td>CAR</td>
<td>0.198</td>
<td>0.175</td>
<td>0.02</td>
<td>1.2</td>
</tr>
<tr>
<td>CMCR</td>
<td>3.39E-09</td>
<td>1.62E-08</td>
<td>-2.62E-08</td>
<td>1.16E-07</td>
</tr>
<tr>
<td>CMCAR</td>
<td>3.39E-09</td>
<td>1.62E-08</td>
<td>-2.62E-08</td>
<td>1.16E-07</td>
</tr>
<tr>
<td>Inflation</td>
<td>9.979</td>
<td>4.844</td>
<td>2.37</td>
<td>20.15</td>
</tr>
</tbody>
</table>

Δ deposit, Δ loans and Fee income are highly volatile as their SD is greater then mean all other variable are normal and their mean is greater then SD.

Table 4: Descriptive statistics of capital wise categorization.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Low Capitalized</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
<th>High Capitalized</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Δ deposit</td>
<td>-0.004</td>
<td>0.243</td>
<td>-1</td>
<td>0.45</td>
<td>0.079</td>
<td>0.093</td>
<td>-0.22</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ loans</td>
<td>0.233</td>
<td>-0.89</td>
<td>0.47</td>
<td>0.086</td>
<td>0.092</td>
<td>-0.06</td>
<td>0.34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ real GDP</td>
<td>0.014</td>
<td>0</td>
<td>0.05</td>
<td>0.017</td>
<td>0.014</td>
<td>0</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fee income</td>
<td>0.249</td>
<td>0.772</td>
<td>-0.78</td>
<td>6.1</td>
<td>1.476</td>
<td>4.429</td>
<td>-0.98</td>
<td>16.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ equity</td>
<td>0.006</td>
<td>0.131</td>
<td>-0.42</td>
<td>0.18</td>
<td>0.005</td>
<td>0.17</td>
<td>-0.6</td>
<td>0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank size</td>
<td>11.241</td>
<td>0.514</td>
<td>9.67</td>
<td>12.07</td>
<td>10.739</td>
<td>0.711</td>
<td>9.4</td>
<td>11.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>0.096</td>
<td>0.041</td>
<td>0.05</td>
<td>0.25</td>
<td>0.089</td>
<td>0.027</td>
<td>0.05</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>0.116</td>
<td>0.076</td>
<td>0.01</td>
<td>0.49</td>
<td>0.337</td>
<td>0.237</td>
<td>0.1</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAR</td>
<td>0.139</td>
<td>0.074</td>
<td>0.02</td>
<td>0.51</td>
<td>0.352</td>
<td>0.254</td>
<td>0.12</td>
<td>1.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMCR</td>
<td>8.30E-10</td>
<td>2.47E-09</td>
<td>-2.71E-09</td>
<td>1.32E-08</td>
<td>1.01E-08</td>
<td>2.96E-08</td>
<td>-2.62E-08</td>
<td>1.10E-07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMCAR</td>
<td>8.30E-10</td>
<td>2.47E-09</td>
<td>-2.71E-09</td>
<td>1.32E-08</td>
<td>1.01E-08</td>
<td>2.96E-08</td>
<td>-2.62E-08</td>
<td>1.10E-07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inflation</td>
<td>9.844</td>
<td>4.896</td>
<td>2.37</td>
<td>20.15</td>
<td>10.333</td>
<td>4.725</td>
<td>2.54</td>
<td>20.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If we compare the descriptive statistics of high and low capitalized banks we can see that low capitalized banks behavior is same like overall sample and the same three variables Δ deposit, Δ loans and Fee income are highly volatile but high capitalized banks data behavior is normal as there is not much difference in mean and SD.

Table 5: Correlation analysis
Table 5 shows the correlation of the variables. From this table it can be noted that the correlation coefficient of change in equity, bank size and inflation is highly significant with change in deposit and change in loan. Some of the regressor have significant relationship to examine the strength of their relationship (Multicollinearity) we use VIF and the results of VIF for each variable is less than 1.5 that why none of the regressor is considered as multicollinear.

<table>
<thead>
<tr>
<th>Δ deposit</th>
<th>Δ loans</th>
<th>Δ real GDP</th>
<th>Fee income</th>
<th>Δ equity</th>
<th>Bank size</th>
<th>Liquidity ratio</th>
<th>CR</th>
<th>CAR</th>
<th>CMCR</th>
<th>CMCAR</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>.842**</td>
<td>-0.04</td>
<td>0.06</td>
<td>.576**</td>
<td>-.287**</td>
<td>.134**</td>
<td>.149</td>
<td>.130</td>
<td>.12</td>
<td>.12</td>
<td>.370**</td>
</tr>
<tr>
<td>Δ loans</td>
<td>1.00</td>
<td>-0.10</td>
<td>0.07</td>
<td>.471**</td>
<td>-.257**</td>
<td>.138**</td>
<td>.157</td>
<td>.139</td>
<td>.130</td>
<td>.130</td>
<td>.232**</td>
</tr>
<tr>
<td>Δ real GDP</td>
<td>1.00</td>
<td>-0.02</td>
<td>-0.03</td>
<td>-0.12</td>
<td>0.11</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.08</td>
</tr>
<tr>
<td>Fee income</td>
<td>1.00</td>
<td>0.06</td>
<td>-.182**</td>
<td>-0.05</td>
<td>0.12</td>
<td>0.10</td>
<td>.305**</td>
<td>.305**</td>
<td>-0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ equity</td>
<td>1.00</td>
<td>-0.12</td>
<td>0.12</td>
<td>0.03</td>
<td>0.03</td>
<td>.298**</td>
<td>.298</td>
<td>.298</td>
<td>.336</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank size</td>
<td>1.00</td>
<td>-0.12</td>
<td>-.200**</td>
<td>-.133**</td>
<td>-.349**</td>
<td>-.349**</td>
<td>-.349</td>
<td>-.349</td>
<td>-.182</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>1.00</td>
<td>.136**</td>
<td>.136**</td>
<td>.136**</td>
<td>.136**</td>
<td>.136**</td>
<td>.136</td>
<td>.136</td>
<td></td>
<td></td>
<td>.136**</td>
</tr>
<tr>
<td>CR</td>
<td>1.00</td>
<td>.994**</td>
<td>.221**</td>
<td>.221**</td>
<td>.221**</td>
<td>.221**</td>
<td>.221</td>
<td>.221</td>
<td>.221</td>
<td></td>
<td>.221**</td>
</tr>
<tr>
<td>CAR</td>
<td>1.00</td>
<td>.200**</td>
<td>.200**</td>
<td>.200**</td>
<td>.200**</td>
<td>.200**</td>
<td>.200</td>
<td>.200</td>
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<td>.200**</td>
</tr>
<tr>
<td>CMCR</td>
<td>1.00</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
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<td>1.00</td>
<td>1.00</td>
<td></td>
<td>1.000**</td>
</tr>
<tr>
<td>CMCAR</td>
<td>1.00</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.000**</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
<td>1.000**</td>
</tr>
</tbody>
</table>

*, **, *** Respectively significant to 10%, 5% and 1%.
Table 6: Model Estimation Results

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Low capitalization</th>
<th>High capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Δ deposit</td>
<td>Δ loan</td>
<td>Δ deposit</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.828***</td>
<td>0.859***</td>
<td>0.809***</td>
</tr>
<tr>
<td>Δ real GDP</td>
<td>-0.757</td>
<td>-0.776</td>
<td>-1.779**</td>
</tr>
<tr>
<td>Fee income</td>
<td>0.002</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>Δ equity</td>
<td>0.813***</td>
<td>0.812***</td>
<td>0.665***</td>
</tr>
<tr>
<td>Bank size</td>
<td>-0.08***</td>
<td>-0.083***</td>
<td>-0.074***</td>
</tr>
<tr>
<td>Liquidity ratio</td>
<td>0.077</td>
<td>0.076</td>
<td>0.283</td>
</tr>
<tr>
<td>CR</td>
<td>0.146**</td>
<td>-0.141**</td>
<td>-0.142**</td>
</tr>
<tr>
<td>CMCAR</td>
<td>2291306.9***</td>
<td>1630427.7***</td>
<td>9489721.2</td>
</tr>
<tr>
<td>CAR</td>
<td>-0.137**</td>
<td>0.0122</td>
<td>9432773.7</td>
</tr>
<tr>
<td>CMCAR</td>
<td>2287804.1***</td>
<td>1624845.1***</td>
<td>9432773.7</td>
</tr>
<tr>
<td>Inflation</td>
<td>0.007***</td>
<td>0.007**</td>
<td>0.001</td>
</tr>
<tr>
<td>R2</td>
<td>0.416</td>
<td>0.416</td>
<td>0.278</td>
</tr>
<tr>
<td>F-test</td>
<td>22.849***</td>
<td>22.795***</td>
<td>12.784***</td>
</tr>
</tbody>
</table>

CR, CAR, CMCAR, ΔEQT, SIZE(-1), LQDT(-1), FEE, INFL, and GDP refer to capital adequacy ratio (using leverage ratio), capital adequacy ratio (using risk-weighted ratio), interactive terms using leverage ratio, interactive terms using risk-weighted ratio, change in equity, one year lag of bank size, one year lag of liquidity, fee income, inflation rate and change in real GDP.

⁎ Significance at 1%.
⁎⁎ Significance at 5%.
⁎⁎⁎ Significance at 10%.
The results show that deposit and loan growth in both overall and high capitalized banks react positively to changes in capital (CAR or CR) but reverse in low capitalized banks. Most of the coefficients for $\beta_1$ and $\alpha_1$ for $\Delta$Deposits and $\Delta$Loans are significant and positively associated with a change in CAR. The significant, positive coefficients on $\Delta$Deposits and $\Delta$Loan provide evidence that bank loans react in the same manner as bank capital, and this supports the supply-side theory that credit behavior is particularly influenced by the level of bank capital. The positive coefficient on $\Delta$Deposits suggests that an increase in bank deposits is also influenced by changes in CAR. This result implies that deposits are the main source of funding for the banks. The positive, significant impact of CAR on lending and borrowing behavior of banks is consistent with the documented evidence [Peek and Rosengren (1995), Chiuri et al. (2002), Yudistira (2002), Schmitz (2007), Mastura et al (2013)]. This study is useful for the banking system. Firstly, bankers facing capital requirement issues can take help from this study as it guides them in choosing a certain level to be achieved in order to maintain their liquidity level and to balance their deposits and loans.

Secondly, as State Bank has function to fix a certain percentage for banks to keep a level of capital reserve with them as required by regulatory authorities. State bank can get knowledge from the experiences of banks who maintain capital at different levels and also from the issues faced and privileges they get from their circumstances. This study has certain limitation as well. Firstly, sample size is limited to Pakistan and more limited to banks’ specific industry. So, its result is only limited to banks. This phenomenon should also be studied on different industry levels and with different sample size and designs. Secondly, time period is limited to 10 years. If time is taken from 1950 to till today, then it will provide a better picture of how capital requirements change at different level and what steps should be taken by the bank and regulatory authorities. What effect Basle1 and Basle 2 have on the bank’s performance. This time frame can provide a complete information about the ups and downs of the banking industry at different steps or time frames.

Thirdly, quantitative analysis for CAR is performed. There is need of qualitative studies in order to examine the qualitative aspects of this important topic. Improved skills and management should be focused that can positively affect change in deposits, change in loans and capital requirement.

References


capital: evidence from Indian public sector banks. RBI Occasional Papers, (Summer), 1e21.


Appendixes

Table 1 List of IBs and CBs in Pakistan

<table>
<thead>
<tr>
<th>Conventional banks CBs</th>
<th>Islamic banks IBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Bank Limited</td>
<td>Meezan Bank Limited</td>
</tr>
<tr>
<td>Standard Chartered Bank</td>
<td>Dubai Islamic Bank Pakistan Limited</td>
</tr>
<tr>
<td>Soneri Bank Limited</td>
<td>Burj Bank Limited</td>
</tr>
<tr>
<td>Silkbank Limited</td>
<td>BankIslami Pakistan Limited</td>
</tr>
<tr>
<td>Samba Bank Limited</td>
<td>Albaraka Bank Limited</td>
</tr>
<tr>
<td>NIB Bank Ltd</td>
<td></td>
</tr>
<tr>
<td>National Bank of Pakistan</td>
<td></td>
</tr>
<tr>
<td>MCB Bank Limited</td>
<td></td>
</tr>
<tr>
<td>KASB Bank Limited</td>
<td></td>
</tr>
<tr>
<td>JS Bank Limited</td>
<td></td>
</tr>
<tr>
<td>Habib Metropolitan Bank Limited</td>
<td></td>
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Impact of Leverage and Risk Exposure on Financial Performance in SMEs of Northern Punjab

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ABSTRACT

Basic objective of this research was to discover the impact of Leverage on Risk and Profitability. For this purpose main focus of research was SMEs and Commercial sector of Pakistan. Leverage has three types DOL, DFL and DTL. And these three types of leverage are independent variables for this research while dependent variables of this research are ROE, ROA, ROS, GM and Risk. Further sales growth is also used as control variable in this research. Time frame for data analysis was 3 years from 2012 to 2014. Sample size for this research is 61 SMEs and Commercial sector organizations.

Secondary data was used in this research and data was collected by using different data collection methods. SPSS version 20 was used to analyze data. Linear regression analyses were used to check the significant relationship between independent variables and dependent variables. This research is limited to just SMEs and Commercial sector organization so we cannot use these results for overall industry or sectors. This research is entirely new research for SMEs and Commercial sector organizations.

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Keywords
Leverage, Risk Exposure, Profitability, Small Enterprises, Medium Enterprises and Commercial Sector Organizations.

1. Introduction

Organizations can finance their investments by using equity or debt and sometimes both equity as well as debt. Preference shares could also be used by a company. Companies’ interest rate is fixed regardless rate of return on assets and preference dividend rate is too fixed. Every company is legally obliged to pay interest amount on debts. Common shareholders receive their income after the payment of all interests, taxes and preferred dividend. In businesses, leverage could be referred as use of minor investment or small volume of borrowed money to attain superior profits (Panday, 2010). This paper examined the relation between leverage, risk exposure and profitability. Purpose of this paper is to find the influence of leverage on risk exposure and profitability of SMEs and Commercial sector organizations. Leverage could be define as use of borrowed money in business to generate more profit. Company’s measures their leverage by using leverage ratios. These measurements specify the use of fund obtained by lenders and owners. There are basically three classifications of leverage, first is degree of financial leverage, second is degree of operating leverage and third one is degree of
combined leverage. Financial leverage could be defined as a degree to which a commercial or depositor is spending the rented money. Financial leverage is an amount of how far firm practices debt and equity to back its moneys. Operating leverage could be defined as the use of large amount of fixed cost to variable cost in organizations operations or we can say use of fixed operating cost for operation of firm to generate more profit. While total leverage (DTL) could be defined as a summarized effect of both DFL and DOL on organizations profitability. Risk exposure is all about the amount of risk a person, entity or organization is facing. The potential of loss occurrence in our chosen action is risk, or we can say chances of uncertain events occurrence in future. Though, in business, risk could be define as uncertainty about returns on investments. Or we say that risk is conceivable when companies’ actual return on investment is different from the expected return on investment. But there is existence of an important concept, a business investment that shows greater level of risk it gives greater level of returns. Risk has some types: Financial risk, Price risk, Interest rate risk, Liquidity risk, Business risk, Market risk and Default risk. Profitability in common terms could be defined as the ability of any firm or business to generate profit. Profit is an amount that we left after paying all expenses from revenue of a business. Organizations measure their profitability by using different profitability ratios. These ratios determine either organization is going in profit or loss. If they are in profit then how much time it will take to payback their debts. These profitability measures also make organizations clever to develop their future strategies. If ratios show that organizations are not in profit, then it indicates that current strategies are not suitable, and there is a need to make some new strategies or make some amendments in previous strategies. Profit is final productivity for any organization if organization is not producing good profits then it has no future. It is a responsibility of financial manager to appraise profitability of firms regularly. And it is possible by computing profitability ratios (Panday, 2010). There are many profitability ratios. In this research researcher has used four profitability ratios to check the impact of leverage on level of profitability Return on Equity, Return on Sale, Return on Assets and Gross Margin.

2. Literature Review

According to earlier studies, financial leverage disturbs ultimate Operating profitability of any organization. The key purpose of this research is to explore the Influence on firms’ profitability and risk caused by financial leverage. Profitability is very important part of any business; debt to asset ratios is negatively disturbed by financial leverage (Wald, 1999). Level of the height of leverage is depend on the amount of fixed cost, high fix cost means organization is using high level of leverage (Archer, 1972). We can explain leverage as usage of rented money as an investment into business and getting a return on this investment. But on the other side a truth exists, it’s a very risky way to generate profit because companies with high leverage ratio are also called highly risky firms (Smith, 2002). Relationship between leverage and risk is mostly depends on those variables that put an impact on prices of goods economy wide, if these variables changes then they also effects the prices of goods as well as risk level of firms (Haugen, Talmo and Barnea 1987) while a study draws a conclusion that optimal leverage is a best source to reduce the level of business risk (Raymar, 1991). To measure the influence of financial leverage on shareholders return and market capitalization of automotive industry in India (Pithampur, M.P) was examined. They collect the Model of seven main motorized public businesses. The study enclosed five years duration (2006-07 to 2010-11). Results determine that there is no relationship among financial leverage and shareholders returns as well as market capitalization (Totala K Navindra; Pachori Sachchidanand, 2012). When fixed expenditures are compared with the amount which is always fluctuating such as sales (base value) of any organization, then result would not match the fraction association to that base value. This concept is normally recognized as the operating leverage (Schultz and Schultz, 1972). Firms who are highly profitable their leverage level is always low as compare to low profitable firms because they always prefer to use first their own earnings into business instead of looking for outside capital. Many researches have been directed to check the influence of leverage on profitability of companies. But according to our conclusion outside capital is always low profitable for firms because it make firms liable to pay some extra fixed costs. Performance of a firm can be described by looking at its stock price. Firms with high stock price always prefer to issue equity rather than using outside capital (Wessels and Titman, 1988). Companies must reframe their capital structure as well as capacity utilization intended for further ability in future.
Financial decisions are actually concerned with the right selection of debt and equity proportion into business model (Virani & Varsha, 2010). Organizations with small operations are less profitable as compare to large scale organizations (Weiss & Hall, 1967), (French & Fama, 1998), and (Li et al. 2012). In terms of financial matters large size organizations and small size organizations are different from each other. Small organizations gives a statement that they get less financial credit as compare to large organizations, this could be a reason for less profitability (Beck, 2008). There is an important relationship between profitability and debt/equity ratio of an organization, another finding is that when organizations try to reduce their risk level there profitability level always increases (Leonard Weiss and Hall, 1967). When company takes debt it pays interest for it and get exemption from tax that’s why companies who are highly levered save large amount of tax and generates good corporate income. However as well as level of debt or borrowed money increases company would face a higher burden of interest amount, ultimately company would suffer from default risk which would create greater cost of the debt financing (Myers, 2001). Internal financing could be gathering of finance by issuing companies own stocks into market instead of getting debt from other sources. For issuing companies stocks into market companies need accurate information they should be fully aware that when there stock prices are overpriced, because over priced stocks gives good value, companies should always sell their stock at overpriced value or fair priced value they should never sell on underpriced value (Jang and Tang, 2007). There is positive association between debt ratio and organization growth opportunity. Organization with greater cash flows seemed to use greater debt, though old organizations use higher level of long term and total debt. And operating cash flows of organizations are negatively associated with short term debts. While chances of bankruptcy of an organization are positively associated with long term debts, means higher long term debt could be the cause of bankruptcy of an organization (Dalbor and Upneja, 2002). Leverage has also an impact on shareholders returns and market capitalization. A sample of 7 companies was taken from telecommunication sector to prove this, and at the end findings showed that there is optimistic association among leverage and shareholder return but there is negative association among market capitalization and leverage (Rajni Saini, 2012). Organizations policies about working capital management, size of organization and financial leverage influence the net income level, ROA and ROE of firms (Dr. Khalaf Taami, 2012). There is low level of progressive association between capital structure of a firm and gross profit of a firm but at the same time we found negative association between a firm’s capital structure and net profit level. Capital structure also has negative association with ROA and ROI (Pratheepkanth, 2011). Capital structure influences both profitability or we can say performance of firms and risk of firms (Fetherston and Bos, 1993) earlier researchers has the same trust (Modigliani & Miller, 1963) as well as (Wessel and Titman, 1988). There is always positive association among short term debt ratio to total assets and firm’s profitability but negative relationship among long term debt ratio to total assets and firm’s profitability (Abor, 2005). A study explained the impact of leverage on profitability in Oil and Gas companies. For this concern panel data of Oil and Gas sector firms was used from 2007 to 2012. Degree of financial leverage (DFL) and degree of operating leverage (DOL) were independent variables, while Return on assets (ROA), return on investment (ROI), return on equity (ROE) and earning per share (EPS) were used as dependent variables. After the completion of regression correlation descriptive analysis study concluded that, there is positive association among DFL and ROA while negative association is among DOL and ROA. It was also mentioned in that study ROI and DFL has opposite association and correspondingly ROI and DOL also has opposite association. There is positive association among DFL, DOL and ROE. As well as we found positive association among EPS and DFL while negative association among EPS and DOL. Ultimate findings were highly leveraged organizations contains lower factor of risk and highly leveraged organizations are highly profitable (Khushbakht Tayyaba, 2013). In general a company's systematic risk must increase with the increases in its (DOL) Degree of operating leverage (Gahlon, 1981). Higher ratio of debt is the cause of positive influence on ROE. Many organizations use debt to influence their profit as well as capital (Vintilla & Georgetta, 2012). Financial performance do not positively influenced by debt financing because of no debt tax benefit. Firm’s value is negatively associated with dividends and positively associated with debts (French and Fama, 1998). Large amount of leverage enhances the industry profit rates but it also carries a large amount of risk. If leverage is high it will enhance the level of risk as well as level of profit (Bakar, 1973). When a
company takes more debt in reaction it faces high financial risk but on the other hand it will have to pay lower tax on its income. Debt contains worth if an organization generate profit up to that extent which gives a good return to shareholders. Debt is helpful for firms for future planning because interest on debt is predetermined, so when organizations make planning for their desired profit they keep in mind the margin of interest and other costs. Organizations should take debt if the return on debt is greater that the interest on debt (Rhee & Mandelker, 1984). Organizations that use their own earning in to their business rather than taking debt from other sources are always profitable organizations, because on the amount of debt from outside sources organizations have to pay interest, which will reduce the level of organization profit. Organizations profit can be determined by its stock prices. If an organization have high stock prices then they will not take debt from outside sources, they will prefer to issuance of equity (Titman and Wassels, 1988). Financial leverage has a relationship with organization performance, and organization performance is all about what is the profitability level of an organization. There is positive relationship between profitability level of an organization and organization performance. If performance increases then profitability level also increases (Akinmulegunm, 2012). Profitable businesses that are compared with non-profitable businesses have low borrowing and debt ratio, so we can say that low leverage leads towards high profitable firms and high leverage leads towards low profitable firms (Meyers, 1997). Risk that is linked with the leverage is dependent on the pricing variables economy-wide (Talmo, Haugen, and Barnea, 1987) on the other side Raymar; gave a conclusion of his studies that optimum leverage usually declines with the business risk. He additionally explains that the firms whose value is low by default they use low level of leverage, because they don’t have capacity to bear high level of risk so we can say that the firms with low level of profit or income have low leverage. While stable firms might be highly levered because they have more ability to take greater risks (Raymar, 1991). There is negative relationship between financial leverage and profitability of firms, which means highly profitable firms mostly rely on their internal sources or internal capital for operational financing (Ezeoha, 2008). Usage ratio of leverage in India is increasing day by day because of easy excess to external finance. To check the impact of leverage and adjustment cost on performance of firms a research was conducted in India. And findings of the research shows that adjustment cost has mixed impact from 24 to 54 percent, on the performance of firms. While leverage has negative impact on the performance of firms. And some control variables also have impact on performance of firms (Mahakud and Misra, 2009). Effective risk management is all about exploring new opportunities and avoiding negative economic impacts, and creates a major positive affiliation with performance of firm. Positive performance of firm automatically lower’s the level of financial leverage (Anderson, 2009). Capital structure could be define as the mixture of companies short term and long term debts as well as preferred equity and common equity, and capital structure is all about how companies’ finance its operations by utilizing its diverse sources of capitals.

In Kenya a study was conducted to examine the impact of capital structure on profitability of different companies. 48 different companies were selected which were listed at NSE (Nairobi stock exchange). Time period of study was 1999 to 2004. At the end results of the study show that there is a weak optimistic relationship among profitability of companies and capital structure of companies in Kenya (Munene, 2006). In 2010 a study was conducted on cement sector of Pakistan. After the completion of analysis findings of the study shows that there is significant inverse relationship among financial leverage and profitability of firm. Firms with low leverage have high profitability while firms with high leverage have low profitability. Findings of this study were mostly matched with previous studies such as study of Sheel 1994 as well as study of Soocheong and Eunju 2005. Findings of this study were not matching with some other studies such as study of Stulz and Larry 1995 in which they concluded that there is positive association among financial leverage and profitability of firm. Stulz and Larry selected top 20 companies of Gahan stock exchange and conducted their study on these companies. Debt cost in Ghana is lower as compare to debt cost in Pakistan, which could be the main reason of difference in the results of both studies (Nawaz, Atif and Aamir, 2015). Bata is leading retail firm in India its foot wears are very famous in India. A study was conducted on Bata in India; study purpose was to examine the relationship between leverage and profitability of firm. Key variables for this study were ROI, profitability, operating leverage, financial leverage and total leverage. And after the completion of analysis, findings of the research shows that there is positive relationship between...
financial leverage and ROI as well as operating leverage and ROI. But studies also reveal that Bata is not using optimal level of leverage. So firm should make some changes in its capital structure and should use more equity as well as borrowed money in business to get greater return on investment. More over total leverage of Bata is also correlated with return on investment of Bata, so firm should change its capital structure to enhance shareholders wealth (Ramana, 2014). Lodging industry is an important part of any countries economy, it is considered as an important indicator of profitability. So it’s important for managers to find out different ways to enhance profitability level in this industry. Small research was conducted in USA lodging industry to check the influence of leverage on RevPAR and profitability. RevPAR (Revenue per available room) is an important determinant of profitability in hotel industry. 193 lodging firms RevPAR and financial data from 2001 to 2010 were examined. Results of the research showed that there is positive association between lodging firm’s long-term debt and RevPAR but there is negative association between RevPAR and revenue. Generally there is inverse relation between debt ratio and growth opportunity but this research shows that there is no relationship between debt ratio and future growth. Research also showed that there is negative association between long-term debts and profitability of lodging firms, and the reason of negative association was use of debt more than optimal level. Means lodging firms were practicing debt more than their maximum usage boundary (Kang, 2011). In bad times there is positive relationship between operating leverage and risk level, while in good time there is negative relationship between operating leverage and risk level (Aquino, 2003). There is no association between operating leverage and systematic risk of Tehran stock exchange listed firms (Kheder Alaghi, 2011). Financial leverage sometimes positively and sometimes negatively associated with financial performance of firms in sugar industry of Pakistan (Fasih Ur Rehman, 2013). In Nigeria after analysis a research concludes that there is positive connection between return on investment, return on assets and return on equity (Nuhu Onimisi and Aliu, 2010). Experimental outcomes of a research show that there is nonlinear relation between debt to total assets and return on equity. When debt to total assets ratio increases it also increases the return on equity but as it reached to optimum level then return on equity starts to decrease. In Pakistan optimum debt to assets ratio is almost 56 percent for textile sector. This percentage shows that in Pakistan textile firms pays huge amount of their earning as fix cost on debt. Study also showed that return on equity is positively linked with sales growth while firm size has no impact on return on equity (Sana, Heman and Sara, 2015). Outcomes of a study in Sabar Dairy showed positive relationship between return on capital employed (ROCE) and DOL, DFL as well as DTL, but not significant. Study also showed positive relationship between return on equity (ROE) and DOL, DFL as well as DTL, but not significant. Generally it’s a significant model. Relationship between ROA and DOL is significantly positive. Relationship between ROA and DFL is negative and relationship between ROA and DTL is positive but not significant. At the end relationship between earning per share (EPS) and DOL, DFL as well as DTL is positive, but not significant. So the overall results conclude that Sabar Dairy has adequate use of degree of operating leverage, degree of financial leverage and degree of total leverage (J. B. Patel, 2014). A study showed that there is inverse association between Degrees of operating leverage and Earning per share, Degrees of financial leverage and Earning per share and Degrees of total leverage and Earning per share. So result concludes that debt usage will enhance the fixed cost expenses and reduce the profitability level of steel companies. If firms want to enhance profitability level then they should reduce the usage of debt in operations (V. Kalpana, 2014). A study examines growth in liquidity variables, growth in the investment opportunities, growth in assets size and growth in profitability. Study made a link of these variables with debt ratio. More over research showed that growing investment opportunities has positive relationship with long-term debt ratio and variable for assets size showed positive association with long-term debt, while assets size has an inverse association with the short-term debt. Research also revealed that liquidity and profitability variables have no relation with change in the debt size (Al Taleb and Al Shubiri, 2011).

3. Research Gap
After studying whole literature regarding concerned variables of this research and after analyzing the
previous studies data researcher found a gap. Past studies shows that leverage have both type of impacts ascendant and descendent, on profitability and risk. Previous studies are from different sectors and different time periods but this study is from SMEs and Commercial sector of Pakistan. That’s why it is a unique study. There is no study available in these sectors specifically on this topic. This research determines the impact of operating leverage, financial leverage and combined leverage on different ratios of profitability such as Return on Equity (ROE), Return on Assets (ROA), Return on Sale (ROS) and Gross Margin (GM). This paper also includes the impact of DOL, DFL and DTL on risk exposure. In this research risk is measured by taking standard deviation of ROE.

4. Methodology

4.1 Model Summary
In this research three variables are used to measure Leverage Degree of Financial Leverage, Degree of Operating Leverage and Degree of Total Leverage. Four variables are used to measure profitability Return on equity, Return on Assets, Return on Sales and Gross Margin while one variable is used to measure Risk and risk is standard deviation of Return on Equity. This research also contains two control variables first one is Sales growth and second one is Sector (Small Enterprises, Medium Enterprises and Commercial Sector). Many researchers have used these variables in their research that’s why I am using these variables in my research.

4.2. Problem Statement
Problem statement for this paper is “To study the impact of leverage on risk exposure and profitability of SMEs and Commercial sector organizations of Pakistan”.

4.3. Study Objective
Objective of this study is to check that how much impact leverage puts on risk and profitability level of SMEs and Commercial sector organizations of Pakistan.

4.4. Model

4.5. Study Significance
This is a unique study because previously many researchers have conducted research on this type of topics but their sectors of studies were different. This study is just focusing on SMEs and Commercial sector. Previously there is no study available in this sector, on this topic. Small enterprise (SEs) could be defined as, where No. of employees are up to 20 (including contract employees), and annual sales turnover is up to R.s 75 million. Medium enterprise (MEs) could be defined as, where No. of employees are from 21 to 250 for manufacturing and services enterprises while No. of employees from 21 to 50 for trading enterprises, and annual sales turnover is above than R.s 75 million to R.s 400 million.

4.6. Hypothesis
Return on Equity: \[ \text{SG} + \text{SEC} + \beta_1 \text{DFL} + \beta_2 \text{DOL} + \beta_3 \text{DTL} + \epsilon_0 \]
Return on Assets: \[ \text{SG} + \text{SEC} + \beta_1 \text{DFL} + \beta_2 \text{DOL} + \beta_3 \text{DTL} + \epsilon_0 \]
Return on Sales: \[ \text{SG} + \text{SEC} + \beta_1 \text{DFL} + \beta_2 \text{DOL} + \beta_3 \text{DTL} + \epsilon_0 \]
Gross Margin: \[ \text{SG} + \text{SEC} + \beta_1 \text{DFL} + \beta_2 \text{DOL} + \beta_3 \text{DTL} + \epsilon_0 \]
Risk: \[ \text{SG} + \text{SEC} + \beta_1 \text{DFL} + \beta_2 \text{DOL} + \beta_3 \text{DTL} + \epsilon_0 \]
4.7. Sample Size
Researcher has used convenience sampling technique to select sample size for research purpose. From all SMEs and Commercial sector organizations of Southern and Central Punjab Pakistan, our selected sample size for research purpose is 61 companies. Further among of these 61 firms 15 firms are small enterprises, 28 firms are medium enterprises and 18 firms are from Commercial sector. Time period for this research is 3 years 2012, 2013 and 2014.

4.8. Data Collection Approaches
Secondary data was collected and used in this study, for this purpose data is taken from different companies’ annual reports and financial statements, that falls in the category of SMEs and Commercial sector organizations. Data is also taken from the firm’s auditors and by make use of our personal sources as well as friends.

4.9. Empirical Results
Linear Regression Analysis were used in this research model to get outcomes. Regression analysis were applied to check impact of leverage on risk and profitability with control variable sales growth. Outcomes with control variable sales growth shows that for all three years from 2012 to 2014 there is significant relationship between DFL, DOL, DTL and ROE but it’s a weak relationship at 22.7% and no other dependent variable is showing significant relationship with DFL, DOL and DTL. In commercial sector for all three years from 2012 to 2014 DFL, DOL, DTL are showing strong significant impact on Risk at 60.3% and no other dependent variable is showing significant relationship with DFL, DOL and DTL. In small enterprises sector for all three years from 2012 to 2014 DFL, DOL, DTL are showing strong significant impact on ROE at 70.9%, ROA at 66.1%, ROS at 87.1%, GM at 71.4% and Risk is not showing significant relationship with DFL, DOL and DTL.

Regression results for 2012 commercial sector shows that DOL has strong significant relationship with Risk at 74% while no other dependent variable is showing significant relationship with DFL, DOL and DTL. Regression results for 2012 medium enterprises sector DOL is showing weak significant relationship with Risk at 22% while no other dependent variable is showing significant relationship with DFL, DOL and DTL. And regression results for 2012 small enterprises sector DFL, DOL, DTL are showing strong significant impact on ROE at 70.6%, ROA at 69.5%, ROS at 92.9%, GM at 72.8% and Risk is not showing significant relationship with DFL, DOL and DTL.

Regression results for 2013 shows that DOL and DTL have weak significant relationship with ROE at 12.9%. Regression results for 2013 commercial sector DFL, DOL, DTL are showing strong significant impact on Risk at 41.3%. And regression results for 2013 small enterprises sector DFL, DOL, DTL are showing strong significant impact on ROE at 53.5%, ROA at 47.4%, ROS at 70.1%, GM at 68.5% and Risk is not showing significant relationship with DFL, DOL and DTL.

Regression results for 2014 commercial sector DFL, DOL, DTL are showing strong significant impact on Risk at 63.4% while no other dependent variable is showing significant relationship with DFL, DOL and DTL. Regression results for 2014 medium enterprises sector DFL, DOL, DTL are showing weak significant impact on GM at 39.7% while no other dependent variable is showing significant relationship with DFL, DOL and DTL. And regression results for 2014 small enterprises sector DFL, DOL, DTL are showing strong significant impact on ROE at 87.9%, ROA at 82.4%, and GM at 69.9% while ROS and Risk are not showing significant relationship with DFL, DOL and DTL.

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Table 4.1 Outputs Summary With Control Variable-Sales Growth
5. Conclusions
Impact of Leverage on Risk and Profitability in SMEs and Commercial sector is a study that has not been attempted previously in Pakistan and this challenge has been taken up on a small sample for this study. Data of 61 sampled firms was collected from 2012 to 2014. Key variables for this research are leverage, profitability and risk. Leverage is independent variable in this research and leverage is measured by DOL, DFL and DTL. Profitability and Risk are dependent variables, profitability is measured by ROE, ROA, ROS, GM and Risk is measured by standard deviation of ROE. Causal research design is used in this research to check the effect of independent variables on dependent variables. Further this research explore the effect of independent variables on dependent variables in three different sectors small enterprises sector, medium enterprises sector and commercial sector for three different years 2012, 2013 and 2014 separately. Moreover, this research also determines combined effect of leverage on risk and profitability for all three years from 2012 to 2014 for all three sectors.

Outcomes of 2012 regression analysis with control variable sales growth showed that in commercial sector DOL has strong significant relationship with risk and in medium enterprises sector DOL has weak significant relationship with risk. Results are matched with previous study of (Rhee and Mandelker, 1984). While in small enterprises sector leverage is showing strong significant relationship with all profitability variables ROE, ROA, ROS and GM (Tayyaba, 2013). Outcomes of 2013 regression analysis with control variable sales growth showed that DOL and DTL have weak significant relationship with ROE (Vintilla & Georgeta, 2012). In 2013 commercial sector leverage is showing significant relationship with risk while in small enterprises sector leverage is showing strong significant relationship with all profitability variables ROE, ROA, ROS and GM same as it showed in 2012 (Bakar, 1973). Outcomes of 2014 regression analysis with control variable sales growth showed that in commercial sector leverage have strong significant relationship with risk. In medium enterprises sector leverage is showing very weak significant relationship with GM while in small enterprises sector leverage is showing very strong significant relationship with profitability variables ROE, ROA and GM. Results are almost similar to previous study of (Onimisi and Aliu, 2010). And outcomes of combined regression analysis for all three years and all three sectors with control variable sales growth showed weak significant relationship between leverage and ROE. In commercial sector from 2012 to 2014 leverage is showing strong significant relationship with risk while in small enterprises sector from 2012 to 2014 leverage is showing strong significant relationship with all profitability variables ROE, ROA, ROS and GM same as it showed in 2012 and 2013 (Patel, 2014). And in medium sector from 2012 to 2014 leverage is showing insignificant relationship with risk and
profitability both (Navindra and Sachchidanand, 2012).

So researcher draws a conclusion that overall leverage has weak significant impact on profitability of firms in SMEs and commercial sector and has no significant impact on risk of firms in SMEs and commercial sector. But if we talk about results sector wise then leverage has a strong significant relationship with Risk in commercial sector and leverage has very strong significant relationship with profitability of firms in small enterprises sector while leverage has no impact on risk and profitability in medium enterprises sector. On the whole because of weak impact of leverage on risk and profitability I conclude that there could be some other factors those have strong impact on profitability and risk which are not part of this research. There could be another reason, Mostly in Small, Medium and Commercial sector organizations owners prefer equity based financing rather than debt based financing that’s why this study is showing low significant relationship between risk, profitability and leverage.

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How Companies Value Stock Prices After Going Public: Evidence from Emerging Pakistan Economy

Muhammad Aamir, Hafiz Muhammad Nadeem, Khawer Naheed, Allah Bakhsh Khan

1. Introduction

It is said that an initial public offering constitutes hurdles relating price discovery (Engelen & Van Essen, 2010). It is not sure in market relating quality of initial public offering of firms while the firms that issue shares unaware about demand of their shares. Issuer firms therefore entrust the decision of offer price for investors that underwrites the initial public offering (Bancel & Mittoo, 2009). Underwriters have muscular incentives to build their repute as expertise of valuation and endorse that offer price reflects basic value. In our empirical analysis, we will elaborate how underwriters can make more authenticated valuation through specific valuation methods.

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Keywords
Efficient market hypothesis, Initial public offering, Karachi stock exchange, Market return, Investment.

ABSTRACT
The purpose of this study is to estimate the accuracy and authenticity of valuation methods used by underwriters to set preliminary offer price. This study uses complete universe of all newly listed companies during 2000 to 2015 on Pakistan Stock Exchange. We analyzed the determinants of the Initial Public Offering (IPOs) by comparing the ex-ante and ex-post characteristics of IPOs firms. Binary logistic model was used for evaluation of variables. Results revealed that underwriters use four different valuation methods to set IPO preliminary offer price namely as dividend discount model (DDM), discounted cash flow method (DCF), peer groups multiple (MULT) and economic valuation method (EVA). This study used Binary Logistic Regression model to estimate the accuracy and authenticity of these valuation methods. Results of this study can help the portfolio managers for constructing their effective portfolio strategies. This study also helps to highly levered firms to get cheaper long term capital by going public. This study is also important for underwriters to counter check their valuation patterns for IPO firms.

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Dividend discount model is usually used in so many cases. The contemporary research elaborates that underwriters select the valuation method on the basis of firm characteristics. Modern literature usually give the priority to dividend discount model to check the values of those firms which go public when overall previous market returns are so low and when companies take a decision about their future earnings large portion as dividend. The weights which were assigned by the underwriters to the value estimates to their fair values also depend on the different factors of the firm and overall stock market position.

Penman (2001) described that investment is considered as loss in dividend discounted cash flow method and freely cash flows totally fail to recognize the value that does not include the cash flows. In addition, highly growing firms keep their profits as savings rather than paying dividend. It is difficult for large firms to value firms because large part of their profit comes from growth options. Dividend discount model and discounted cash flow methods cannot incorporate the value of these growth opportunities. Bancel & Mittoo (2009) elaborate that many financial analysis view dividend discount model more useful to value stable, high dividend paying stock. They predict that underwriters most likely to use dividend discount model when setting the fair value estimates for firm.

2. Literature Review
Deloof et al (2009) revealed that although the underwriters use different methods to value an IPO but DCF is the most appropriate method for IPO valuation. Their findings suggest that use of dividend discount model would result in underestimating the value of an IPO, while DCF produced unbiased results. The results also demonstrated that final offer price of an IPO set by an underwriter is closer to the stock market price as compared to pre IPO value estimates. They concluded that most appropriate valuations can be obtained by using multiples valuation based on post-IPO forecasted earnings and cash flows as compared to multiple valuations in the IPO year.

IPO firm’s valuation obtains limited attention in the literature. Kim and Ritter (1999) elaborated how U.S firms offer prices are set in the market by using the multiples among recent IPOs from the same industry. They described that in valuation accuracy forward multiples of price earnings dominates the current price earnings multiples. The multiples valuation and discounted cash flow method also falls in the same field of accuracy of the valuation. Lie & Lie (2002) described that discounted cash flow method perform at least as well as the multiples method in valuing leverage buyouts. They further elaborated that discounted cash flow valuation method and other valuation techniques are the similar results in the field of bankruptcy court cases.

Theoretical properties of several valuation frameworks have been studied by the valuation theorists. Penman (1998) elaborated the accuracy of the dividend, cash flow and accrual earnings equity value estimates. They described that values estimates focus on accrual earnings is more reliable than the estimates calculated from free cash flows.

2.2.1 Valuation Model Choice
It was argued by lot of authors that multi period valuation models based on discounted cash flows or residual income are best for single time period multiple valuation approaches, which shows less accuracy in valuation (Copeland, 2000). Empirical evidence on valuation models used by professional investors and financial analysts stands in contrast to the theoretical superiority of multi period valuation method.

2.2.2 The Accuracy of Valuation Method
Lot of studies examined the accuracy of valuation models. Few studies focused on multiple valuation method and provided the different results but multiple valuation method is the best for valuation accuracy It was compared by different researchers that choice of firms affects the accuracy of the valuation multiples. Profitability, growth and risk are the most important factors in peer group of selection and harmonic mean provides the best results (Kaplan and Ruback, 1995).
3. Methodology
3.1 Selection of Valuation Method
This section will develop the valuation model which will elaborate the choice for valuation methods regarding IPOs. This study proposes binary logit model to examine the determinants of the valuation methods.

3.1.1 Size of Firms
It is easier for larger firms to value rather than small firms because large firms forecast future cash flows and dividend in a better way as compared to the small firms (Ritter, 1984; Beatty and Ritter, 1986). This makes the possible use of dividend discount model and discounted cash flow method. We will measure the size (LnSIZE) of the firm by taking the natural log of the assets which are reported in the balance sheet of the company in the most recent financial year before taking the decision of going public.

3.1.2 Log (1+age)
The log of this variable (1+age) will be used as a proxy for risk. As it is said how much long the age of firm will lead the risk level as much lower (Ritter, 1984). He further described that calculation of future cash flows are so difficult and dividend for newly firms without preparing the previous track records as most of the time their values are represented by relying on future growth rates which varies from firm to firm. Forecasting of future cash flows and dividends is difficult for small size of firms.

3.1.3 Assets of the Firm
Accounting is a better way to capture the value of the firm’s tangible assets as compared to the intangible assets. This increases the value of accounting methods such as the valuation methods. We will measure assets in place through the ratio of property, plant and equipment and all the total assets at the end of year preceding the IPO. In a common sense, accounting is considered to be a better way in capturing the value derived from tangible assets as compared to intangible assets.

3.1.4 Firms Growth
For proxy of growth opportunities, we employ the forecasted sale growth of the recent year. Short term free cash flows are negative for rapidly growing firms due to lower cash flows as compared to their capital investment. In discounted cash flow method, investment is loss of value and free cash flows fail to value the firm. Penman (2001) described that investment is considered as loss in dividend discounted cash flow method and freely cash flows totally fail to recognize the value that does not include the cash flows. In addition, highly growing firms keep their profits as savings rather than paying dividend.

3.1.5 Dividend Payout
Future dividend payouts will be disclosed through this ratio. High quality firms have better credibility as compared to the low quality firms. Bhattacharya (1979) showed that only high quality firms can use the dividend payout to show their quality to the investors. From their theoretical point of view, dividends are very costly and easily observable that low quality firms are unable to reproduce.

3.1.6 Dividend Discount
It is difficult for large firms to value firms because large part of their profit comes from growth options. Dividend discount model and discounted cash flow method cannot incorporate the value of these growth opportunities. Existing literature elaborate that many financial analysis view dividend discount model more useful to value stable, high dividend paying stock. They predict that underwriters most likely to use dividend discount model when setting the fair value estimates for firm.

3.1.7 Standard Deviation
Rising aggregate stock market provides the great opportunities. For this purpose we will include this
variable of market index return between 90 to 95 interval trading days five days before the 1st day of IPO. Time period with high stock returns before IPO increases the usage of discounted cash flow method. Roosenboom (2007) included standard deviation of daily market index returns between 90 trading interval from 95 trading days before and 5 trading days before the IPO firms first day of trading into their model. They described that investors are mostly uncertain about the basic value when the overall market volatile. Underwriters may cater the investors demand to get more information about the basic value by valuing the IPO stock using direct valuation methods. Standard deviation of daily market index return will also be used between 90 to 95 days and 5 days before the 1st day of IPO. Investors are unknown about the basic value when market is volatile.

3.1.8 Underwriters Repute
Underwriter reputation will be used as a control variable. Underwriter market share will be used as proxy. Underwriter market share will show the percentage of market share.

Model:

$$\text{MULT}_i = \beta_0 + \beta_1 \ln\text{SIZE}_i + \beta_2 \ln(1 + \text{Age}_i) + \beta_3 \text{AIP}_i + \beta_4 \text{PROF}_i + \beta_5 \text{GROW}_i + \beta_6 \text{DIV}_i + \beta_7 \text{TECH}_i + \beta_8 \text{MRET}_i + \beta_9 \text{SD}_i + \beta_{10} \text{UREP}_i + \varepsilon_i$$

MULT=1 if underwriter uses Dividend Discount Model (DDM) and 0 otherwise, and so on for DCF, EVA, OTH separately as well.

Where

- $\ln\text{SIZE}$ has calculated through natural logarithm of total asset in the balance sheet of most recent financial year before going public.
- $\ln(1+\text{Age})$ this has used as ex-ante proxy for risk.
- AIP AIP has calculated through ratio of property plant and equipment and total asset at the end of the year.
- PROF PROF has calculated through price earnings multiples.
- GROW calculated through forecasted sales growth.
- DIV calculated through dividend paid / total income.
- TECH calculated through technology level of companies.
- MRET calculated through discounted cash flow method.
- SD calculated through standard deviation of daily market index return.
- UREP calculated through underwriter market share.

4. Results and Analysis
This section will explain the results and analysis of descriptive statistics and regression models through various econometric techniques. E-views and SPSS software has been used to estimate results of these models.

4.1 Descriptive Statistics
This section will elaborate the descriptive statistics of variables used by the Binary Logit model.

Table 1: Descriptive Statistics of Variables used in Binary Logit Model

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>St. Dev</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIZE</td>
<td>39,316 ml</td>
<td>2,283 ml</td>
<td>718,943 ml</td>
<td>64 ml</td>
<td>1194 ml</td>
<td>80</td>
</tr>
<tr>
<td>AGE</td>
<td>13.0565</td>
<td>6.5000</td>
<td>66.0000</td>
<td>0.5000</td>
<td>15.6453</td>
<td>80</td>
</tr>
<tr>
<td>GROW</td>
<td>63.7366</td>
<td>34.8250</td>
<td>640.7800</td>
<td>-90.4300</td>
<td>104.7067</td>
<td>80</td>
</tr>
<tr>
<td>PROF</td>
<td>-3.1088</td>
<td>7.3632</td>
<td>347.0000</td>
<td>-638.0000</td>
<td>114.5484</td>
<td>80</td>
</tr>
<tr>
<td>DIV</td>
<td>9.4341</td>
<td>0.0000</td>
<td>89.5448</td>
<td>0.0000</td>
<td>21.6585</td>
<td>80</td>
</tr>
</tbody>
</table>
Table 1 elaborates the descriptive statistics of independent variables used in Binary Logit model. The size of the company plays a vital role for any IPO firm’s evaluation. Size is measured through net turnover of IPOs firms before going public. The mean value of size is 39,316 million. The value of standard deviation is 1.194 million which represents the more volatility from their mean values. AGE defines that how much older the firm is. We measure company age as the number of years the firm has been in existence prior to its IPO. The mean value of these firms is 13 years. Property plant and equipment are very much important for any firm to get a high returns in the market. The average of AIP (20%) defines that property plant and equipment are twenty percent of the total assets and it also indicates that firms are less capital intensive. The value of SD is 2.6 which represent the consistency of the Pakistani firms with respect to usages of more labor than automation involved in their business operations. Profitability also defines the firm’s good position in the market and for dividend distribution of any firm. The results of descriptive statistics show that the profitability of the firms is in negative and few firms announced the dividend. The average 9% of dividend elaborate that few firms distribute of any firm. The results of descriptive statistics show that the profitability of the firms is in negative and few firms announced the dividend. The average 9% of dividend elaborate that few firms

### 4.2 Multivariate Regression Models

This section elaborates the regression results of Binary Logit Model by taking different valuation methods as dependent variable such as Dividend Discount Model (DDM), Discounted Cash flow method (DCF), Market/Peers Multiples (MULT), Economic Value Added (EVA) and OTHERS to estimate the final results of this binary logit regression model. E-views and SPSS have been used to estimate the results.

Table 2: BINARY LOGIT MODEL

| Dependent Var: | DDM | | | 
|---|---|---|---|---|---|---|
| | Coefficient | t-statistic | Prob | Coefficient | t-statistic | Prob |
| C | -0.7453 | ** 1.6846 | 0.0353 | 0.1385 | 0.7875 |
| SIZE | 0.0964 | ** 2.4616 | 0.0164 | GROW | -0.0001 | -1.4991 | 0.0138 |
| AGE \_\_\_ | -0.0617 | ** -2.0173 | 0.0053 | GROW | -0.0001 | -0.3123 | 0.7558 |
| AIP | 0.0005 | ** 3.8793 | 0.0003 | AIP | 0.0005 | *0.0358 | 0.9715 |
| DIV | 0.0002 | 0.1563 | 0.8762 | DIV | 0.0002 | 0.8762 | 0.8762 |
| TECH | 0.0389 | ** 0.4904 | 0.6254 | TECH | -0.0155 | 0.0163 | 0.9715 |
| MRET | -0.0749 | ** -0.3184 | 0.7511 | MRET | -0.1252 | 0.4817 |
| SD | 0.2795 | ** 2.4644 | 0.0163 | SD | -0.0991 | 0.9128 |
| UREP | -0.2454 | -2.0173 | 0.0053 | UREP | 0.0138 | ** 0.1548 | 0.8774 |
| R-Square | 0.2695 | ** 1.8657 | 0.0124 | F-Statistics | 1.8905 | ** 1.6846 | 0.0736 |

Dependent: Multiples

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>t-statistic</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5344</td>
<td>1.2714</td>
<td>0.2079</td>
</tr>
<tr>
<td>0.0281</td>
<td>0.6423</td>
<td>0.5228</td>
</tr>
<tr>
<td>0.2571</td>
<td>** 2.1509</td>
<td>0.0353</td>
</tr>
<tr>
<td>-0.0065</td>
<td>-0.3205</td>
<td>0.7496</td>
</tr>
<tr>
<td>-0.0005</td>
<td>-0.914</td>
<td>0.3639</td>
</tr>
<tr>
<td>0.0003</td>
<td>0.5854</td>
<td>0.5602</td>
</tr>
<tr>
<td>0.0002</td>
<td>0.1563</td>
<td>0.8762</td>
</tr>
<tr>
<td>0.0389</td>
<td>** 0.4904</td>
<td>0.6254</td>
</tr>
<tr>
<td>-0.0749</td>
<td>** -0.3184</td>
<td>0.7511</td>
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<td>-0.2454</td>
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</tr>
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<td>** 1.8657</td>
<td>0.0124</td>
</tr>
<tr>
<td>1.8905</td>
<td>** 1.6846</td>
<td>0.0736</td>
</tr>
</tbody>
</table>
Table 2 represents the results of Binary Logit regression model. When MULT method used as a dependent variable, results reveal that AGE is significant at 5% level as the value of t-statistics is 2.1509. Results depict that underwriters use peer multiples when firms are mature in age. Our results are consistent with Deloof et al. (2009). SD is also measured as average returns of 60 days before going to formal listing in capital market. It is also significant at 5% level having t statistic of 2.4644. Underwriters prefer to use multiples valuation method when market sentiments are bullish and stock prices are overvalued. UREP is also significant at 5% level having the t statistic of -2.0173. No literature supports the significance of UREP by using the multiple methods. Deloof et al. (2009) explained the results by using the multiple method and described that SIZE is significant but our
results are not consistent with them as SIZE is insignificant by using the multiple method. Deloof et al (2009) described that AIP is significant by using the MULT approach but our results are not consistent with them as AIP is not significant in our study by using the MULT approach. Deloof et al (2009) explained that PAYOUTS are significant by using the MULT approach but our results are showing the contradiction with them as PAYOUTS are not significant by using the MULT approach. Lie & Lie (2002) used the MULT method and resulted that MTB is significant but our results show that MTB is not significant by using the MULT method. Keun (2006) explained that TECH is significant by using the MULT approach and in our results it is insignificant.

When we used DDM method as a depended variable, results show SIZE is significant with the t-value of 2.4616 at 5% level. Results urged that underwriters prefer to use Dividend Discount model for big firms in term of total assets. Our results are consistent with Deloof et al, (2009). DIV is significant with the t-value of 2.8793 at 1% level. DIV shows the worth of the firms which regularly issue the dividends. No literature support our results at the significance of DIV. Deloof et al (2009) used the DDM model and explained that AGE is significant but our results are not consistent with them as AGE is not significant in our study by using the DDM approach. Deloof et al (2009) used the DDM model and revealed that AIP, GROW and PAYOUTS are significant but our results are insignificant. Penman (1998) elaborated that MTB is significant by using the DDM approach but our results are insignificant in our study. SD, MRET and UREP are also insignificant in our study.

In our results SIZE and UREP are significant at 5% level with the t-values of -2.3406 and 2.1153 respectively. Yee (2002) used the DCF method for evaluation and resulted that SIZE is significant and our results are also consistent with them. He also explained the results by using the DCF method and revealed that TECH is significant but our results revealed that TECH is insignificant by using the DCF method. Yee (2002) used the DCF method and resulted that UREP is significant and our results are also consistent with them as UREP is significant at 5% level by using the DCF approach. Remaining variables AIP, GROW, DIV, SD, MRET, AGE are insignificant in our study by using the DCF approach. It was also found that underwriters use the discounted cash flow analysis when market index returns (MRET) are high. This market condition offer a window of opportunity in which investors want to get the more stocks and willing to get more cash flow and assumptions of discount rate underlying the discounted cash flow method. Table 2 report that the volatility of market index (SD) is negatively related to use of discounted cash flow model. In this situation of the market the investors are uncertain about the basic value. We do not found that underwriter use the discounted cash flow model mostly when value large firms (size), older companies (Ln (1+age)) with lower growth rates (Grow).

In our study GROW; SD and PROF are significant at 5% level with the t-values of 2.5598, 2.2939 and -2.0719 respectively by using the OTHERS approach. By grow we mean at what rate the sales are increasing of the firm. No existing literature supports our results. Bancel (2004) described that MTB and Size are significant by using the OTHERS approach. Other variables SIZE, AGE, TECH, SD, MRET, AIP and UREP are insignificant in our study by using the OTHERS approach. In our study the TECH is significant at 5% level with the t-value of 2.2658 and SD is significant at 5% level with the t-value of -2.0692.

By using the EVA as a dependent variable TECH and SD are significant at 5% level in our study. No literature support our results at the significance of TECH and SD. Yee (2002) used the EVA approach and resulted that AGE is significant but our results are against them as AGE is insignificant. Other variables AGE, AIP, UREP, MRET and PROF are insignificant in our study by using the EVA approach and results are consistent with them.

5. Summary and Conclusion
The literature about the valuation of firms is particularly shorter to about that how underwriters value the shares of those firms which go public. The major purpose of our study is to fill up this gap. We got the valuation report from different underwriters that give us access to make an analysis for the sample
of 80 IPOs from the period of 2000-2015. The purpose of our study is to answer the three research questions. (i) How does underwriter lay down the preliminary offer price by using different valuation methods? (ii) How underwriters check the accuracy and authenticity of the different valuation methods. (iii) Does underwriter meet the ambition of issuer firm to achieve the highest value while ensuring an optimistic start of secondary trading and short run after market performance?

It was documented that underwriters mostly use the multiple valuation method, dividend discount model, discounted cash flow method to value the IPO firms. Economic value added method has less usage by underwriters to value the equity of the IPO firms. Results depict that underwriters use multiple methods for the valuation of older firms when their firms are underwritten by reputed underwriters. Dividend discount model is suitable to value the firms which are highly profitable and firms which regularly issue the large part of their earnings as dividends. Discounted cash flow method is suitable for the large size firms and highly reputable underwriters. Economic valuation method is used by the underwriters to value the firms which are technologically advanced firms and those firms which have the high returns in the market. Others approach is used by the underwriters for those firms which are highly profitable.

References


Impact of Human and Social Capital on Economic Development in Pakistan: Empirical Evidence from Primary Data Analysis

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ARTICLE DETAILS

ABSTRACT

This study examines the impact of human and social capital on economic development in Pakistan by employing empirical evidence from primary data analysis. The survey was conducted in Multan District based on the household concerning questionnaire. The results conclude that age, on job training, area of residence, public health units, and work experience have positive and significant impact on economic development, while norms of the society and gender have negative impact on economic development. In other words, it is empirically evident from the analysis that human and social capital has strong impact on economic development. Therefore, there is an ardent need to bring the sustainable changes in human and social capital for inclusive growth and economic development in Pakistan.

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1. Introduction

In the modern world no country is able to attain the goal of economic development without investment in human and social capital. In developing countries a huge number of citizens live under the poverty line. In order to remove poverty from the developing countries, investments must be increased in human development to remove poverty. Improve the basic facilities such as education, health, safe drinking water to increase the living standard of the people. The goal of economic development cannot be achieved without increasing investment in human capital and they are closely linked to each other. The social interaction of the people is also important in the society and they connect each other in different sectors of the society. It is only possible with the help of social capital which are helpful in achieving the desired goals.

Human capital works as an engine to achieve the goal of economic development in any country. In the modern world human beings are considered as the most significant positive feature of the nation. Human capital is helpful to increase the knowledge, skills, which are helpful to get better employment opportunities and to increase the living standard of the people. No country achieves the goal without increasing investment in human and social capital. Educated and healthy people play an essential part in the economic development of the nation. So investment in both these sectors must be increased to achieve the desired goal.

With the passage of time, the importance of human and social capital is increasing day by day in the
under developed countries of the world. The investment in social capital is helpful to increase the trust level among the people in the society. Different financial institutions of the world like IMF and World Bank also give weight age to social capital. Social capitals are also helpful to increase the economic growth.

Social ills of the society can be removing by increasing investment in social capital. Social interaction is important for the development of particular area. Social interaction tells us about the norms and other cultural activity of specific area. In under developed countries more than fifty percent of the population is living in rural area and they are mostly engaged in agricultural and dairy industry. Social capital is helpful in these areas because people are socially connected with each others. Social capital is helpful to enhance the hope intensity which is helpful in raising the creative ability of these areas. They form different co-operative societies which help small farmers and helpful in overall production of agricultural sector. In the same way public servant also form their social groups which are helpful in public administration.

By increase investment in education sector literacy rate of the country can be increased. It is the duty of the administration to give better health and education services to everyone in the country. There is a positive and significant effect of investment in human and social in the society.

2. Literature Review

Phillips & Massey (2000) examined that huge amount of people migrated from Mexico to USA. Data is used from 1987 to 1994 in this research. Logit model is used to obtain the results. The finding shows that 58 percent of working people move to United States of America. The significant store of immigration precise to human capital was there among the public. 10 percent of the citizens are qualified for the lawful migration to the US. The human and social capital were formerly accumulated in Mexico will provide as engines of accumulation exit for the time to come.

Bosma et al (2004) said that investment in human and social capital increases the skills and abilities of employees. Primary data is used in this research and got data through questionnaires. Logarithm model is applied to find out the results. The finding tells us that human capital persuades performance measures. Social capital is also helpful to increase the performance. The main goal is to achieve growth and provide more opportunities to common people.

Khan et al (2005) said that in the last two decades, the performance of Pakistan economy is much better as compare to other developing countries. Data from year 1980 to 2002 is used in this research. Cobb-Douglus production function is used to obtain the results. The finding tells us that growth rate is 5 percent is much better that 72 other countries. But capital growth is less than 1 percent. Investment in both the private and public must be increased to develop institutional structure. More investment is required to improve education facilities in the country.

Casey & Christ (2005) elaborate that due to investment, in social capital economic performance of some areas are high in these areas. Data from 1972 to 2002 was used in this research. The OLS model is used to get the results. Finding tells us that reflect on beside human, physical capital and other factors; social capital was neither an economically, nor statistically significant fact of state output expansion and service. Investment in social capital is helpful in economic development of the country.

Khilji (2005) elaborate that 85 percent of the people live in rural areas and 66 percent are connected with agriculture sector. Data from 1951to 1992 is used. Increase in investment is helpful for the industrial development of the country. The goal of economic development cannot be achieved without investment in human capital. Finding tells us that there is well-built association among economic development and human capital. There is negative effect of increase in population on the resources of the country.

Mamuneas et al (2006) said that increase in education level is helpful in increasing income level. Data
from 1971 to 1987 was used. Coefficient semi parametric model is used to estimate the results. The finding of the research tells us that human capital growth has less advantageous effect on output. The benefit is lower for developed countries and higher for developing countries. Inference of productivity stretch was low for developing countries.

Nasir (2002) elaborate that increase investment in human capital are helpful to increase the productivity in the country. This research used primary data. PIHS survey is used to collect information in 1995-96. Due to increase in education level the income of the people increase. OLS is used to get the result. The finding tells us that earning level increases with the increase in education level. Male earn more as compare to female at all levels. Education is the key to increase the economic development in developing countries.

Neira et al (2009) investigates that there is strong link between economic development and social capital. There is slam relationship among fiscal capital and human. Development is not possible without investment in social capital. Data from 1980 to 2000 is used in this research. OLS is used to obtain the results. Finding tells us that there is constructive connection between social capital and economic growth in Europe Union.

3. Data and Methodology

Primary data is used this research. Survey is conducted to get important information related to variable that are connected with human and social capital on economic development in Pakistan. To, examine the relationship between human and social capital formation on economic development. The specified model has been analyzed by employing the method of Ordinary Least Squares (OLS). Log of per capita income is used as dependent variable while AGE, SQAGE, GENDER, NORMS, HHS, JT, TEA, PHU, AH, TWE are independent variable for our model. Regression error in these models will be tested for autocorrelation with the help of Durbin Watson (DW) test statistic.

4. Explanation of variable used in the research

Many factors are connected with the human and social capital in Pakistan. In this research we consider variables which are based on literature and theory. The clarification of variables and their hypothetical impact are described as follows:

Per capita income (PCI)
In this research we use per capita income as dependent variable. Per capita income tells us about the purchasing capacity of the people. Per capita income tells us regarding the economic circumstance of the country. High per capita income shows strong economic condition and low per capita income shows that county in under developed. Purchasing power of the people depends directly on the per capita income. Increase in per capita income help to increase the purchasing power of the common people and vice versa.

Age
Age is considered as the most influencing variable in human capital. Productivity of the individual is linked with age. Young people work more effectively as compare to old people. On the other hand the increase in age, experience of the individual increase. Experienced person make better decision. The square of age is also used in this research. The second derivative of age is negative which shows that after specific age level productivity of the individual decreased. Age square is added to make non linear function.

Total Education Acquired
The impact of education is very significant in the growth procedure of the country. No state is able to attain the goal of economic expansion without investment in education sector. Education level is direct linked with the income level. Highly qualifies person make better decision in all the fields. Output is directly linked with year of schooling. Highly educated person get better job as compare to low educated person. Education level is divided in different sectors in Pakistan.

Gender
Gender is considered as independent variable in this research. Income level is also affected due to
gender. Female has less opportunities of job as compare to male in developing countries. Male earned more as compare to female in developing countries. Fewer predilections are giving to female in all the fields in developing countries. Most of the female in under developed countries work in agricultural sector and their productivity are also low as compare to males.

Norms
Norms is considered as the most important variable of social capital. We use norms as independent variable in this research. Norms tells us the overall deeds of the society. Norms vary from place to place. Social norms can be obligatory from end to end permit or casually from side to side body language and nonverbal commutation.

Household size
The household size is closely associated with the development of specific area. In this research we use household size as an independent variable. As the house hold size increase less resources is available to family members. If the household size of the family is low more resource is available to family members.

On Job Training
Another important variable of this research is on job training. Training section during the job is also considered as independent variable in this research. Training section is helpful in increasing the creative ability of the individual. Income level is also increased due to on job training.

Public Health Unit
Health is considered as the most important variable of human capital. Better health facilities are helpful to increase the productive capacity of the people in the society. Community health services in the area give better and cheap health services to common people in the surrounding. It is the liability of the state to offer superior health services to everybody in the area.

Area of House
Area of house also tells us about the living standard of the people. Area of house is directly linked with the development. People with more resources live in big villas. Increase investment in real stat is directly connected with the economic development.

Total Work Experience
One other important variable in this research is total work experience. Work experience increases the performance of the individual. Experienced person make better decision in favour of the organization. We also use square of total work experience to make it non linear function. The second derivative of total work experience is negative. Working ability of the experienced staff increased which are helpful to increase productivity.

5. Model Specification
Two different models are used to get the impact of human and social capital on economic development in Pakistan. In model number 1, log of per capita income is a dependent variable while AGE, GENDER, NORMS, HHS, JT, TEA, PHU, AH are independent variables. On the other hand in model number 2 log of per capita income is used as dependent variable while TWE, GENDER, NORMS, HHS, JT, TEA, PHU, and AH are independent variables. Econometric model of the selected variable used in this study is given as follows:

Model 1: log PCI = $\alpha_0 + \alpha_1$ AGE + $\alpha_2$ age sq + $\alpha_3$ gender + $\alpha_4$ norms + $\alpha_5$ HHS + $\alpha_6$ JT + $\alpha_7$ TEA + $\alpha_8$ PHU + $\alpha_9$ AH + $\epsilon_i$

Model II: log PCI = $\alpha_0 + \alpha_1$ TWE + $\alpha_2$ TWE SQ + $\alpha_3$ gender + $\alpha_4$ norms + $\alpha_5$ HHS + $\alpha_6$ JT + $\alpha_7$ TEA + $\alpha_8$ PHU + $\alpha_9$ AH + $\epsilon_i$

Where

<table>
<thead>
<tr>
<th>Log PCI = log of Per Capita Income</th>
<th>AGE = Age</th>
<th>GENDER = Gender</th>
<th>NORMS = Norms</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHS = House Hold Size JT= On Job Training TEA= Total Education Acquired PHU= Public Health Unit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AH= Area of House TWE= Total Work Experience</td>
<td>$\epsilon_i$ = Error Term</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Results and Discussions
In this segment we will present the econometric and statistical data analysis. Descriptive statistics tell us about the main quantitative features of the data used in this study. This will give us the simple summaries about the data. Following table provide the detail of descriptive statistics of the variable of our models.

Table: 1 Descriptive analysis of the variable of both the models

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>JT</th>
<th>AGE</th>
<th>PCI</th>
<th>HHS</th>
<th>NORMS</th>
<th>PHU</th>
<th>AH</th>
<th>TEA</th>
<th>TWE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.93</td>
<td>0.45</td>
<td>35.5</td>
<td>9034.6</td>
<td>5.12</td>
<td>0.99</td>
<td>0.59</td>
<td>12.9</td>
<td>12.6</td>
<td>11.8</td>
</tr>
<tr>
<td>Median</td>
<td>1</td>
<td>0</td>
<td>34</td>
<td>7500</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Maximum</td>
<td>1</td>
<td>1</td>
<td>65</td>
<td>56000</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>40</td>
<td>21</td>
<td>40</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>2500</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Std.Dev</td>
<td>0.26</td>
<td>0.49</td>
<td>8.71</td>
<td>6271.5</td>
<td>1.49</td>
<td>0.08</td>
<td>0.49</td>
<td>8.6</td>
<td>4.39</td>
<td>8.6</td>
</tr>
<tr>
<td>Skewness</td>
<td>-3.32</td>
<td>0.25</td>
<td>0.79</td>
<td>4.09</td>
<td>0.34</td>
<td>-11.1</td>
<td>0.39</td>
<td>1.71</td>
<td>-0.96</td>
<td>1.71</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>11.97</td>
<td>1.06</td>
<td>3.41</td>
<td>26.39</td>
<td>3.86</td>
<td>123.01</td>
<td>1.15</td>
<td>5.69</td>
<td>3.32</td>
<td>5.69</td>
</tr>
<tr>
<td>Observation</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

Detail descriptive analysis is carried out in table 1. The descriptive statistic show that the normal of age is 34 with standard deviation of 8.7. Gender is 0.928 with standard deviation of .25. The average for on job training is 0.44 with the standard deviation of 0.49. The average for house hold size is 5.12 with standard deviation of 1.49. The average for the norms is .99 with standard deviation of .08. The average for the per capita income is 9034.5 with standard deviation of 6271.4. The average total education acquired is 12.5 with standard deviation of 4.38. The average of total work experience is 11.7 with standard deviation of 8.27. The average of area of house is 12.8 with standard deviation 8.5. The average of public health unit is 0.59 with standard deviation of 0.4.

Correlation coefficient tells us about the degree of linear connection among the two variables. The table of correlation matrix shows all possible correlation coefficients between a set of variables. Following table give us detail of correlation matrix of the variables used in our model.

Table: 2 Correlation Matrix of both the models.

<table>
<thead>
<tr>
<th></th>
<th>AGE</th>
<th>AH</th>
<th>GENDER</th>
<th>HHS</th>
<th>JT</th>
<th>NORMS</th>
<th>PHU</th>
<th>TWE</th>
<th>TEA</th>
<th>LPCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AH</td>
<td>0.29</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GENDER</td>
<td>0.09</td>
<td>-0.04</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HHS</td>
<td>0.46</td>
<td>0.34</td>
<td>-0.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JT</td>
<td>-0.19</td>
<td>-0.09</td>
<td>0.16</td>
<td>-0.16</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NORMS</td>
<td>0.11</td>
<td>0.08</td>
<td>-0.03</td>
<td>0.09</td>
<td>0.08</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHU</td>
<td>-0.13</td>
<td>-0.26</td>
<td>0.02</td>
<td>-0.11</td>
<td>0.33</td>
<td>0.02</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWE</td>
<td>0.91</td>
<td>0.29</td>
<td>0.17</td>
<td>0.42</td>
<td>0.32</td>
<td>0.11</td>
<td>-0.15</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEA</td>
<td>-0.23</td>
<td>-0.09</td>
<td>0.17</td>
<td>-0.22</td>
<td>0.54</td>
<td>-0.03</td>
<td>0.29</td>
<td>-0.48</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>LPCI</td>
<td>0.11</td>
<td>0.23</td>
<td>-0.09</td>
<td>0.21</td>
<td>0.37</td>
<td>-0.03</td>
<td>0.29</td>
<td>0.01</td>
<td>0.49</td>
<td>1.00</td>
</tr>
</tbody>
</table>

The results tells us that no severe issue of multicollinearity in this table. As we know that little multicollinearity always exist, but there is no issue of multicollinearity in this models. All zero order correlation are no so high.

Table 3 table of result of model I

Dependent Variable: LOGPCI
Method: Least Squares
Sample (adjusted): 1 250
The result of the research show that age, on job training, area of house, public health units significant variables in this research. These entire variables are significant at 1 percent level. The result shows that total education is exceedingly significant variable and is helpful to increase the income to people of Pakistan. This is the key point of our research that increases in education increase the income level in Pakistan. The coefficient of TEA is .05. The result shows that due to change in 1 year of schooling will increase income level by 5 percent and it will increase the economic development process. Coefficient of PHU is also significant and positive effect. On job training boost the capability, skills and effectiveness of the person. Coefficient of AH is 0.02 which is highly positive and significant and has positive effect on the economic development of the area. Another important variable in this research is age. Coefficient of age is .06. Due to one year increase in age will increase income by 6 percent. The sign of HHS is negative which shows that with the increase in family members, fewer resources are available to family members. It is according to the results of the previous research. There is a negative link among family size and income level. Norms and gender is insignificant variables in this research. Per capita income is not affected if people do not observe the norms of the society. Gender discrimination exists in our society. Males give preference in all the fields in our society. Most of the women are working in very low grade jobs. On the other hand mostly women are housewife in our society. We also include the age square in this research. The sign of age square is opposite to age which shows that after certain age limit working ability of the individual decreases. So in mature age the level of income decreases.

Table 4: table of result of model II

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>8.32</td>
<td>0.29</td>
<td>28.93</td>
<td>0.00</td>
</tr>
<tr>
<td>Gender</td>
<td>-0.15</td>
<td>0.09</td>
<td>-1.59</td>
<td>0.11</td>
</tr>
<tr>
<td>Norms</td>
<td>-0.14</td>
<td>0.26</td>
<td>-0.54</td>
<td>0.59</td>
</tr>
<tr>
<td>TWE</td>
<td>0.06</td>
<td>0.01</td>
<td>5.89</td>
<td>0.00</td>
</tr>
<tr>
<td>SQTWE</td>
<td>-0.01</td>
<td>0.01</td>
<td>-3.84</td>
<td>0.00</td>
</tr>
<tr>
<td>AH</td>
<td>0.22</td>
<td>0.01</td>
<td>6.77</td>
<td>0.00</td>
</tr>
<tr>
<td>PHU</td>
<td>0.22</td>
<td>0.05</td>
<td>4.39</td>
<td>0.00</td>
</tr>
</tbody>
</table>

R-Square: 0.49
Adjusted R-square: 0.47
n: 250
F-Statistics: 25.03
p-value of F-statistic: 0.00
S.D. dependent var: 0.49
In model II we include the total work experience. E-views is used to find out the result of the research. The results tell us that TWE is significant and positive effect on per capita income. Coefficient of TWE is .06 which shows that one year change in experience will increase the income level by 6 percent. When number of family member’s increases income per capita decreases which shows the negative relationship exists between income level and number of family members. But household is significant variable in this research. On the other hand job training has significant impact on income level. It will helpful in increasing the ability and efficiency of individual. The coefficient of TEA is 0.06. TEA has significant and positive effect on income level. This show that one year of schooling will increase the income level by 6 percent. In the same way, the accessibility of public health unit is helpful for the economic development of specific area. It is significant variable in this research. Public health unit has also positive effect on income level. The coefficient of area of house is 0.02 which is positive and significant variable in this research and has positive effect on economic development. The result of this research is related to the past study. Gender and norms are also insignificant variables in this research. Reason of insignificance is explained in model one. Square of total work experience is negative and is opposite to total work experience. Square of total work experience in old age is negative effect.

7. Conclusion and Suggestions
The major purpose of this research is to find the empirical association among human and social capital formation on economic development in Pakistan. Survey is conducted for this purpose in Multan district in the month of November in 2016. The finding tells us that education, health facilities on job training working experience has positive impact on economic development in Pakistan. There is significant and positive effect of education, public health units on economic development. The norms of the society do not have impact on economic development. Government spent more on non productive purpose. In order to increase the pace of economic development, government must increase spending on basic facilities such as health and education to achieve the goal of economic development. Investment must be increased in education sector to provide better and better education facilities. It is helpful to increase employment opportunities for the common people. Increase the health facilities and provide more facilities in the remote areas of Pakistan. Due to better health facilities life expectancy of the people increased in Pakistan. Government provides more opportunities to increase the skills abilities of to unskilled worker. Technical education is helpful to increase the abilities of common people. It is helpful to achieve the goal of development. Government should take measures to provide on job training to staff of different department. Skill building is very important for the worker. To provide employment opportunity to educated people so they can contribute towards the process of economic development. Due to increase in prices purchasing power of the people decreases. Government should serious steps to control the prices of basic facilities such as food, education etc. Government should also take steps to control population because resources are limited and increase pressure on existing resources. Promote family planning program which are helpful in controlling the population.

References
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Predicting Bankruptcy Using Z-Score and Z Double Prime (Z”): A Study of Pakistan Stock Exchange

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1. Introduction

A corporation’s main aspiration is to setup a lucrative business for its shareholders. In today’s world where business failure is an inescapable phenomenon experienced in both developed and developing countries, the ingenuity of maintaining sustainability is something that must be inquired from today’s successful businesses. Since the last decade businesses are failing at an ever-alarming rate. According to figures by US Census Bureau of Labor Statistics in 2015, every year there are only 400,000 businesses which shows a sustainable portfolio whereas the failures are 470,000. Thus, it is pretty...
much obvious that there are not as much of businesses that show a sustainability portfolio than the
ones that confront failures around the whole corner. This figure seems just too scary. Pakistan being a
developing country is very instable from both political and economic perspectives and thus a
deteriorating sustainability profile of businesses is being observed there. This tremendous fall in the
sustainability profile of businesses is due to the fierce competition among companies in market place
followed by economic downturn. Financial chaos of 2008 has also made a sizeable contribution in
throwing the firms out of business. Thus, these corporate scandals and substantial failures during last
decennium have initiated an extended and deepened research on developing indicators for assessing
the sustainability of businesses. Even companies now are more proactive and likelier to adopt such
measures that may help them in ensuring the sustainability of their companies. Thus far, much
emphasis has been given to the significance of bankruptcy prediction models for tracking sustainability of companies, hence, to discern and pore over timely signals to the nervous lenders and
other stakeholders looking for any sign of financial distress. These models for forecasting financial
distress has potential to assess the sustainability profile of companies and their likelihood of
bankruptcy in near future.
Assessing the financial stability of a company is always a prime concern for accounting executives,
business analysts, prospective investors etc. because there are enormous corollaries for both internal
and external customers in case of financial distress of a company. Bankruptcy seems to be a big
concern for them as they are very much interested in figuring out the ins and outs of investment and to
keep track about the near future and sustainability of the firm they are eyeing to invest. Bankruptcy is
not something which immediately happen rather it is followed by a series of events. So, to be
bankrupt, a firm must be in financial distress in first place. Financial distress is actually a term of
corporate finance and is primarily used to give “early warning” to companies prior to default and,
therefore, it may be very meaningful for those who wish to protect their stakes in company. Four generic
terms stated in literature by Altman and Hotchkiss (2006) to define financial distress are failure,
default, insolvency and bankruptcy. Failure happens to be when the rate of return realized on capital
invested is considerably low than that on the same investments. Failure happens when the rate of
return realized on capital invested is considerably low than the rate prevailing on the similar
investments. And when average return is not adequate to cover cost of capital, firm is said to be
financially distressed. Default is another term akin to financial distress. It exists between debtor and
creditor when interest or principal amount is not paid within prescribed time. A more technical term
mentioned in this regard is insolvency. It is a situation in which firm is unable to maintain its liquidity
and to fulfill its promises, hence, ranked as financially distressed. And the last term associated with
distress is bankruptcy which is transpired when the net worth of firm’s assets is not more than its total
liabilities. It is a set going process borne by a company for its inability to pay the claims.
Thus, bankruptcy prediction has turned out to be an eminent research topic after Beaver (1966) and
Altman (1968) have employed financial ratios for predicting bankruptcy. Owing to this, a wide suite
of models with their respective strengths and weaknesses (Adnan & Humayon, 2006) have emerged
till date and none of them is superior to other. Therefore, despite of the availability of contemporary
options, in this study Grandfather of all i.e. ‘Altman’s Z-score’ and modified Z-score called Z double
prime Z” is used. It is also all the way different from the remaining studies because no direct
comparison has been cited between these two existing models of Multivariate Discriminant Analysis
MDA in case of Pakistan. It is actually the pioneer model of its type i.e. multivariate discriminant
analysis. It not only aids/assists in evaluating and measuring financial health of firm but serves as a
diagnostic tool too for assessing sustainability prior to distress. The purpose of this research is to test
the reliability of ratios provided in Altman Z-score model and to use these ratios in discriminating
between financially distressed and healthy companies. It is also aimed to figure out the financial
indicator which contributes the most in assessing sustainability, apart from those previously proved. It
will help the firms in shifting the focus of their efforts on that very indicator so to minimize the
chances of potential default instead of wasting their efforts on least effective indicator.
Precisely, the salient objectives of this research are;

1. To give prominence to the need of assessing the overall sustainability of firm prior to any
   looming collapse.
2. To test whether the model has ability to forecast future events with same level of accuracy as mentioned in native study as a statistical evidence (to test whether it overstates or understates the results).

3. To figure out how well the financial stability of a company can be measured vis-a-vis financial ratios used in Z-score and Z" model.

4. And to figure out the financial ratio that has the detrimental effect in leading towards bankruptcy and that can be worked onto minimizing the bankruptcy risk.

Section 2 discusses prior literature relevant to this study. Section 3 describes the research methodology to employ Altman's model. Section 4 provides the data analysis and the final section 5 examines the findings i.e. whether or not Z-score & Z" model truly predict bankruptcy.

2. Literature Review

Studies regarding the use of financial data and accounting numbers to analyze performance dates back to couple of years ago (E.I Altman & Edith Hotchkiss, 2006). The growing repercussions of business failure on economies worldwide, sparked more deepened, aggressive and dedicated researches in this domain to construct more advanced, sophisticated and powerful statistical models for forecasting bankruptcy and assessing sustainability. The upshot of all this was explosion of wide suite of statistical modelling techniques like Logit Analysis; LA (Ohlson, 1980), Probit Analysis; PA (Zmijewski, 1984), Recursive Partitioning Algorithms; RPA (Quinlan, 1986) and Artificial Neural networks; ANN (Odom and Sharda, 1990) each having its explicit assumptions and specific computational complexities. Some of them are either too confined or some are too outmoded in their forecasting ability but they also have their respective strengths and weaknesses as well (Adnan & Humayon, 2006).

However, this paper doesn’t contain an exhaustive list of all subsequent studies made in this field except a few along with modelling techniques that are familiarized till date and are also discussed in the later section.

2.1. Univariate Analysis

The first ever classical approach in this ratio analysis was made by Beaver, W. H. (1966). He used almost 30 ratios, categorizes them into a group of 6 and figured out that cash flow to debt ratio is most appropriate (Cuvakhin & Gertmenian, 2003). However, the shortcoming of his work was rooted in the type of analysis itself i.e. univariate analysis. It only accounts for single ratio at a time, so results may be vague and biased for not incorporating all ratios simultaneously. Furthermore, a single ratio can never truly reflect the overall financial status of firm. Besides this boundary values were assigned for post failure i.e. financial status of firm is misclassified always. Its limitations were realized later and there was a need to introduce a more complicated set of ratios with greater empirical applications, maximum accuracy and improved predictive ability.

2.2. Multivariate Discriminant Analysis

Multi discriminant analysis is another approach to calculate bankruptcy. It is a statistical technique very much analogous to regression analysis. By means of its multiple measurements can be aggregated to produce composite score called discriminant score, and, this discriminant score is calculated by means of regression equation called discriminant function that further helps to differentiate between two priori groups. Shortly, the objective of this multivariate technique is to maximally differentiate a sample of firms into dichotomous distinct dimensions. Here this discriminant function turns out as;

\[ Z = a + b1(X1) + b2(X2) + \ldots + bn(Xn) \]

Here; Z is discriminant score or Z-score, a is constant and b1 and b2 are discriminant coefficient and implies effect of x1 and x2 on chances of firm to become bankrupt, where x1 and x2 are independent variables or predictors.

2.2.3. Z-Score & Z” model

Though Beaver’s work was a failure but it paved the way for others to follow. Following his footsteps, Altman, E.I. (1968) just did that. He defied the worth of univariate analysis and introduces a more successful and sophisticated model called ‘Z-score model’ which outperformed the former one. He exploited 22 different financial ratios to 66 firms and categorizes them into a list of 5 variables or
ratios i.e. profitability, solvency, liquidity, sales activity and financial leverage but he did this via multivariate discriminant analysis (MDA).

This approach was used first ever by eponymous Altman, E.I., (1968) and the model thus evolved gives the best yield of its times in classifying the firms into priori groups, distressed and non-distressed, and it can correctly forecast the company’s sustainability with up to 90% accuracy prior to one year of default, with 86% accuracy prior to two years and this percentage drops sharply with longer horizons (1968).

Despite of gaining so much popularity, the Z-score model devised previously, only holds for publicly listed companies and industrial firms (manufacturing and construction) (Taffler, 1983) not for the non-listed companies and manufacturing firms (Chuvakhin & Gertmenian, 2003). So, after realizing the defects inherent in his model, Altman make adjustments in his original model to accommodate above mentioned companies as well and came up with a more refined model called Z’ model (Altman, 1995). The revised model only accounts for the first four ratios i.e. the ratio of Sales/Total (X5) was dropped out and the weights to rest of the four ratios were objectively reassigned. Due to this update, only its predictive ability increased to 94% prior to a year of default as compared to 90% in original Z-score.

2.3. Conditional Probability Models

In early 1980’s, MDA technique was substituted by other techniques like Logit analysis (LA) (Ohlson, 1980), Probit analysis (PA) (Zmijewski, 1984) etc. Hillegeist, S. A. (2004) underlines that, two econometric impediments were there in Ohlson logit model. Sample selection bias for incorporating one non-random observation for every single bankrupt company is first one. And second is the inability to account for the time variations and associated bankruptcy risk that it reflects. Probit Analysis (Zmijewski, 1984) was not proficient in assessing failure in small private enterprises. So, both of these were not much promising approaches and were not adopted much.

2.4. Recursive partitioning algorithm (RPA)

Recursive partitioning algorithm (RPA) is another statistical technique in which non-parametric sampling is used. Nevertheless, due to two limitation of RPA one being a forward selection method whereas other is partitioning process continuation, its use in predicting bankruptcy is minimum [14].

2.5. Artificial Neural Network (ANN)

The most popular approach among intelligent techniques is probably neural networks (Demyanyk & Hasan, 2010). It by means of an algorithm which imitates the biological neural networks of human nervous system That is, it is a network of interconnected neurons just like in human nervous system and they are called artificial neurons. In contrast to statistical techniques, this technique has two unique advantages. The very first is, being non-parametric it has no underlying assumptions unlike in statistical techniques. Other is that, it relies on non-linear approaches consequently its possibilities for testing complex data patterns are widespread. However, the downside of model that render it non-useful is that it is very responsive towards cyclical or temporal economic changes, this makes their interpretation very difficult (Paliwal & Kumar, 2009).

2.6. Revisiting Z-Score

Among many studies on the application of models, one is conducted by Ijaz, M. S., Hunjra, A. I., Hameed, Z., & Maqbool, A. [16] to ascertain the likelihood of failure in listed companies of Pakistan who were a part of sugar industry. They made a comparison between Altman’s Z-score model and current ratio, taking a sample of 35 firms from sugar industry and data was taken for a time frame of 2009 to 2010 and it was explored that Z-score is reliable method for predicting bankruptcy.

Pok, W. C. [17] performed an analysis of Malaysian Syariah-compliant stocks to inspect about financial stability of the sample of 477 companies. And his results recommend that only 35.43% of the firms were financially stable using Altman’s Z-score whereas the results acquired through Z’ were much better i.e. 59.75% of firms were found to be financially healthy using the later 2011-12 model. This qualifies Z’ as more reliable tool than former one.

In one more study Altman’s model was applied to assess the financial status of firms in Indian
logistics Industry from 2005-06 and by Tyagi, V. [18], and he founds that firms in logistics industry are doing satisfactory.

Kumar, M. [19] assess the financial performance of King Fisher airlines using Altman’s Z-score model and its findings indicate that firm was continuously facing looming losses from 2005 to 2012, and if no protective strategies are soon adapted, it will end up in default.

In successive years, Kumar, M. N., & Rao, V. S. H. [20] executed a research in which they estimated credit risk and bankruptcy prediction under Basel II. The findings suggest that Z” can predict up to 98.6% accurately whereas the comparative accuracy of Z-score was 93.5%. It makes Z” a far better predictor than Z-score.

Another study in this realm is by Ncube, T. [21] to assess the corporate failure using data of all listed firms in stock exchange of Zimbabwe from 2011-13 to aware government and general public about the need of detecting sick firms in time and it results so declared showed that 83.33% of the firms were prone to distress whereas the rest were safe.

A similar research was performed by Thai, S. B., Goh, H. H., HengTeh, B., Wong, J., & San Ong, T. [22] in Malaysia using multivariate discriminant analysis model undertaking a sample of 30 firms listed in Bursa Malaysia, 15 in each priori group and its results indicate that Altman’s Z-score model has a prediction accuracy of 76.7% and ratio of working capital to total assets is the best financial indicator of all.

Besides this Malik, M. S., Awais, M., Timsal, A., & Hayat, F. [23] also analyzed the empirical applications of Altman model in textile sector of Pakistan to account for the performance of firms in this industry before and after crises and figured out that most of the firms failed to sustain the crises and collapse.

In another research carried by Anjum, S. [2] all the studies on significance of Altman’s Z-score model were discussed and results show that it can be safely exercised to modern economy.

An advanced research made in similar context was of Jan, A., & Marimuthu, M. [24]. Its mainstay was to revisit Altman’s model for assessing the sustainability profile of Islamic Banking Industry. The procured results thus again proves that; Altman’s model is a viable option for assessing sustainability and predicting bankruptcy.

A relevant work found in this regard is of Mihalović, M. [25], who decided to compare the predictive performance of the two models i.e. a logistic regression model and MDA model. The sample encompasses a total of 236 firms Slovakia, dissociated into two priori groups. He also endeavors to catch on the best financial predictor for assessing sustainability. The results comprehended that logistic regression model is better than the later whereas Working Capital to Total Assets WC/TA & Retained Earnings to Total Assets (RE/TA) are better predictors. Parallel to above mentioned researches, Mohammed, S. [26] too contributed in the available discourse by monitoring the sustainability of a firm Result Cement Company SAOG and its subsidiaries in Oman. The tool adopted for analysis was Altman’s Z-score. And the findings revealed that company and its subsidiaries were financially stable and tool proved as a reliable one.

Though subsequent researchers had explored countless distinct models and have done worth adding researches in this realm, yet to choose the most appropriate and suitable model out of this wide suit is never a Hobson’s choice. Still there is a dearth of discourse on such model choices and financial indicator that best captures the risk of bankruptcy. So, from the myriad of options, there was a dire need to ascertain the most suitable and preeminent model that can truly forecast the likelihood of default ahead of time in given circumstances. Along with that, it was also seriously felt to identify a financial indicator that plays the most dominant part in pushing the firm towards disturbing its stability. So that firms start to work on it and maintain its sustainability in order to reduce their
chances of default. So, this research is not only restricted towards mere identification of the best model rather this research aims to serve manifold as it first helps the firms to realize the problem i.e. bankruptcy, than identify a measure to work on and finally provide them a reliable and well tested tool to help diagnose the problem before time. And for all this a list of hypotheses is developed and is given below.

3. Hypothesis
Following hypothesis are formulated for the empirical verification of this research:

**H1:** Z” model is the best, most accurate and reliable method to identify bankruptcy risk.

**H2:** Financial ratios truly capture the risk of bankruptcy.

**H3:** Working Capital to Total Assets (WC/TA) is the best financial indicator.

**H4:** Retained Earnings to Total Assets (RE/TA) is the best financial indicator.

**H5:** Earnings before Interest and Tax to Total Assets (EBIT/TA) is the best financial indicator.

**H6:** Market Value of equity to Total Liabilities (MV/TL) is the best financial indicator.

**H7:** Sales to Total Assets (S/TA) is the best financial indicator.

4. Materials and Methods
This section covers a comprehensive detail of research methodology applicable in this study.

4.1. Sampling
The sample of firms gathered for this analysis encompasses a list of 60 firms, 30 in each priori group as their corresponding match. The firms are selected on the basis of industry and asset size. The companies contained within the sample are from diverse industries of Pakistan except financial ones because the chances of sustainability of such firms rely highly on economic conditions of a country which are very much uncertain especially in Pakistan. The following list entails the name of industries from which the sample is derived:

<table>
<thead>
<tr>
<th>Table 1. List of Industries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile</td>
</tr>
<tr>
<td>Industrial Metals and Mining</td>
</tr>
<tr>
<td>Construction and Materials (Cement)</td>
</tr>
<tr>
<td>Electronics and Electrical Goods</td>
</tr>
<tr>
<td>Engineering</td>
</tr>
<tr>
<td>Automobile and Parts</td>
</tr>
<tr>
<td>Food and Beverages</td>
</tr>
<tr>
<td>Paper, paperboard and products</td>
</tr>
<tr>
<td>Household Goods</td>
</tr>
<tr>
<td>Fuel &amp; Energy</td>
</tr>
</tbody>
</table>

4.2. Selection of Distressed Firms
The distressed firms that are considered for analysis are those that have lodged a bankruptcy petition in court or failed to satisfy the provisions of clause 5.11.1. (e) of Pakistan stock exchange (PSX) Regulations and are removed from the daily diaries of PSX and their operations are also winded up by Securities and Exchange Commission of Pakistan (SECP) in a period stretching from 2000 to 2015.

4.3. Selection of Non-Distressed Firms
Healthy companies are picked out on the following criteria;
(1) The company which is publicly listed on the stock exchange of Pakistan at least five years before 2015
(2) The company has at least five years of fully disclosed financial information.

4.4. Source of Data Collection
The genealogy of this research is quantitative in nature. So, in this study we have worked with secondary data, obtained from balance sheet analysis (BSA) of firms published by State Bank of Pakistan (SBP) till the date they become bankrupt. For example, if a firm listed in year 2008 in
Pakistan Stock Exchange (PSX) and went bankrupt in year 2014 then data for its financial analysis will be included from year 2009 to 2013 i.e. as per the above stated rule.

4.5. Altman Z-Score Model

\[ Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 1.0X5 \]

Where;

- X1 is Working capital/total assets
- X2 is Retained earnings/total assets
- X3 is Earnings before Interest & Tax (EBIT)/total assets
- X4 is Market value of equity/total liabilities
- X5 is Sales/total assets (measured in number of times, not percentages)

And,

Z is overall index score.
The lower is the Z-score, the higher are the odds that company will go bankrupt. Altman also provided cut-off scores for generalizability of results. A company having score of 3 or above is ranked as healthy, and a score below 1.8 means that it has highest odds of becoming bankrupt Altman, E. I. (1968).

4.6. Altman Z-Double Prime (Z") Model

\[ Z" = 6.56 X1 +3.26 X2 +6.72 X3 + 1.05 X4 \]

Where;

- X1 = Working Capital / Total Assets
- X2 = Retained earnings / Total Assets
- X3 = Earnings before Interest and Tax / Total Assets
- X4 = Market Value of Equity / Total Liabilities

Z" is overall index score.
The cut off scores for generalizability of results in this model are that a firm having score of 2.6 or above is ranked as healthy, whereas firm with a score below 1.1 is considered to have highest odds of becoming bankrupt Altman, E. I. (2000), Zopounidis, C., & Paraschou, D. (1998).

<table>
<thead>
<tr>
<th></th>
<th>Z-Score</th>
<th>Z&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy</td>
<td>≥3</td>
<td>≥2.6</td>
</tr>
<tr>
<td>Bankrupt</td>
<td>&lt;1.8</td>
<td>&lt;1.1</td>
</tr>
</tbody>
</table>

4.7. Measurement of variables

Financial ratio analysis let us develop a more comprehensive understanding of firm’s position and device a strategy that can be well applied to cater the firm’s financial problems Altman, E. I. (1968). It generally facilitates in discriminating a bankrupt firm from matched control sample i.e. healthy firms under observation. In this research, five ratios indicating financial distress are brought to use by Altman for making appropriate decisions in his model which serve as independent variables and are given below; whereas the dependent variables are Z-score & Z" prime.

4.7.1. Working Capital / Total Assets (X1=WC/TA)

Working capital is the difference between current assets and current liabilities. It is considered as liquid asset for company to meet their short-term obligation effectively. A company is able to meet its short-term obligation when there is positive working capital. When there is insufficient working capital, the company is concerned that they will not be able to pay their short-term debt. Normally, the companies that are facing financial difficulties will have a shrinking asset which will cause them to be non-liquid and fail to pay their creditors.

4.7.2. Earnings before Interest and Tax / Total Assets (X2=RE/TA)

This ratio is used to evaluate the company’s ability to generate operating profit with existing asset. When the company has high profit with low asset, it has a relatively low chance of getting default. It is
due to the dollar of asset that is able to generate a larger amount of operating profit. On the other way, lower income might not be enough to cover company’s daily expenses.

4.7.3. Retained Earnings / Total Assets (X3=EBIT/TA)
Retained earnings are the amount of earning that is not paid out as dividend. The purpose of retaining the company’s earning is to allow the company to reinvest without adopting external fund with more cost. In other words, retained earnings can be used to measure the extent of a company by using leverage. If this ratio is high, it means that there is sufficient funding for the firm to reinvest. If the ratio is low, the company will borrow instead of retaining earnings to finance their investment. This will increase the company’s chance of being default.

4.7.4. Market Value of Equity / Total Liabilities (X4=MV/TL)
By referring to this ratio, we are able to measure how fast the company’s asset would decline when the company become insolvent – when liability exceed asset of the company. This ratio is not considered based on pure fundamental because it computes with the company’s market value. Market capitalization indicates the level of confidence the company gives to the market. A higher-level ratio indicates that the company has a higher chance to sustain when there is an economic downturn.

4.7.5. Sales / Total Assets (X5=S/TA)
This ratio is also known as asset turnover. It indicates how effective the company uses a single dollar of asset to generate sales. Sales are the amount earned without considering cost, interest and tax. When this ratio is high, it indicates that with the amount of assets, the company is able to expand their market share. If the company with low asset turnover is not using proper strategy to improve their sales, they may not have a promising future.

5. Test Procedures
Table 3 is used to test significance of variables i.e. whether they truly capture the risk of bankruptcy and it also measures the potential of each predictor variable. And if level of significance of F values is ≤ 0.05, then it indicates that the variable surely contributes to model and also discriminates between the two groups. Here all the independent variables are highly significant with values less than 0.05 and they also have high standardized coefficients attached to them, which shows that better discriminating power between two groups. Wilks’ lambda also serves the same purpose i.e. it too measures the variable's potential in predicting bankruptcy. It has a value of 1 and the lower the value of Wilks’ Lambda the better a variable can discriminate between groups. Here MV/TL shows the best discriminating ability with Wilks’ Lambda equals to .638 i.e. lowest of all and also has the highest standardized coefficient and significance in case of Z‖ whereas in case of Z-Score S/TA and MV/TL have significantly smaller values as compared to others. In short, it is pretty much obvious from the above results that greater significance, high standardized coefficient and smaller Wilks’ lambda of all variables shows their best contribution in making up the model.

<table>
<thead>
<tr>
<th>Table 3 Test of Equality of Group Means</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Z‖</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Z</td>
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</tbody>
</table>

Table 4(b) reports standardized canonical discriminant function coefficients for both models in which
each predictor variable has been assigned with an index which are same as standardized beta coefficients in regression analysis i.e. it reflects the unique contribution of independent variables like WC/TA, RE/TA in defining bankruptcy. Here, the strongest indicator in defining bankruptcy in case of $Z''$ is MV/TL with value of 0.797 whereas in Z-Score S/TA and MV/TL contributes most respectively.

<table>
<thead>
<tr>
<th>Function 1</th>
<th>WC/TA</th>
<th>RE/TA</th>
<th>EBIT/TA</th>
<th>MV/TL</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Z''$</td>
<td>.343</td>
<td>.095</td>
<td>.338</td>
<td>.797</td>
</tr>
<tr>
<td>Z-Score</td>
<td>.214</td>
<td>.209</td>
<td>.023</td>
<td>.324</td>
</tr>
</tbody>
</table>

5.1. Classification Accuracy of Altman’s Models

The classification table 5.1.1. shows that in case of $Z''$, 24 of 24 previously defaulted companies from the cases included in creating model are accurately classified, 15 out of 21 healthy companies are accurately classified i.e. 100% of defaulted and 71.4% of healthy firms are correctly classified. Overall prediction power of $Z''$ is 86.7%. When re-estimated for Z-Score, it was found that 20 of 22 previous defaulted companies from the cases included in creating model are accurately classified, 18 out of 25 healthy companies are accurately classified i.e. 90.9% of defaulted and 72.0% of healthy firms are correctly classified. Thus, overall prediction power of Z-Score is 80.6%.
Table 5 Classification Results

<table>
<thead>
<tr>
<th>Z’’</th>
<th>Accuracy</th>
<th>%</th>
<th>Default</th>
<th>100</th>
<th>0</th>
<th>24</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Healthy</td>
<td>28.6</td>
<td>71.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Z’-Score</td>
<td>Accuracy</td>
<td>%</td>
<td>Default</td>
<td>90.9</td>
<td>9.1</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Healthy</td>
<td>28.0</td>
<td>72.0</td>
<td>100.0</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>18</td>
<td>25</td>
</tr>
</tbody>
</table>

a. Accuracy rates represent the correct classification using Altman’s Model Coefficients
b. 87.6% of selected cases correctly classified using Altman’s Z’’
c. 80.6% of selected cases correctly classified using Altman’s Z-Score

6. Results & Discussion
By using our sample of 30 distressed and 30 non-distressed firms, classification accuracy of both models of Altman is evaluated through multivariate discriminant analysis. Results suggest that Z double prime (Z’’) procures a good classification result of 86.7% as compared to original estimate of 94% and Z-Score marked with an accuracy of 80.6% instead of 90% in the original holdout sample. Furthermore, it seems that contribution of financial ratios in predicting financial distress may also vary over time. For example, statistics shows that in Z double prime (Z’’) model market value of equity to total liabilities whereas in Z-score market value of equity to total liabilities and sales to total assets receives the highest coefficient score, making it obvious that these two variables are most significant and have the strongest ability in predicting bankruptcy. Market value of equity to total liabilities is the most appropriate variable for firms to work on in order to avoid the chances of default in general whereas in particular, market value of equity to total liabilities and sales to total assets are found to have a significant contribution in forecasting and leading a firm towards bankruptcy. In summary, this study offers some useful insights about the benefits of exercising bankruptcy prediction models in general, and testing the classification accuracy, significance and predictive ability of financial ratios in particular. And these reflections can later on prove beneficial for investors, managers, government and financial policy makers in designing frameworks, laws and policies to minimize the occurrence of any distress in near times, to develop protective measures to mitigate its effects if any and to provide substantial support to the distressed companies.

Table 6

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1</td>
<td>Accepted</td>
</tr>
<tr>
<td>H2</td>
<td>Accepted</td>
</tr>
<tr>
<td>H3</td>
<td>Rejected</td>
</tr>
<tr>
<td>H4</td>
<td>Rejected</td>
</tr>
<tr>
<td>H5</td>
<td>Rejected</td>
</tr>
<tr>
<td>H6</td>
<td>Accepted</td>
</tr>
<tr>
<td>H7</td>
<td>Accepted</td>
</tr>
</tbody>
</table>

7. Conclusion
The present above forth study is an attempt to objectively quantify, compare and analyze Pakistani firms that are either vulnerable to default or have already declared bankruptcy using proportionate sample (i.e. 30 in each group) and most relevant data of recent times i.e. from 2000 to 2015, by means of two most venerable model choices i.e. Altman’s Z-score and Z’’, falling under the category of statistical techniques and employing multivariate discriminant analysis to serve for the purpose. In both models, we make a fair
use of conventional accounting indicators and financial ratios owing to their classification ability and popularity in literature in terms of bankruptcy prediction. Yet, based on the cut off score the two models differ in terms of their classification accuracy and predictive power. $Z''$ model correctly classifies the firms in underlying sample with a maximum accuracy of up to 86.7% prior to one year of default as compared to the original hold out sample of Altman i.e. 94% which is exceptionally good whereas Altman’s $Z$–Score was only 80.6% accurate as compared to 90% in original sample which is indeed acceptable. Thus, classification results of $Z''$ model demonstrates its improved accuracy over existing model of $Z$-score for failure prediction. These results are a reinforcement of the results proposed by Pok, W. C. and Kumar, M. N., & Rao, V. S. H. So, we can say that results declare $Z''$ as the most accurate and reliable assessment tool out of the two.

This study is not merely limited towards identification of most accurate and reliable model rather this research aims to serve manifold as it also calculates a financial indicator that is highly capable, strongly interpret and contribute the most in defining the firm’s overall sustainability profile, hence, suggesting the firms an obvious solution to work on and to manage their risks. And that very financial indicator is Market Value of equity to total liabilities. As, the firm that is more volatile in its equity or has a low market value of equity is more likely to default than a firm that is quite stable in this ratio or has a high market value of equity to total liabilities. Other variables like working capital to total assets, retained earnings to total assets, earnings before interest and tax to total assets and sales to total assets also captures the risk of bankruptcy but comparatively to a lesser extent (Rashid, A., & Abbas, Q., 2011, Abid et al, 2012).

By use of most relevant and recent data, the results of this study serve as an early warning for firms in the underlying sample about their financial status. It may help the firms to assess sustainability and detect their likelihood of default if any thus to take necessary actions to avoid colossal losses in future. Besides this, it may also serve as an indicator for all respective shareholders and analysts about the risky profile of firm who aims to include it in their portfolio.

In summary, this study offers some useful insights about the benefits of exercising bankruptcy prediction models in general, and testing the classification accuracy, significance and predictive ability of financial ratios in particular. And these reflections can later on assist/prove beneficial for investors, managers, government and financial policy makers in designing frameworks, laws and policies to minimize the occurrence of any distress in near times, to develop protective measures to mitigate its effects if any and to provide substantial support to the distressed companies.

8. Future Research Recommendations
In this study we have not only quantified risk of bankruptcy in firms but also compared important and distinct facts about the performance of the two conventional but venerable models in question and thus it is empirically evident from the findings that $Z$ double prime ($Z''$) has superior performance than $Z$-score in evaluation of impending success or failure of firm. So, this makes the model a highly recommended tool by researcher to ascertain bankruptcy risk among companies in future. However, the model is not the only most relevant and accurate assessment tool in this regard. Researchers and practitioners recommend to subject all modelling techniques on underling data for thorough empirical testing simultaneously, the information so condensed will be used to judge the true position of companies. Another major recommendation that can be made to Altman’s failure prediction model after this study is to reflect changing economic, market and industry conditions in its input for improving the status. Perhaps, this can be done by adding up variety of explanatory variables that may serve as better predictors by re-estimating the coefficients of model and expanding no of firms in underlying sample. But as mentioned earlier that one obvious impediment of this research is absence of sufficient data for companies which has confined the study to just a few variables and small sample size. Furthermore, other models can also be widely applied and tested at the same time for reflecting better picture of firms in question. To a final note, this research can also be exercised for financial and non-listed sector of Pakistan to retrieve more remote
trends in this domain.

References


Ncube, T. PREDICTING CORPORATE FAILURE.


Appendix 1

Comparison of Altman Z-Score (1968) and Z”-Double Prime (1995) Bankruptcy Prediction Models

<table>
<thead>
<tr>
<th></th>
<th>Altman’s 1968 Paper</th>
<th>Altman’s 1995 Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Title</td>
<td>Edward I. Altman</td>
</tr>
<tr>
<td></td>
<td></td>
<td>New York University</td>
</tr>
<tr>
<td>2</td>
<td>Year</td>
<td>1968, September</td>
</tr>
<tr>
<td>3</td>
<td>Dependent Variable</td>
<td>Bankrupt/Non-Bankrupt firms</td>
</tr>
<tr>
<td>4</td>
<td>Independent Variables</td>
<td>Five out of 22</td>
</tr>
<tr>
<td>5</td>
<td>Sample Size</td>
<td>66 paired (33 each)</td>
</tr>
<tr>
<td>6</td>
<td>Industry</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>7</td>
<td>Data Source</td>
<td>Income Statement and Balance Sheet</td>
</tr>
<tr>
<td>8</td>
<td>Financial Ratios used as Independent Variables</td>
<td>WC/TA, RE/TA, EBIT/TA, MV/TL, S/TA</td>
</tr>
<tr>
<td>9</td>
<td>Classification Accuracy</td>
<td>90%</td>
</tr>
<tr>
<td>10</td>
<td>Order of Relative Contribution</td>
<td>EBIT/TA, RE/TA, W/TA, S/TA, MV/TL</td>
</tr>
<tr>
<td>11</td>
<td>Needed items of Financial Statement</td>
<td>CA, CL, TA, TL, RE, EBIT, No of shares</td>
</tr>
<tr>
<td>12</td>
<td>Application</td>
<td>Publicly held manufacturing firms</td>
</tr>
</tbody>
</table>

Appendix 2: List of companies taken as testing sample

<table>
<thead>
<tr>
<th>Ayesha Textile Mills Limited</th>
<th>Hajra Textile Mills Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asim Textile Mills Limited</td>
<td>Ideal Spinning Mills Limited</td>
</tr>
<tr>
<td>Ashfaq Textile Mills Limited.</td>
<td>Idrees Textile Mills Limited</td>
</tr>
<tr>
<td>Artistic Denim Mills Ltd.</td>
<td>Ishitaq Textile Mills Limited</td>
</tr>
<tr>
<td>Ansari Sugar Mills Ltd.</td>
<td>Mitchells Fruit Farms Limited</td>
</tr>
<tr>
<td>Annoor Textile Mills Limited</td>
<td>Mehr Dastgir Textile Mills Limited</td>
</tr>
<tr>
<td>Atlas Honda Ltd.</td>
<td>Medi Glass Limited</td>
</tr>
<tr>
<td>Atlas Engineering Ltd</td>
<td>National Foods Limited</td>
</tr>
<tr>
<td>Akzo Nobel Pakistan Ltd</td>
<td>Nestle Pakistan Limited</td>
</tr>
<tr>
<td>Company Name</td>
<td>Industry Name</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Bela Automotives Ltd.</td>
<td>Olympia Textile Mills Limited</td>
</tr>
<tr>
<td>Bhanero Textile Mills Limited</td>
<td>Pak Leather Crafts Limited</td>
</tr>
<tr>
<td>Bawany Air Product Limited</td>
<td>Pakistan Gum and Chemicals Limited</td>
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<tr>
<td>Biafo Industries Limited</td>
<td>Pakistan Paper Products Limited</td>
</tr>
<tr>
<td>Chakwal Spinning Mills Limited</td>
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<tr>
<td>Crescent Textile Mills Limited</td>
<td>Resham Textile Industries Ltd</td>
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<td>Clover Pakistan Limited</td>
<td>Shifa International Hospitals Limited</td>
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<td>(Colony) Thal Textile Mills Limited</td>
<td>S. G. Fibres Ltd</td>
</tr>
<tr>
<td>(Colony) Sarhad Textile Mills Limited</td>
<td>S. S. Oil Mills Ltd</td>
</tr>
<tr>
<td>Colgate Palmolive (Pakistan) Limited</td>
<td>Sind Fine Textile Mills Ltd</td>
</tr>
<tr>
<td>Cherat Cement Company Limited</td>
<td>Saleem Denim Industries Limited</td>
</tr>
<tr>
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<td>Sazgar Engineering Works Limited</td>
</tr>
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<td>Sitara Chemical Industries Limited</td>
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<td>Sitara Peroxide Limited</td>
</tr>
<tr>
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<td>Transmission Engineering Industries Limited</td>
</tr>
<tr>
<td>Dost Steels Limited</td>
<td>Wah Noble Chemicals Limited</td>
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<td>Morafo Industries Limited</td>
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<td>Data Agro Limited</td>
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<td>Descon Oxychem Limited</td>
<td>HinoPak Motors Limited</td>
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<td>Engro Corporation Limited</td>
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<td>Engro Polymer and Chemicals Limited</td>
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<td>Husein Industries Limited</td>
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**Appendix 3: Financially distressed companies indicated by Z”**

<table>
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<td>S. S. Oil Mills Ltd</td>
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<tr>
<td>Annoor Textile Mills Limited</td>
<td>Saleem Denim Industries Limited</td>
</tr>
<tr>
<td>Ashfaq Textile Mills Limited</td>
<td>S. G. Fibres Ltd</td>
</tr>
<tr>
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<td>Morafco Industries Limited</td>
</tr>
<tr>
<td>Bela Automotive Ltd.</td>
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</tr>
<tr>
<td>Dewan Khalid Textile Mills Limited</td>
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<tr>
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<td>Gadoon Textile Mills Limited</td>
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<td>Dadabhoy Cement Industries Limited</td>
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<td>Gulshan Spinning Mills Limited</td>
<td>Dost Steels Limited</td>
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<td>Globe (OE) Textile Mills Limited</td>
<td>Data Textile Limited</td>
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<td>Fateh Textile Mills Limited</td>
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<tr>
<td>Idrees Textile Mills Limited</td>
<td>Fatima Enterprizes Limited</td>
</tr>
<tr>
<td>Kohat Textile Mills Limited</td>
<td>Khurshid Spinning Mills Limited</td>
</tr>
<tr>
<td>Olympia Textile Mills Limited</td>
<td>Hajra Textile Mills Limited</td>
</tr>
<tr>
<td>Transmission Engineering Industries Limited</td>
<td>Ishtiaq Textile Mills Limited</td>
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## Appendix 4: Financially distressed companies indicated by Z-Score

<table>
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<tbody>
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<td>Dost Steels Limited</td>
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<td>Ashfaq Textile Mills Limited</td>
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<tr>
<td>Dadabhoy Construction Technology Limited</td>
</tr>
<tr>
<td>Husein Industries Limited</td>
</tr>
<tr>
<td>(Colony) Thal Textile Mills Limited</td>
</tr>
<tr>
<td>Globe (OE) Textile Mills Limited</td>
</tr>
<tr>
<td>Saleem Denim Industries Limited</td>
</tr>
<tr>
<td>Dadabhoy Cement Industries Limited</td>
</tr>
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<td>Husein Industries Limited</td>
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<tr>
<td>Bela Automotive Limited</td>
</tr>
<tr>
<td>Dadabhoy Construction Technology Limited</td>
</tr>
<tr>
<td>Ansari Sugar Mills Ltd</td>
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<tr>
<td>Transmission Engineering Industries Limited</td>
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<td>Pak Leather Crafts Limited</td>
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<td>S. G. Fibres Ltd</td>
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<td>Olympia Textile Mills Limited</td>
</tr>
<tr>
<td>Gulistan Textile Mills Limited</td>
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</table>
Stock Market Reaction to Election Cycles: The Nigerian Experience

1 Sharlywest Uwabor EBOIGBE, 2 Kennedy Prince MODUGU

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ARTICLE DETAILS

ABSTRACT

This study seeks to unravel the relationship between national electoral events and industry’s stock market returns using the various presidential elections in Nigeria. The study adopts the traditional Market Model (MM) and testing with the Cumulative Abnormal Return (CAR) approach on the daily market data from the Nigerian Stock Exchange. Evidences abound that banking and Petroleum sector decreases before and increases after all elections. With the same trend for other sectors such as Conglomerates stock prices which oscillated in the same direction for the 1999 and 2003; Brewery took their turn 1999 and 2011 while building sector experienced this event effect in 1999, thereby revealing industry connectivity with political activities. This manifests as their stock returns tend to reduce generally before and increase after election periods. We therefore recommend the depoliticization of public policies through strict adherence to corporate governance codes and strengthening of public institutions. This will put a check on the political manoeuvrings of the economy by boosting investors’ confidence on the market regardless of electoral activities and power swings. More importantly, for those stocks that experiences increase in value after election it is a better time to sell those portfolios and buy these stocks that experience loss in value at a post-election window.

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1. Introduction

Political connection is where one or more of a company’s directors have the same educational, social, cultural and religious affinity with the key actors in government from whom they can draw economic advantage. This often manifest with political actors having units of corporate ownership in the firms. It can also be seen with different employment arrangements in politically disadvantage areas with government in power. Political connectivity of firms confers competitive advantage on firms in the areas of ease of access to financing, funding and tax holidays for politically connected firms. It also facilitates contracts between political actors and board of director for mutual advantage.

Economic manifestation of political exposures of firms to government spending affect the capital market
volume of trade as well as market returns (Agrawal & Knoeber, 2001; Khwaja&Mian, 2005; Goldman, Rocholl & So, 2008). Politically connected firms tends to adjust their employment and dismissal policies and have higher rates of job and branch network creation before election. They sometimes superfluously maintain low rates of plant and product line deletion. Low profits, higher labour costs and robust labour relation in election years just to help incumbent government in their re-election bid to portray a healthy economy to the ill-informed electorate. Here new jobs and plants are established despite unproductive product lines within the election window (Kramarz & Thesmar, 2007; Bertrand, Kramarz, Schoar & Thesmar, 2008; Cohen, Frazzini & Malloy, 2008; Fracassi, 2009; Do, Lee, Nguyen & Nguyen, 2012; Nguyen, 2012). Such political turnover substantially diffuse into stock market performance of politically linked firms. These aforementioned are validated in literature with positive relationship (Fisman, 2001; Kroszner and Strahan, 2001; Bunkanwanicha and Wiwattanakantang, 2009; Aggarwal, Meschke and Wang, 2008; Boubakri, Cosset and Saffar, 2008; Guner, Malmendier and Tate, 2008; Goodell and Vahamaa, 2013).

The study examines the link between politically connected firms/industry’ and the aggregate demand, supply and market equilibrium of their stocks returns within an electoral cycle (before and after political events—elections). This is motivated by Bertrand, Kramarz, Schoar and Thesmar, (2007) rebuttal of absence of a causal link between political connectedness of firms and firms’ performance. The other school of thought avows neutrality of political inclination of owners to firms’ turnover Fisman, Fisman, Galef and Khurana, (2006). Knight (2007) reveals that policies in a party’s platform transmit positive incremental values into equity prices through returns from industries favoured by a particular party. Roberts (1990), Santa-Clara &Valkanov (2003) and Sy & Al Zaman (2011) aver further that politically determined events manifest at both macro and microeconomic levels. This they demonstrate with the death of very senior and influential Washington senator resulting in lower abnormal returns for firms where he has a stake implying that specific client-firms relationship is a building block for firms’ performances.

In the light of the aforesaid, this research seeks to determine the relationship between national electoral events and some specific industry stock market returns exist. Variability in economic (financial markets, monetary and fiscal) activities originating from external interference or politically aware actors seeking to be re-elected is termed opportunistic business cycle theory. This concept in underpinned by the assumption that there exist a short-term trade-off between level of manpower and resources utilization as well as employment and inflation in the aggregate economy within an administration cycle.

As political officeholders are rational actors who rank their political objectives in order of priority, it is therefore incumbent on financial economist, accountants, researchers and investors to keep an eye on these players and their intentions. Since individuals and corporate personnel have trade-offs like consumption-investment tangles as well as labour-leisure trade-off, the study of aggregates economy and the interdependent variables using real business cycle model foresees that during temporary shock indicators like productivity, consumption, investment and employment varies from their respective long-term and trend projection. Therefore, business cycles are a product of accumulation or de-accumulation of wealth, which is determine by the prevailing national politico-economic culture (Blomberg & Hess, 2003). These models integrate many factors upon which economic variations hinge but fail to take cognisance of office-bearers influence in the cycles powered by their quest for re-election. As individuals have preferences, so also do incumbent and opposition governments. Such preference may not be consistent with the need of economy at that point. Therefore, politicians and their parties cannot be trusted with proper and public-oriented macroeconomic policies driven by industry, economic and company’s fundamentals. This is because of politicians’ determination to adjust institutional capacity of existing economic policies and structures with a view to realizing their short term aim of winning elections. Therefore this study seeks to unravel the relationship between national electoral events and industries stock market earnings and returns.
2. Review of Related Literature

Greenwood and Thesmar (2011) study the relation between ownership structure, financial assets market prices and non-fundamental risk. They see an asset fragility as caused by its vulnerability to shifts in demand driven by non-fundamentals. They affirm that as owners are faced with volatility and liquidity shocks caused by buy or sell, the units of asset ownership experience wide returns variability. This is further explained by the reappearance of high electioneering cost which might lead owners to sell for funding purpose. Consistent with Greenwood and Thesmar (2011) and many other expectations, fragility denotes price volatility not dependent on the fundamental. The dislocating impact of arbitrageurs on stock prices due to arbitrage in the outdated asset pricing theory lends credence to impact on sales volume and price movement.

We argue that ownership composition of assets ought not to influence future risk and returns predictability, but where current holders’ buys or sells for reasons unrelated to fundamentals, there will be an impact on the price. Fragility of the market is a function of ownership concentration, volatilities and holders’ expected liquidity preferences. The connectivity between ownership structure and risk therefore buttresses the impact of institutional ownership role on stock price volatility (Johnson & Mitton, 2003; Faccio, 2006; Faccio, Masulis& McConnell, 2006; Jachandran, 2006; Faccio& Parsley, 2007; Goldman, Rocholl& So, 2007; Claessens, Feijen&Laeven, 2008).

During partisanship political business cycle, companies’ exposure to public spending envisages cross-sectional effect as such industries stock returns outperform firms in similar and dissimilar industries with low exposure to public expenditure (Santa-Clara & Valkanov, 2003). This activities create abnormal returns which is usually in the second and third year of administrations term and wanes in electoral years. They asserts that this disappearance shows that political linkage pull down profits as employment wage bill surges in highly challenged areas resulting an increase in social welfare cost. Their conclusion means that political exposures doest not only create some benefits without concomitant costs.

Premise on these divergences, we hypothesized that:

H1: There is significant negative relationship between the performance of companies with politically-exposed directorship/ownership and election cycle

3. Methodology

3.1 Research Design, Sample and Data.

The longitudinal research design was adopted due to its usefulness in determining the trend of a unit or a group of items over a period of time. Trading stockprices in Nigerian Stock Exchange were grouped on the basis of industry for the period of the various elections (1999, 2003, 2007 & 2011) were used. Event-study-approach where elections in the country forms the basic event was also adopted. The market model (MM) was used for this study as a result of its good characteristics of not supposing the random walk philosophy of stock returns in relation with market portfolio returns. The model has robust belief of joint normality of the returns (Campbell et al 1997 & Mackinlay, 1997). For the estimation of the factors of normal performance, the following comes to the fore.

\[ R_t = \alpha_i + \beta_i R_{mt} + \epsilon_t \]  

(1)

Where:

- \( R_t \): realized return for \( i \) stock in time period \( t \).
- \( R_{mt} \): realized return for index in time period \( t \). Here the banking index is used
- \( \alpha_i \) and \( \beta_i \): regression coefficients.

In the mathematical computation, the normal return is

\[ R_t = \alpha_i + \beta_i R_{mt} \]  

(2)

The daily rates of return for each company stock price index are calculated as follows:

\[ R_t = \ln \left( \frac{S_P_t}{S_P_{t-1}} \right) * 100 \]  

(3)
Where:

- $R_t$ = return on share price
- $SP_t$ = contemporary share price
- $SP_{t-1}$ = previous period share price
- $\ln$ = natural logarithm

The abnormal return is the difference between actual return on the event window and estimated or expected return. In this study, we adopt the method of estimating the abnormal return which is frequently referred to as the residual analysis. Here the residual term in equation (1 & 2) is assumed to indicate the abnormal return computed (see Eriki & Eboigbe, 2012) as:

$$AR_{it} = R_{it} - (\alpha_i + \beta_{im} R_{mt})$$

A testing framework of the study needs to be defined for any abnormal returns calculated, including the definition of the null hypothesis and techniques for aggregating the results over time and across individual firms. This studies as those before it, adopts the cumulative abnormal return (CAR) approach, defined as the sum of the abnormal returns for each day in the event window:

$$CAR_i = \sum AR_{it}$$

Under the null hypothesis, the given event has no impact on the mean or variance of returns, hence the expectation of abnormal returns is zero. Inferences about the CAR will be drawn using a test statistic:

$$t = \frac{CAR_i}{\sigma_i/\sqrt{n}}$$

$\sigma_i$ is the standard error of the distribution and $n$ is the number of days in the event window.

The results from the event study will be used to examine the impact of the appearance of unanticipated information from the electoral events on the unstable nature of the market earnings. To examine this, the difference in stock returns on daily basis for all firms are calculated for the pre- and post-election days as well as for the days without elections. This alterations are calculated using this formula:

$$Var = \frac{1}{N_j-1} \sum_{t=1}^{N_j} (R_{it} - \bar{R}_{ij})^2$$

Where $N_j$=Number of days in each category (before and after as well as the days without the event), $R_{it}$= the return daily for firm $i$ on day $t$, $\bar{R}_{ij}$ represents the mean return for each grouping (before and after as well as the days without the event).

4. Result Presentation and Discussion of Findings

The result of the initial estimation is reported in table (i) below. From the table, estimates of alphas and betas are shown for the industries in each of the election periods. Only the coefficient of the banking and petroleum sector were significant throughout the entire periods. This shows that the event of essence transmits its impact into the market price as it tends to significantly stimulate the prices of stocks in these sector. The coefficients of insurance and chemical sectors were significant for some of the years, suggesting that these sectors were also active for some years in the market during elections.

Table (1): Estimates of the $\alpha$‘s and $\beta$‘s for each of the Firms

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>$\alpha$</td>
<td>$\beta$</td>
<td>$A$</td>
<td>$\beta$</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0.01</td>
<td>0.11</td>
<td>-0.05</td>
<td>0.03</td>
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<tr>
<td>Banking</td>
<td>-0.28</td>
<td>0.85**</td>
<td>-0.36*</td>
<td>0.25**</td>
</tr>
<tr>
<td>Breweries</td>
<td>0.24</td>
<td>0.09</td>
<td>0.20</td>
<td>-0.14</td>
</tr>
<tr>
<td>Building materials</td>
<td>0.16</td>
<td>0.11</td>
<td>-1.54</td>
<td>1.08</td>
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</table>
Using the results of the estimated normal returns of the downstream industries as well as the insurance sector, it is observed that the period close to elections is associated with relatively poor stock returns. This trend and movement pattern is shown in the chart below (figure 1). Banking, petroleum (downstream) as well as the insurance sector are worst affected in the pre-election period as indicated by their abnormal returns. The patterns of the return movements during the period are emphasized. For most of the stock returns, there were more negative outcomes for the period before the elections than for the period after the elections. This generally shows that for the period close to elections, stock returns tend to perform relatively poor.

Table 2: Abnormal Returns for the Firms, 1999 (10 days Pre- and post-elections)

<table>
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<tr>
<th>Day</th>
<th>agric</th>
<th>Bank</th>
<th>brew</th>
<th>Build</th>
<th>Chem</th>
<th>Congl</th>
<th>Constr</th>
<th>Health</th>
<th>Indust</th>
<th>insur</th>
<th>Petrol</th>
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<td>0.57</td>
<td>-1.08</td>
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<td>1.61</td>
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<td>0.01</td>
<td>1.21</td>
<td>-1.71</td>
<td>-0.93</td>
<td>1.26</td>
<td>0.36</td>
<td>0.99</td>
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<td>-1.16</td>
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<td>3.07</td>
<td>1.80</td>
<td>-1.08</td>
<td>-3.75</td>
<td>0.57</td>
<td>-0.54</td>
<td>1.34</td>
<td>-0.68</td>
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<tr>
<td>-2</td>
<td>-0.28</td>
<td>-0.52</td>
<td>-2.38</td>
<td>-0.08</td>
<td>-1.97</td>
<td>-2.13</td>
<td>-3.22</td>
<td>-0.77</td>
<td>0.04</td>
<td>-0.91</td>
<td>-1.20</td>
</tr>
<tr>
<td>-1</td>
<td>-0.21</td>
<td>0.11</td>
<td>-1.48</td>
<td>2.15</td>
<td>-0.40</td>
<td>1.40</td>
<td>-0.06</td>
<td>0.73</td>
<td>0.96</td>
<td>1.19</td>
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<td>0</td>
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<td>0.21</td>
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<td>1.44</td>
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<td>1</td>
<td>0.28</td>
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<td>-0.18</td>
<td>-0.36</td>
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<td>-0.64</td>
<td>-0.36</td>
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<td>0.12</td>
<td>0.08</td>
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<td>2.11</td>
<td>-0.06</td>
<td>-1.71</td>
<td>-0.06</td>
<td>1.08</td>
<td>-1.95</td>
</tr>
<tr>
<td>3</td>
<td>-0.28</td>
<td>0.48</td>
<td>2.92</td>
<td>0.47</td>
<td>0.07</td>
<td>0.23</td>
<td>-0.07</td>
<td>0.68</td>
<td>-1.10</td>
<td>1.36</td>
<td>-0.06</td>
</tr>
<tr>
<td>4</td>
<td>-0.28</td>
<td>0.59</td>
<td>-0.75</td>
<td>0.12</td>
<td>0.30</td>
<td>-1.48</td>
<td>3.18</td>
<td>0.67</td>
<td>1.78</td>
<td>0.07</td>
<td>1.20</td>
</tr>
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<td>0.27</td>
<td>0.53</td>
<td>-1.45</td>
<td>2.54</td>
<td>0.16</td>
<td>-1.56</td>
<td>-0.08</td>
<td>0.04</td>
<td>0.24</td>
<td>-0.54</td>
<td>1.88</td>
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<td>0.27</td>
<td>0.76</td>
<td>0.01</td>
<td>-1.90</td>
<td>0.39</td>
<td>-1.37</td>
<td>2.09</td>
<td>2.11</td>
<td>-0.74</td>
<td>0.73</td>
<td>-1.21</td>
</tr>
<tr>
<td>7</td>
<td>-2.20</td>
<td>0.56</td>
<td>-0.11</td>
<td>0.81</td>
<td>0.69</td>
<td>1.10</td>
<td>-0.24</td>
<td>2.08</td>
<td>-0.33</td>
<td>0.40</td>
<td>-0.13</td>
</tr>
<tr>
<td>8</td>
<td>-2.17</td>
<td>0.77</td>
<td>0.21</td>
<td>1.90</td>
<td>1.44</td>
<td>1.74</td>
<td>3.29</td>
<td>-2.43</td>
<td>0.71</td>
<td>2.64</td>
<td>0.07</td>
</tr>
<tr>
<td>9</td>
<td>0.27</td>
<td>0.65</td>
<td>0.71</td>
<td>-1.14</td>
<td>1.57</td>
<td>-0.87</td>
<td>-0.12</td>
<td>-0.21</td>
<td>1.83</td>
<td>1.03</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Note: * significance at 5 percent; ** significance at 1 percent.

Source: Authors' computations, 2017

The abnormality of returns obtained from the estimated market models are presented in successive tables for each of the election periods under consideration. Using the results of the estimated normal returns model obtained in table (1), the abnormal returns on each of the stocks during the estimation periods are obtained. The outcome of abnormal return for each stock price for 10 days before and ten days after the presidential elections are presented in tables 2 to 5 below. From the trends for 1999 as shown in table (ii), the patterns of the return movements during the period are emphasized. For most of the stock returns, there were more negative outcomes for the period before the elections than for the period after the elections. This generally shows that for the period close to elections, stock returns tend to perform relatively poor.
respective graphs. The trend for the market progressively became positive with similar advantage to banking, petroleum and insurance stocks. This could perhaps confirm the axiom of higher risk with higher returns.

In table 3, the abnormal return trend for 2003 is reported. The general trend in the abnormal returns is that the returns tend to fall consistently from 10 days before elections to 1 day before election. The stock returns tends to improve gradually after the elections. The results indicate that the abnormal returns responded significantly to the period of presidential elections for most of the stocks. Thus, elections might have significantly affected the stock return movement for these forms.

**Table (3): Abnormal Returns for the Firms, 2003 (10 days Pre- and post-elections)**

<table>
<thead>
<tr>
<th>Day</th>
<th>agric</th>
<th>Bank</th>
<th>brew</th>
<th>build</th>
<th>chem</th>
<th>Congl</th>
<th>Constr</th>
<th>Health</th>
<th>industri</th>
<th>Insur</th>
<th>Petrol</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10</td>
<td>-0.74</td>
<td>0.59</td>
<td>1.51</td>
<td>-0.04</td>
<td>0.86</td>
<td>-0.71</td>
<td>0.05</td>
<td>1.06</td>
<td>0.47</td>
<td>-0.89</td>
<td>1.82</td>
</tr>
<tr>
<td>-9</td>
<td>-0.69</td>
<td>0.14</td>
<td>0.39</td>
<td>0.99</td>
<td>-0.05</td>
<td>-0.21</td>
<td>0.04</td>
<td>-1.19</td>
<td>-0.99</td>
<td>-0.90</td>
<td>-0.42</td>
</tr>
<tr>
<td>-8</td>
<td>-0.64</td>
<td>0.23</td>
<td>1.33</td>
<td>1.20</td>
<td>0.01</td>
<td>1.00</td>
<td>-1.41</td>
<td>-0.77</td>
<td>1.04</td>
<td>0.30</td>
<td>0.82</td>
</tr>
<tr>
<td>-7</td>
<td>0.24</td>
<td>0.00</td>
<td>0.07</td>
<td>0.96</td>
<td>-0.35</td>
<td>-0.22</td>
<td>0.02</td>
<td>-0.52</td>
<td>0.15</td>
<td>0.99</td>
<td>-0.37</td>
</tr>
<tr>
<td>-6</td>
<td>0.24</td>
<td>0.53</td>
<td>1.02</td>
<td>1.14</td>
<td>-0.04</td>
<td>-0.16</td>
<td>-0.33</td>
<td>-0.06</td>
<td>0.62</td>
<td>0.86</td>
<td>-0.04</td>
</tr>
<tr>
<td>-5</td>
<td>0.26</td>
<td>0.05</td>
<td>1.44</td>
<td>2.29</td>
<td>-1.34</td>
<td>-0.58</td>
<td>-2.74</td>
<td>-0.56</td>
<td>-1.06</td>
<td>-0.55</td>
<td>0.16</td>
</tr>
<tr>
<td>-4</td>
<td>0.24</td>
<td>0.29</td>
<td>0.96</td>
<td>0.84</td>
<td>0.65</td>
<td>0.51</td>
<td>-0.11</td>
<td>-0.94</td>
<td>-1.41</td>
<td>-0.84</td>
<td>1.01</td>
</tr>
<tr>
<td>-3</td>
<td>0.23</td>
<td>0.83</td>
<td>4.07</td>
<td>2.54</td>
<td>1.49</td>
<td>-0.89</td>
<td>-3.10</td>
<td>0.47</td>
<td>-0.45</td>
<td>1.11</td>
<td>-0.56</td>
</tr>
<tr>
<td>-2</td>
<td>0.23</td>
<td>0.43</td>
<td>1.97</td>
<td>0.07</td>
<td>-1.63</td>
<td>-1.76</td>
<td>-2.66</td>
<td>-0.64</td>
<td>0.03</td>
<td>-0.75</td>
<td>-0.99</td>
</tr>
<tr>
<td>-1</td>
<td>0.17</td>
<td>0.09</td>
<td>1.22</td>
<td>1.78</td>
<td>-0.33</td>
<td>1.16</td>
<td>-0.05</td>
<td>0.60</td>
<td>0.79</td>
<td>0.98</td>
<td>1.04</td>
</tr>
<tr>
<td>+1</td>
<td>0.23</td>
<td>1.68</td>
<td>0.17</td>
<td>3.47</td>
<td>-1.97</td>
<td>2.03</td>
<td>0.06</td>
<td>1.19</td>
<td>-0.25</td>
<td>0.18</td>
<td>-0.56</td>
</tr>
<tr>
<td>+2</td>
<td>0.23</td>
<td>0.16</td>
<td>2.03</td>
<td>0.28</td>
<td>-0.01</td>
<td>-0.15</td>
<td>-0.30</td>
<td>1.03</td>
<td>-0.53</td>
<td>-0.30</td>
<td>1.36</td>
</tr>
<tr>
<td>+3</td>
<td>0.23</td>
<td>1.04</td>
<td>0.07</td>
<td>1.59</td>
<td>-0.32</td>
<td>1.74</td>
<td>-0.05</td>
<td>-1.41</td>
<td>-0.05</td>
<td>0.89</td>
<td>-1.61</td>
</tr>
</tbody>
</table>
The trend and movement pattern shown in the chart below (figure 2), clearly reveal that Banking, petroleum (downstream) as well as insurance sector are also worst affected in the pre-election period as indicated by these graphs. Though the dispersion was not as that of 1999 perhaps due to improved confidence on the nation’s electoral system by investors.

In the abnormal returns table for 2007 as shown in table (vi) below, though the patterns are not quite clear, there is suggestion that the returns fell slightly just before Election Days for most of the categories. There is also an indication of stock returns moving along with election news.
The trend and movement pattern shown in the chart below (figure 3) maintained a steady trajectory from negative (at the pre-) to a very weak positive with exception of petroleum (downstream) and chemical stocks nosediving into high negative returns at the post-election days. This can be seen in these graphs.

The abnormal returns table for 2011 period is as shown in table (v) below. There indicates that stock prices were negative mostly before elections and improved after the elections. This could be market uncertainty powered by lack of investors’ confidence on the different portfolios.

### Table (4): Abnormal Returns for the Firms, 2011 (10 days Pre- and post-elections)

<table>
<thead>
<tr>
<th>Day</th>
<th>Agric</th>
<th>Bank</th>
<th>build</th>
<th>Chem</th>
<th>congl</th>
<th>Construct</th>
<th>Health</th>
<th>Ind</th>
<th>insur</th>
<th>petrol</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10</td>
<td>-1.71</td>
<td>1.49</td>
<td>0.44</td>
<td>-0.16</td>
<td>0.13</td>
<td>0.03</td>
<td>0.13</td>
<td>-0.03</td>
<td>0.97</td>
<td>0.78</td>
</tr>
<tr>
<td>-9</td>
<td>-0.06</td>
<td>-1.02</td>
<td>-0.93</td>
<td>0.20</td>
<td>-0.97</td>
<td>-0.04</td>
<td>0.28</td>
<td>0.07</td>
<td>-1.52</td>
<td>0.59</td>
</tr>
<tr>
<td>-8</td>
<td>2.90</td>
<td>0.96</td>
<td>0.52</td>
<td>0.89</td>
<td>0.21</td>
<td>0.04</td>
<td>-0.06</td>
<td>-0.30</td>
<td>-1.17</td>
<td>-0.06</td>
</tr>
<tr>
<td>-7</td>
<td>2.81</td>
<td>-1.93</td>
<td>-0.31</td>
<td>0.28</td>
<td>-1.80</td>
<td>-0.07</td>
<td>0.32</td>
<td>0.08</td>
<td>1.40</td>
<td>0.35</td>
</tr>
<tr>
<td>-6</td>
<td>0.48</td>
<td>-3.23</td>
<td>-0.59</td>
<td>-0.10</td>
<td>1.79</td>
<td>0.00</td>
<td>-0.42</td>
<td>0.10</td>
<td>1.03</td>
<td>-0.08</td>
</tr>
<tr>
<td>-5</td>
<td>0.06</td>
<td>-0.51</td>
<td>-0.18</td>
<td>0.07</td>
<td>-1.48</td>
<td>-0.03</td>
<td>-0.11</td>
<td>0.47</td>
<td>-0.07</td>
<td>2.03</td>
</tr>
<tr>
<td>-4</td>
<td>-2.10</td>
<td>0.14</td>
<td>-0.90</td>
<td>0.14</td>
<td>-0.62</td>
<td>-0.01</td>
<td>0.07</td>
<td>0.06</td>
<td>-0.68</td>
<td>0.23</td>
</tr>
<tr>
<td>-3</td>
<td>0.42</td>
<td>-0.03</td>
<td>-0.79</td>
<td>0.27</td>
<td>-0.55</td>
<td>-0.27</td>
<td>-3.02</td>
<td>0.14</td>
<td>0.14</td>
<td>-0.87</td>
</tr>
<tr>
<td>-2</td>
<td>-0.03</td>
<td>2.20</td>
<td>-2.41</td>
<td>0.24</td>
<td>0.03</td>
<td>0.62</td>
<td>-3.82</td>
<td>0.08</td>
<td>-0.56</td>
<td>0.14</td>
</tr>
<tr>
<td>-1</td>
<td>-1.13</td>
<td>0.71</td>
<td>0.04</td>
<td>0.25</td>
<td>1.83</td>
<td>-0.23</td>
<td>0.47</td>
<td>0.08</td>
<td>-0.45</td>
<td>0.49</td>
</tr>
<tr>
<td>1</td>
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<td>1.21</td>
<td>2.02</td>
<td>1.99</td>
<td>1.35</td>
<td>0.01</td>
<td>-2.55</td>
<td>0.23</td>
<td>1.03</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Negative days (pre event) and positive days (post event). Source: Author’s computations 2017
The trend and movement pattern shown in the chart below (figure 4) maintained similar trajectory of the 2007 election. From negative (at the pre- to a very weak positive with exception of banking, petroleum (downstream) and chemical stocks nosediving into very high negative returns at the post-election days. This can be seen in these graphs.

Essentially, the overall outcome of the trend of abnormal return during this 10-day period around elections generally indicates that most of the stocks actually responded in an abnormal pattern to the presidential elections in Nigeria. The path of their movements was effectively altered by either the news of the coming elections or the general outcome of the elections.

**Empirical Analysis of the Cumulative Abnormal Returns (CAR)**

Here we conducted the empirical test on the cumulative abnormal returns for the event window (of six days) in order to observe whether a significant difference exists in its pattern over the event (presidential elections) periods. In table (6), the results of cumulative abnormal return along with the computed t-statistics for the event window in all the election years are reported. It is based on the outcome of the results of CAR that decision on the event study is determined.

For the 2011 elections, only the CAR for banking, breweries and petroleum sectors were significant, indicating a significant abnormal return level during the 2011 presidential election period. For banking and petroleum sectors, positive CARs were revealed. This implies that returns on their stocks actually rose after the 2011 presidential election. Hence it is a better time to sell those portfolios i.e. after the election. For the breweries, the results show that a fall in return on these stocks was experienced after the election period in 2011. Therefore, investors could buy these stocks that experience loss in value at a post-election window. For the 2007 election, only the chemicals/banking and petroleum sectors experienced significant changes in their returns, judging from the fact that only their CARs are significant at the 5
percent level. For 2003, the banking sector, conglomerates and petroleum sectors had significant CARs. The year with the highest number of industrial growth with significant CARs is 1999. These includes Banking, Building and Conglomerate. Also on the list are Breweries and Petroleum sub-sector of the nation’s economy. This is not unconnected with the import dependent and foreign portfolios status of the nation economy instead of direct investment. The direction of market returns and owners connectivity are inextricably linked.

Table (6): Cumulative Abnormal Returns for Presidential Election Periods, 1999-2011

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>0.02 (0.86)</td>
<td>0.04 (1.17)</td>
<td>-0.07 (-1.09)</td>
<td>0.11 (1.01)</td>
</tr>
<tr>
<td>Banking</td>
<td>0.11** (3.11)</td>
<td>0.26* (2.92)</td>
<td>0.09* (2.31)</td>
<td>0.13* (2.31)</td>
</tr>
<tr>
<td>Breweries</td>
<td>-0.23** (-4.18)</td>
<td>0.11 (1.13)</td>
<td>-0.11 (-1.75)</td>
<td>0.52* (2.75)</td>
</tr>
<tr>
<td>Building</td>
<td>-0.83 (-1.81)</td>
<td>-0.21 (-1.11)</td>
<td>0.16 (1.69)</td>
<td>-0.21** (3.02)</td>
</tr>
<tr>
<td>Chemicals</td>
<td>0.28 (0.71)</td>
<td>0.28 (0.71)</td>
<td>0.02 (0.43)</td>
<td>0.02 (0.64)</td>
</tr>
<tr>
<td>Conglomerates</td>
<td>0.07 (0.21)</td>
<td>0.03 (0.73)</td>
<td>0.04* (2.09)</td>
<td>0.12* (3.34)</td>
</tr>
<tr>
<td>Construction</td>
<td>-0.33 (-1.15)</td>
<td>-0.33 (-1.15)</td>
<td>-0.23 (-0.92)</td>
<td>0.17 (0.22)</td>
</tr>
<tr>
<td>Healthcare</td>
<td>0.04 (0.71)</td>
<td>0.19 (1.12)</td>
<td>0.05 (0.22)</td>
<td>0.02 (0.22)</td>
</tr>
<tr>
<td>Industrial</td>
<td>0.08 (1.02)</td>
<td>0.04 (0.08)</td>
<td>0.05 (0.41)</td>
<td>0.12 (0.77)</td>
</tr>
<tr>
<td>Insurance</td>
<td>-0.17 (-1.57)</td>
<td>0.24 (0.57)</td>
<td>0.31 (1.61)</td>
<td>0.13 (1.09)</td>
</tr>
<tr>
<td>Petroleum</td>
<td>0.47* (2.78)</td>
<td>0.81** (3.12)</td>
<td>0.24* (2.55)</td>
<td>0.19* (2.92)</td>
</tr>
</tbody>
</table>

Note: t-values are in parenthesis
Source: Authors’ computations 2017

Below is a chart to further show the CAR for the various industries and their relationship with various presidential elections in Nigeria (figure 5)
5. Conclusion, Policy Implication and Recommendations

The relationship between electoral events and sectoral stock returns in the Nigerian appears significant as revealed by this study. The stocks of banking, Petroleum, chemical and insurance sectors revealed a disproportional movement. Perhaps, due to weak corporate governance practices in Nigeria, owners’ connectivity with the various governments in power is at play. This manifests as their stock returns tend to reduce generally during election periods definitely due to stripping of their stake to fund the political parties of their interest. However, these negative effects have dropped over subsequent elections in Nigeria, this perchance may not be unconnected with the marginal strengthening of the political institutions as well as increase voters education.

Politics has always served as a pivot for societal interactions since the evolution of modern systems. It is becoming increasingly clear that political affairs, financial market performance and macroeconomic indicators are indistinguishably linked among national economic indicators (Eboigbe, 2016).

A critical look by way of fact-checking the Nigerian operational environment of business reveal the following key actors: From the Banking sector, Tajudeen Afolabi Adeola the former vice presidential candidate of Action Congress Party of Nigeria was in the saddle for the various elections in Guaranty Trust Bank plc. Jim Ovia and the current Governor of Central Bank of Nigeria- Godwin Emefiele were at the helm of affairs at Zenith Bank Plc (ZBN); Anthony Onyemaechi Elumelu of United Bank of Africa Plc (UBA) and his brother Ndudi Elumelu (former member of the Federal House of Representatives). Also on the list of politically connected business moguls are Alex Otti, Femi Otedola, Jimoh Ibrahim etc. These politically exposed persons have controlling interest in oil and gas sector, insurance, banking, hotels and hospitality business sectors as well as overt political interest.

For instance, it is known that with the sensitivity of the financial markets especially in developing countries, making use of monetary policies alone is quite ineffective in stimulating output at any given particular time without the addition of other political and behavioural tools. This study has justify why notable global investment decision theories and rules are not sufficient for the present 21st century competitive business forecast. Therefore political, financial and economic indicators need to be integrate into local and international investment theories.

Consequently, the findings that some industries are adversely affected by election outcomes justify high job losses from such sectors, thereby putting the various stakeholders on notice so as to review political parties funding policies. This is because of our estimation that the connectivity of such industry players is
being rewarded by such industry-specific losses and gains within the event windows.

In the light of these, we recommend the entrenchment of independence for institutions with constitutional and operational mandate to regulate macroeconomic factors that could affect aggregate economic activities. This will help by depoliticizing policy framework through political manoeuvrings of the economy by creating industry-specific expansionary and contractionary policies without the economic fundamentals. These will help to strengthen public institutions by discouraging the influence of politically-exposed and connected actors on the national indices.

References


King’s Model on Capitalization under Basel III: The Case of Lebanese Banks

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ARTICLE DETAILS

ABSTRACT

Objective: Lebanese banks have shown immunity towards the 2008 financial crisis that was attributed to many factors including a strong regulatory and supervisory system of conservative practices and structural economic factors such as the recurrence and non-speculative nature of capital inflows towards Lebanon supported by a large pool of offshore savings from diaspora and investors around the globe. The purpose of this study is to investigate the relation between capital adequacy ratios (CARs) and lending spread ratio (LSR). This paper presents the first assessment of the Basel III capital requirements on lending spread ratio before, during and after the financial crisis among commercial banks operated in Lebanon.

Methodology: We consider King’s approach and assess his model’s applicability in the Lebanese context. Findings indicate some deviations, specifically related to the practices and financial performance of commercial banks in Lebanon.

Results: We found no indication of impact of the change in CAR on LSR among Lebanese commercial banks in years prior to the recent financial crises; Nevertheless, the impact of changing CAR by 1 pp on LSR has a modest effect on Lebanese commercial banks during the years of financial crises; this effect is lowered to become modest after the crisis.

Implication: The results of the current study reveal significant implications for managers in commercial banks in particular and all banks in general. Given that Lebanese commercial banks are well-capitalized and their Capital Adequacy Ratios are above international benchmarks, bank managers must carefully monitor the cost of the implementation of Basel III requirements.

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Keywords
Capital adequacy ratios, Lending spread ratio, financial crisis, commercial banks in Lebanon

1. Introduction

After the onset of the financial crisis of 2008, commercial banks are obliged to hold capital buffers against any potential risk of decline in credit quality of the counterparty. On December 2010, the Basel Committee on Banking Supervision released two frameworks that regulate liquidity risk measurement, standards and monitoring and published a new regulatory reform entitled “Basel III”. The new reform aimed to strengthen banking regulation, supervision and risk management. As a result, banks must hold a minimum level of capital which places pressures on banks’ performance, especially in developed countries. Banks have, since then, introduced a myriad of initiatives that compensate for the cost of higher capital by reducing operating expenses and/or increasing income (particularly non-interest income).
initiatives seek to reduce the cost of holding higher capital by transferring some of its sum to the end customers in the form of higher lending spread (Elliott, 2010; King, 2010, etc…). These initiatives manipulate industry defined performance indicators to strike a balance between regulatory and performance requirements. The study explores consequences of these initiatives, as well as it aims to provide bankers with sufficient evidence to take suitable decisions and formulate strategies which may result in optimal profit.

The capital adequacy ratio (CAR) represents the reserves to guard a bank against the credit risk, operational risk and market risk (Mahajan et al, 2012). Even though Basel III maintains the Capital Adequacy Ratios (CARs) at its minimum level 8% as set by Basel I, a bank must increase Capital Adequacy Ratios to sustain its stability (Berger et al, 1995), to achieve increase in its profitability (Athanasoglou, Brissimis, & Delis, 2008), and to cover risk by holding minimum Capital Adequacy Ratios (Bilal and Salim, 2016). The contraction on capital imposed by the latest regulation issued by the Basel Committee on Banking Supervision (Karim, Hassan, Hassan & Mohamad, 2014) increases banks’ lending problems, by causing difficulties in meeting capital requirements; and affects critically bank performance (Peek and Rosengren, 1995). In fact, the evidence supports that the bank’s manager seeks to reduce the cost of holding higher CARs by transferring some of it to the end customers in the form of higher LSR (Elliott, 2009; King, 2010, etc…).

1.1. The Lebanese Banking Sector
The Lebanese banking sector is represented by the Central Bank, Banque du Liban (BDL), fifty three commercial banks (70%), eighteen investment banks (24%), and five Islamic banks (6%) (Association of Banks in Lebanon, 2015).

Commercial banks are the main provider of credit to individuals as well as businesses (Association of Banks in Lebanon, 2015). These banks are required to provide medium and long-term credit for real estate, industry, agricultural development and household lending. Lebanese banks have shown immunity towards the latest financial crisis that was attributed to many factors including a strong regulatory and supervisory system of conservative practices and structural economic factors such as the recurrence and non-speculative nature of capital inflows towards Lebanon supported by a large pool of offshore savings from diaspora and investors around the globe. Though Lebanon is not a member of the BCBS, Banque du Liban (BDL), Lebanon’s central bank, mandated on Lebanese banks to comply with the standards issued by the BCBS. Lebanon is an interesting case study because Lebanese banks have shown some resilience toward the financial crisis, primarily due to their traditionally conservative approach to speculation in sub-prime mortgages and in any other risky packages of structured products and bundled-up debt, to liquidity requirement with an average liquidity ratio of 40% (Naimy, 2011), and to the introduction of the bank merger law, that forces weak banks to merge with strong ones. In line with the importance of capital regulation for banking organizations, the aim of the current paper is to explore the behavior of the CARs-LSR relationship, and to add to the body of knowledge on banking industry in this important issue by answering the following research question: “To which extent do the implementation of Basel III capital requirements impact on lending spread ratio in the commercial banks operated in Lebanon?

2. Literature Review
2.1. Basel Accord
Since the establishment of Basel Committee on Banking Supervision in 1974 in Basel city in Switzerland, the committee has issued the standards and regulations that put emphasis on banks’ capital, to ensure that capital is sufficient to cover unexpected risks. Accordingly, the standards issued by the Basel Committee on Banking Supervision (BCBS) are constituted of three successive accords to improve the resilience of banking organizations:

Basel I: In December 1988, the Committee released its first proposition Basel I: “The International Convergence of Capital Measurement and Capital Standards” (BCBS, 1988). Basel I accord focused on credit risk and designed to enhance capital profile. The minimum capital requirements for a bank is set at
8% of its risk-weighted assets to measure riskiness associated with bank’s assets (Dermine, 2014). Bank’s capital are divided into two parts, including core capital “Tier I capital or equity capital” and supplementary capital “Tier II capital” (Huang and Pan, 2016).

**Basel II:** In June 2004, Basel II was released and adopted across countries from the beginning of year 2006; Even though, the CAR of Basel II was kept the same as in Basel I, the more sophisticated methodologies imposed under Basel II accord might decrease the capital that banks are obliged to hold against various types of credit risk (Brownbridge, 2015). In addition to dimensions of credit risk, Basel II has improved by incorporated market and operational risks. Though an improvement on its predecessor, this sequel was not enough to prevent the recent banking downfall (Krishnan and Sukar, 2014).

**Basel III:** In response to the recent financial crisis of 2007-2008, the BCBS released on December 2010 two frameworks that further regulate liquidity risk measurement, standards and monitoring (Curry, Feldman, & Johnson, 2012); namely, ‘Baseline III: A global regulatory framework for more resilient banks and banking systems’ and ‘Baseline III: International framework for liquidity risk measurement, standards and monitoring’, released in December 2010 (BCBS, 2010).

### 2.2. Relation between Capital Adequacy and Lending Spread Ratios

We recognize the **capital adequacy ratio** (CAR) as the “cushion to guard a bank against the credit risk, operational risk and market risk” (Mahajan et al, 2012, p. 29). It is a key indicator of a bank’s solvency and resilience (Avramova and Leslé, 2012). While, the **lending spread ratio** (LSR) is “the difference between the interest rate charged on loans and the rate paid on deposits” (Brock & Suarez, 2000, p.114).

A plethora of research highlights the importance of relationship between capital adequacy ratios and LSR (Table 1). Parcon et al (2012) argue that an increase in lending rates, as a strategy to meet the new capital requirements may have a negative impact on the economy. In some countries, it was found that the implementation of higher CAR impacts positively on LSR (Wong, 2010; Di Biase, 2012), while in other countries the higher CAR has a neutral impact on LSR as a result of Basel I, Basel II implementation.

**Table 1 - Sample of the Literature Review on the Relationship between CAR-LSR**

<table>
<thead>
<tr>
<th>Authors – Country of Context</th>
<th>Finding</th>
<th>Δ LSR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wong (2010) - Thailand</td>
<td>To cover the 1% increase in capital adequacy ratios, the LSR needs to increase by 0.83%</td>
<td>+ 0.83</td>
</tr>
<tr>
<td>Cosimano and Hakura, (2011) - United States, Japan, and Denmark</td>
<td>It has been found that the increase in equity-to-asset ratio by 1.3 percentage points leads lending ratio to increase by 16 basis</td>
<td>+ 0.16</td>
</tr>
<tr>
<td>Aiyar et al (2012) – UK</td>
<td>Recognized a negative impact of higher capital requirements on bank lending in the UK.</td>
<td></td>
</tr>
<tr>
<td>Elliott et al (2012) - Japan Europe, United States</td>
<td>The findings revealed that the average lending rates might rise by: 8 basis points in Japan (8bp), Europe (18bp), US (28bp)</td>
<td>+ 0.08 + 0.18 + 0.28</td>
</tr>
<tr>
<td>Eita (2012) - Namibia</td>
<td>As the cost of funds for commercial banks increases, it may be passed on to consumers by means of higher LSR.</td>
<td></td>
</tr>
<tr>
<td>Miles et al (2013) – UK</td>
<td>The researchers found that a 1pp (percentage point) increase in CAR causes LSR to increase by 5.5 basis points in UK banks.</td>
<td>+ 0.055</td>
</tr>
<tr>
<td>Santos and Winton (2013) – United Stated</td>
<td>The authors find a moderate effect of bank capital on LSR for the United States banks.</td>
<td></td>
</tr>
<tr>
<td>Swamy and</td>
<td>The results indicate that a 1pp increase in capital ratio can be</td>
<td>+ 0.31</td>
</tr>
</tbody>
</table>
Hyderabad (2014) - India  
recovered by increasing LSR by 31 basis points

Corbae and D’erasmo (2014) - US  
In respond to higher capital and liquidity requirements in the US that lending rates increase by 50 basis points as a result of an increase in CAR from 4% to 6%. + 0.25

Maredza (2016) – South Africa  
1 pp increase in the capital requirements leads on average to between 12 – 14 basis points increase in the cost of intermediation for the time horizon of 12 years (2001 – 2012). + 0.13

Using an accounting-based model, King (2010) has estimated how much LSR would increase if banks are required to hold more capital. In order to mitigate the effect of this cost, banks have many alternatives to proceed: commercial banks may engage in different non-lending activities, these other activities may influence the pricing of loan products due to cross-subsidization of bank products (Hidayat et al, 2012). An open question is whether higher regulatory requirements will increase the LSR. Previous literature on capital regulation is mixed on whether Basel III capital requirements leads banking institutions to increase their LSR. Empirical models by Elliott (2010), Kashyap et al (2010), Swamy and Hyderabad (2014), among others, find that the impact of CAR on LSR is modest. Thus this study will investigate the impact of CAR on LSR in Lebanese commercial banks and the following sections will analyze the issue.

3. Approach
We explore the sensitivity of the potential impact of the implementation of Basel III capital requirements on LSR before, during and after the latest financial crisis in the commercial banks operated in Lebanon. To answer our research question, this study applies accounting based model on the data used to measure the higher cost associated with a 1% increase in CAR, and its impact on LSR. The significance of applying accounting based model resounds with the previous studies that assessed the impact of CAR on LSR. Our paper is applied to Lebanese commercial banks. The annual data of balance sheet and income statement are collected from Liban Bilan Banques, since this source is the most comprehensive publishing that includes a concise and trust data about Lebanese banking industry. After checking the quality of data included in the database, we eliminated a number of banks because of data availability necessary for the analysis for the period 2005-2016. Stylized facts on banks’ balance sheets and income statement are provided in the appendix.

4. Results and Discussion
In order to distinguish the incremental effect of successive Basel regulation conditions, we conducted our analysis over three periods: (1) from 2005 to 2006; (2) from 2007 to 2010; and (3) from 2011 to 2016. We have included a set of tables showing the CAR - LSR relationship for each year from 2005 to 2016 for evidence. Our result demonstrates that CARs has a significant impact on LSR in 2009 through 2011, during crises periods, before turning to be insignificant at the end of 2012. The impact of CARs on LSR in the crises years (2009 and 2010) is relatively strong. This outcome resonates with Carlson et al (2013), who found that the relationship between CAR-LSR is strongly insignificant in the years prior to the recent crises (2005 and 2006) as well as at the beginning of the crisis (year 2007), after that it becomes significant in 2009 and 2010, before turning to be insignificant again in year 2011. On the other hand, the results are not consistent with the findings of Chun et al (2012), as they conclude that the LSR decreased between 2008 and 2010. They also suggest that the reason behind that is the significantly decreased ratio of RWA to total assets. Surprisingly, the latter relationship appears to be ineffective at the end of 2012 according to our study. Then, this relationship turned again to be effective in years 2013, 2014 and 2015. Since there are no previous literature studies that deal with addressing the impact of CARs on LSR year by year between 2012 and 2016, we cannot compare the results of these years with other studies findings. During the pre-crisis period, CAR reflects a notably higher ratios, while, in the crisis period, there is a deep shift as the CAR fell to an historic low ratio, after which is broadly returns to higher levels. To illustrate, Lebanese commercial banks experienced sharply decrease in CAR from 27.38% in 2006 to 15.10% in 2007; attributed to the 2006 war. As observed, most of Lebanese commercial banks haven’t
published its balance sheets at year 2007. Later, the banking system was able to overcome with strides this short-run hiccup. Commercial banks faced a decline in its Capital Adequacy Ratio during the recent financial crisis at years 2007 and 2008 (their average was 15.1% and 14.73% respectively). In 2009 and thereafter, these banks faced a positive growth on CAR. This increasing trend was a result of the implementation of Basel II and III capital requirements. In 2016, Lebanese commercial banks was highly capitalized with CAR reaching 20.58% as an average. This ratio indicates that commercial banks are well exceeding Basel III requirements and reflecting an adequate coverage of all types of risk (credit, market, and operational risk). Lending spread ratio also offer a mixed picture. Most of these spreads have been stable or narrower at the pre-crisis period. This spread has widened from around 3.179 basis points in early 2008 to around 14.38 basis points in 2010. The timing of the movement of this indicator suggests that the recent crisis has played a substantial role: it widened sharply during the crisis, then narrowed somewhat thereafter to reach its lowest in late 2012. Then widened progressively in years after the crisis.

5. Conclusion
This research is an attempt to provide the Lebanese commercial banks a basic understanding of the impact of CAR-LSR on financial performance to help in formulating their future policies to mitigate the negative effects of the implementation of Basel III. LSR would require more risk to be absorbed by banks 0-14%. Furthermore, this paper gives conceptual and empirical evidence to assertions in the commercial banks. Previous studies that have inspected the consequences of the implementation of CARs have done so at various types of banks. It is essential to note that it is the first study in Lebanon that addresses this proposition. The finding of this study is consistent with the findings of the other studies as shown in table 2.

<table>
<thead>
<tr>
<th>Country (ies) of Study</th>
<th>Change in Lending Spread (Basis points)</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro Area and United States</td>
<td>60 to 65</td>
<td>Roger and Vlček (2011)</td>
</tr>
<tr>
<td>India</td>
<td>31</td>
<td>Swamy and Hyderabad (2014)</td>
</tr>
<tr>
<td>Europe</td>
<td>18.8</td>
<td>ŠÚTOROVA and TEPLY (2013)</td>
</tr>
<tr>
<td>Japan, Europe, and USA</td>
<td>5 to 15</td>
<td>Elliott et al (2012)</td>
</tr>
<tr>
<td>USA, Japan and Euro Area</td>
<td>14.4</td>
<td>Slovak and Couronné (2011)</td>
</tr>
<tr>
<td>South Africa</td>
<td>12 to 14</td>
<td>Maredza (2016)</td>
</tr>
<tr>
<td>Lebanon</td>
<td>0 to 14</td>
<td>Our research result</td>
</tr>
<tr>
<td>13 OECD countries</td>
<td>13</td>
<td>BCBS (2010a)</td>
</tr>
<tr>
<td>United States and Japan</td>
<td>12</td>
<td>Cosimano and Hakura (2011)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.5</td>
<td>Miles et al (2013)</td>
</tr>
<tr>
<td>United States</td>
<td>2.5 to 4.5</td>
<td>Kashyap et al. (2010)</td>
</tr>
</tbody>
</table>

A closer look at figure 1 shows a clear contrast between the pre-crisis period, the crisis period, and then after.
Finally, this paper considers the years between 2005 and 2016 by analyzing the data year by year in which they differ in the level of CARs and its dispersion to address the latter impact; taking into consideration that the higher capital requirement imposed under Basel III are fully implemented in Lebanese commercial banks. Accordingly, our findings are based on realistic data and not on assumptions.

Table 3 - Changes in LSR, 2005 – 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Basel</th>
<th>Impact of changing CAR by 1pp on LSR?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>41</td>
<td>I</td>
<td>None</td>
</tr>
<tr>
<td>2006</td>
<td>41</td>
<td>I</td>
<td>None</td>
</tr>
<tr>
<td>2007</td>
<td>33</td>
<td>II</td>
<td>None</td>
</tr>
<tr>
<td>2008</td>
<td>39</td>
<td>II</td>
<td>3.179 basis points (0.0317%)</td>
</tr>
<tr>
<td>2009</td>
<td>39</td>
<td>II</td>
<td>9.59 basis points (0.0959%)</td>
</tr>
<tr>
<td>2010</td>
<td>40</td>
<td>II</td>
<td>14.38 basis points (0.1438%)</td>
</tr>
<tr>
<td>2011</td>
<td>38</td>
<td>III</td>
<td>11.39 basis points (0.113%)</td>
</tr>
<tr>
<td>2012</td>
<td>39</td>
<td>III</td>
<td>None</td>
</tr>
<tr>
<td>2013</td>
<td>39</td>
<td>III</td>
<td>1.87 basis points (0.0187%)</td>
</tr>
<tr>
<td>2014</td>
<td>37</td>
<td>III</td>
<td>2.37 basis points (0.02377%)</td>
</tr>
<tr>
<td>2015</td>
<td>36</td>
<td>III</td>
<td>8.07 basis points (0.0807%)</td>
</tr>
<tr>
<td>2016</td>
<td>36</td>
<td>III</td>
<td>2.91 basis points (0.0291%)</td>
</tr>
</tbody>
</table>

As shown, there is an evidence that CAR impact LSR at years 2008, 2009, 2010, 2011, 2013, 2014, 2015 and 2016. The magnitude of this impact is smaller and modest in general. Accordingly, King’s model is not supported in pre-crisis period (2005, 2006, 2007), and in year 2012. The magnitude of our estimates in comparison with the results of the previous studies seems to be modest in 2009, 2010, 2011 and 2015. The findings are in line with the earlier studies that found for every one percentage point increase in CAR; LSR must increase by 15 basis points (King, 2010). The estimation of the current study suggests that a
one percentage point increase in CAR leads to a lower impact on LSR as on years 2008, 2013, 2014 and 2016. What happened in years 2008 and 2013 to change the previous quo? This question is a direction for future research.

6. Research Limitations
Our approach has several limitations. First, the focus was on the debate of how CAR affects LSR. However, when I examine the latter relationship, I ignore the role of other alternative choices faced by banks, which might be taken into consideration such as the decrease in Return on Equity (ROE), Risk weighted assets (RWA), operating expense ratio, and increase in non-interest income ratio. Second, the sample was not large enough because the availability of data for commercial banks is restricted to 33 out of 53 at the end of 2007, while on the remainder years; the sample was in between 38 to 41 out of 53 Lebanese commercial banks. Therefore, a considerable sample bias may exist due to the small sample size. Third, while the new proposal under Basel III implies changes both in capital and liquidity requirements, this study focuses exclusively on the effects of the higher capital requirements. Though, the new liquidity requirements may also have some cost implications, such as lower interest income (since banks are required to hold more liquid and less risky assets) and higher interest expenses (associated with debt maturity extension). It has been completely ignored from the scope of the present study. Finally, a noticeable limitation is presented as an additional investigation is obviously needed in the incorporation of investment banks and other non-bank financial sector as the analysis and the outcomes of this paper are based on one sector of the banking industry.

References


Appendix
Table A-1 shows the balance sheet and income statement for representative banks for each year. All items are shown as a percentage of total assets to allow comparability in the pre-crisis period, during and after the crisis. It reveals considerable differences in assets and liabilities over the period of the study. These variances are significant for explaining the variation in the impact of CAR on LSR. In order to analyze the ratios of Net Income, Return on Equity, and other ratios, we use the formulas in table A-2.

The constituents of income statement items are also exhibited in table A-1 with the following variable considered:
- Net interest income represents the difference between interest income and interest expense. Total non-interest income is the sum of trading income and non-interest income excluding trading.
- Revenues represent the sum of net interest income and non-interest income.
- Operating expense represents the sum of personnel expense and other administrative expense.
- Net Income (NI) is accounted as operating profit less taxes; while, Return on Equity (ROE) represents Net Income (NI) divided by Equity.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Balance Sheet</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assets</td>
<td>28.0</td>
<td>23.3</td>
<td>22.3</td>
<td>23.5</td>
<td>24.8</td>
<td>24.4</td>
<td>16.5</td>
<td>18.7</td>
<td>18.8</td>
<td>19.1</td>
<td>19.5</td>
<td>22.0</td>
</tr>
<tr>
<td>Cash and balances</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td>11.2</td>
</tr>
<tr>
<td>Interbank claims</td>
<td>16.6</td>
<td>19.4</td>
<td>23.1</td>
<td>18.5</td>
<td>17.0</td>
<td>16.8</td>
<td>15.3</td>
<td>14.3</td>
<td>13.8</td>
<td>13.4</td>
<td>11.6</td>
<td>2.1</td>
</tr>
<tr>
<td>Trading related assets</td>
<td>6</td>
<td>5</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>31.3</td>
</tr>
<tr>
<td>Net loans, leases</td>
<td>2.73</td>
<td>2.31</td>
<td>2.39</td>
<td>2.08</td>
<td>1.65</td>
<td>2.35</td>
<td>1.98</td>
<td>1.74</td>
<td>1.91</td>
<td>2.16</td>
<td>2.70</td>
<td>29.9</td>
</tr>
<tr>
<td>Investments and securities</td>
<td>23.6</td>
<td>24.5</td>
<td>25.3</td>
<td>26.1</td>
<td>26.0</td>
<td>27.9</td>
<td>28.8</td>
<td>29.9</td>
<td>30.5</td>
<td>31.0</td>
<td>32.0</td>
<td>3.2</td>
</tr>
<tr>
<td>Other assets</td>
<td>5</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td><strong>Liabilities and Equity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24.8</td>
<td>26.5</td>
<td>23.2</td>
<td>26.0</td>
<td>27.2</td>
<td>25.2</td>
<td>33.9</td>
<td>31.7</td>
<td>31.8</td>
<td>31.1</td>
<td>31.2</td>
<td>73.65</td>
</tr>
<tr>
<td>Liabilities and Equity</td>
<td>4.03</td>
<td>3.78</td>
<td>3.49</td>
<td>3.68</td>
<td>3.23</td>
<td>3.18</td>
<td>3.29</td>
<td>3.47</td>
<td>3.08</td>
<td>2.99</td>
<td>2.90</td>
<td>73.65</td>
</tr>
<tr>
<td>Deposits</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>8.16</td>
</tr>
<tr>
<td>Interbank funding</td>
<td>0.88</td>
<td>0.88</td>
<td>1.02</td>
<td>0.73</td>
<td>1.11</td>
<td>1.33</td>
<td>1.35</td>
<td>1.71</td>
<td>1.73</td>
<td>1.91</td>
<td>2.07</td>
<td>8.08</td>
</tr>
<tr>
<td>Trading related liabilities</td>
<td>0.89</td>
<td>2.32</td>
<td>2.38</td>
<td>2.30</td>
<td>2.02</td>
<td>1.86</td>
<td>1.39</td>
<td>1.52</td>
<td>1.47</td>
<td>1.19</td>
<td>1.43</td>
<td>1.34</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>2.63</td>
<td>89.2</td>
<td>89.0</td>
<td>89.0</td>
<td>87.8</td>
<td>88.3</td>
<td>88.1</td>
<td>86.5</td>
<td>87.4</td>
<td>86.6</td>
<td>86.0</td>
<td>4.82</td>
</tr>
<tr>
<td>Other liabilities</td>
<td>8.96</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2.97</td>
</tr>
<tr>
<td>Total liabilities</td>
<td>5.85</td>
<td>6.44</td>
<td>6.24</td>
<td>5.66</td>
<td>5.23</td>
<td>5.13</td>
<td>4.89</td>
<td>4.80</td>
<td>4.85</td>
<td>4.87</td>
<td>4.91</td>
<td>0.74</td>
</tr>
<tr>
<td>Total</td>
<td>3.90</td>
<td>4.41</td>
<td>4.18</td>
<td>3.41</td>
<td>3.22</td>
<td>3.00</td>
<td>2.94</td>
<td>3.00</td>
<td>3.01</td>
<td>3.09</td>
<td>3.19</td>
<td>5.54</td>
</tr>
<tr>
<td>Liabilities</td>
<td>1.96</td>
<td>2.03</td>
<td>2.06</td>
<td>2.25</td>
<td>2.01</td>
<td>2.12</td>
<td>1.95</td>
<td>1.80</td>
<td>1.84</td>
<td>1.78</td>
<td>1.72</td>
<td>11.04</td>
</tr>
</tbody>
</table>

Comment [ZM1]: This table needs to be formatted as values do not correspond to items.
### Table A-2 - Formulas using in Applying Accounting - Based Model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Income (NI)</td>
<td>[ NI = (\text{Income}Loans + \text{Other Interest Income} - \text{Intexp}) + \text{NonIntInc} - \text{OpExp}.(1 - \text{tax}) ]</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
<td>[ \text{ROE} = \frac{\text{Net Income}}{\text{Equity}} ]</td>
</tr>
<tr>
<td>Change in interest expense (ΔIntexp)</td>
<td>[ \Delta \text{Intexp} = \frac{\text{Intexp} - (0.01 \times \text{short term debt}) - (0.02 \times \text{long term debt})}{\text{Deposits} + \text{short term debt} + \text{long term debt}} ]</td>
</tr>
<tr>
<td>New wholesale funding (WF_{t+1})</td>
<td>[ W_{F_{t+1}} = W_{F_{t}} - Δ\text{Total Capital Ratio} \cdot RWA_{t+1} ]</td>
</tr>
<tr>
<td>New Shareholders’ Equity (E_{t+1})</td>
<td>[ E_{t+1} = E_{t} + Δ\text{Total Capital Ratio} \cdot RWA_{t+1} ]</td>
</tr>
<tr>
<td>Net Income (NI_{t+1})</td>
<td>[ NI_{t+1} = ROE \cdot E_{t+1} ]</td>
</tr>
<tr>
<td>Pretax Income (PTI_{t+1})</td>
<td>[ PTI_{t+1} = \frac{NI_{t+1}}{1 - \text{tax}} ]</td>
</tr>
<tr>
<td>Revenue (RV_{t+1})</td>
<td>[ RV_{t+1} = OpExp + PTI_{t+1} ]</td>
</tr>
<tr>
<td>Net Interest Income (NI_{t+1})</td>
<td>[ NI_{t+1} = RV_{t+1} - \text{NonIntInc} ]</td>
</tr>
<tr>
<td>Interest Income (I_{t+1})</td>
<td>[ I_{t+1} = NI_{t+1} + OpExp_{t+1} ]</td>
</tr>
<tr>
<td>Change in lending spread ratio (ΔLSR)</td>
<td>[ ΔLSR = \frac{\text{the additional increase in pretax income}}{\text{Net Loans}} ]</td>
</tr>
<tr>
<td>The additional increase in pretax income</td>
<td>[ PTI_{t+1} = (PTI_{t} + \text{Intexp}) ]</td>
</tr>
</tbody>
</table>

*PTI_t* Represents the initial pretax income, and ΔIntexp represents the change in pretax income.
Table A-2005 - The impact of CAR on LSR in the pre-crisis period, years 2005

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After (2)</td>
<td>Change (3)</td>
<td>After (4)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>26.91%</td>
<td>27.91%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>31.00%</td>
<td>31.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder's equity</td>
<td>10.32%</td>
<td>10.63%</td>
<td>0.31%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>0.89%</td>
<td>0.58%</td>
<td>-0.31%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>2.19%</td>
<td>2.19%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.66%</td>
<td>3.66%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>5.85%</td>
<td>5.85%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.90%</td>
<td>3.85%</td>
<td>-0.04%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>1.96%</td>
<td>2.00%</td>
<td>0.04%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.90%</td>
<td>0.90%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>2.86%</td>
<td>2.90%</td>
<td>0.04%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.99%</td>
<td>1.99%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>0.87%</td>
<td>0.91%</td>
<td>0.04%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>0.74%</td>
<td>0.77%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>7.17%</td>
<td>7.28%</td>
<td>+0.11%</td>
</tr>
</tbody>
</table>

Table A-2006 - Impact of CARs on LSR among 41 Representative Banks, year-end 2006

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After (2)</td>
<td>Change (3)</td>
<td>After (4)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>27.37%</td>
<td>28.37%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>32.74%</td>
<td>32.74%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder's equity</td>
<td>10.72%</td>
<td>11.05%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>0.88%</td>
<td>0.55%</td>
<td>-0.33%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>2.24%</td>
<td>2.24%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>4.20%</td>
<td>4.20%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>6.44%</td>
<td>6.44%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>4.41%</td>
<td>4.36%</td>
<td>-0.05%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>2.03%</td>
<td>2.08%</td>
<td>0.05%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.90%</td>
<td>0.90%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>2.94%</td>
<td>2.99%</td>
<td>0.05%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.99%</td>
<td>1.99%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>0.94%</td>
<td>1.00%</td>
<td>0.06%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>0.80%</td>
<td>0.85%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Return on Equity</td>
<td>7.48%</td>
<td>7.66%</td>
<td>+0.18%</td>
</tr>
</tbody>
</table>
Table A-2007 - Impact of CARs on LSR among 33 Representative Banks, yearend 2007

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>After (2)</td>
<td>Change (3)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>15.10%</td>
<td>16.10%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>32.60%</td>
<td>32.60%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder’s equity</td>
<td>10.95%</td>
<td>11.28%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.02%</td>
<td>0.69%</td>
<td>-0.33%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>2.16%</td>
<td>2.16%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>4.08%</td>
<td>4.08%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>6.24%</td>
<td>6.24%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>4.18%</td>
<td>4.14%</td>
<td>-0.04%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>2.06%</td>
<td>2.10%</td>
<td>0.04%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>1.03%</td>
<td>1.03%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>3.09%</td>
<td>3.13%</td>
<td>0.04%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.89%</td>
<td>1.89%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>1.20%</td>
<td>1.24%</td>
<td>0.04%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>1.02%</td>
<td>1.06%</td>
<td>0.04%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>9.32%</td>
<td>9.36%</td>
<td>+0.05%</td>
</tr>
</tbody>
</table>

Table A-2008 - Impact of CARs on LSR among 39 Representative Banks, yearend 2008

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>After (2)</td>
<td>Change (3)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>14.73%</td>
<td>15.73%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>32.84%</td>
<td>32.84%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder’s equity</td>
<td>10.73%</td>
<td>11.05%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>0.73%</td>
<td>0.40%</td>
<td>-0.33%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>1.96%</td>
<td>1.96%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.70%</td>
<td>3.70%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>5.66%</td>
<td>5.66%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.41%</td>
<td>3.38%</td>
<td>-0.03%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>2.25%</td>
<td>2.28%</td>
<td>0.03%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.85%</td>
<td>0.85%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>3.10%</td>
<td>3.12%</td>
<td>0.02%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.84%</td>
<td>1.84%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>1.25%</td>
<td>1.28%</td>
<td>0.03%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>1.06%</td>
<td>1.09%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>9.91%</td>
<td>9.85%</td>
<td>-0.06%</td>
</tr>
</tbody>
</table>
### Table A - 2009 - Impact of CARs on LSR among 39 Representative Banks, year - end 2009

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>After (2)</th>
<th>Change (3)</th>
<th>After (4)</th>
<th>Change (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total capital / RWA</td>
<td>16.60%</td>
<td>17.60%</td>
<td>1.00%</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>62.22%</td>
<td>62.22%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder’s equity</td>
<td>12.16%</td>
<td>12.78%</td>
<td>0.62%</td>
<td>0.62%</td>
<td>0.62%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.11%</td>
<td>0.49%</td>
<td>-0.62%</td>
<td>-0.62%</td>
<td>-0.62%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.09%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>1.82%</td>
<td>1.82%</td>
<td>0.00%</td>
<td>1.85%</td>
<td>0.03%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.41%</td>
<td>3.41%</td>
<td>0.00%</td>
<td>3.41%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>5.23%</td>
<td>5.23%</td>
<td>0.00%</td>
<td>5.26%</td>
<td>0.03%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.22%</td>
<td>3.18%</td>
<td>-0.04%</td>
<td>3.18%</td>
<td>-0.04%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>2.01%</td>
<td>2.05%</td>
<td>0.04%</td>
<td>2.08%</td>
<td>0.07%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>1.00%</td>
<td>1.00%</td>
<td>0.00%</td>
<td>1.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>3.02%</td>
<td>3.05%</td>
<td>0.04%</td>
<td>3.08%</td>
<td>0.06%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.82%</td>
<td>1.82%</td>
<td>0.00%</td>
<td>1.82%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>1.19%</td>
<td>1.23%</td>
<td>0.04%</td>
<td>1.25%</td>
<td>0.06%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>1.01%</td>
<td>1.04%</td>
<td>0.03%</td>
<td>1.06%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>8.32%</td>
<td>8.16%</td>
<td>-0.17%</td>
<td>8.32%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>
### Table A 2010 - Impact of CARs on LSR among 40 Representative Banks, year-end 2010

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>After (2)</td>
<td>Change (3)</td>
<td>After (4)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>16.41%</td>
<td>17.41%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>63.60%</td>
<td>63.60%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder’s equity</td>
<td>11.65%</td>
<td>12.29%</td>
<td>0.64%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.27%</td>
<td>0.63%</td>
<td>-0.64%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.14%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>1.78%</td>
<td>1.78%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.35%</td>
<td>3.35%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>5.13%</td>
<td>5.13%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.00%</td>
<td>2.97%</td>
<td>-0.03%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>2.12%</td>
<td>2.16%</td>
<td>0.04%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>1.05%</td>
<td>1.05%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>3.18%</td>
<td>3.21%</td>
<td>0.03%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.82%</td>
<td>1.82%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>1.36%</td>
<td>1.39%</td>
<td>0.03%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>1.15%</td>
<td>1.18%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>9.91%</td>
<td>9.63%</td>
<td>-0.28%</td>
</tr>
</tbody>
</table>

### Table A - 2011 - Impact of CARs on LSR among 38 Representative Banks, yearend 2011

<table>
<thead>
<tr>
<th></th>
<th>Before (1)</th>
<th>No change in lending spread</th>
<th>Change in lending spread</th>
</tr>
</thead>
<tbody>
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<td>Change (3)</td>
<td>After (4)</td>
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<td>Total capital / RWA</td>
<td>16.19%</td>
<td>17.19%</td>
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</tr>
<tr>
<td>RWA / Total Assets</td>
<td>65.83%</td>
<td>65.83%</td>
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</tr>
<tr>
<td>Shareholder’s equity</td>
<td>11.89%</td>
<td>12.55%</td>
<td>0.66%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.59%</td>
<td>0.93%</td>
<td>-0.66%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.11%</td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>1.70%</td>
<td>1.70%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.19%</td>
<td>3.19%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>4.89%</td>
<td>4.89%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>2.94%</td>
<td>2.91%</td>
<td>-0.03%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>1.95%</td>
<td>1.98%</td>
<td>0.03%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>1.02%</td>
<td>1.02%</td>
<td>0.00%</td>
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<tr>
<td>= Revenue</td>
<td>2.97%</td>
<td>3.00%</td>
<td>0.03%</td>
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<tr>
<td>- Operating expense</td>
<td>1.78%</td>
<td>1.78%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>1.19%</td>
<td>1.22%</td>
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</tr>
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<td>NET INCOME</td>
<td>1.01%</td>
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<tr>
<td>Return on equity</td>
<td>8.51%</td>
<td>8.29%</td>
<td>-0.22%</td>
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Table A-2012 - Impact of CARs on LSR among 39 Representative Banks, yearend 2012

<table>
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<tr>
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<th>Before (1)</th>
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<th>Change (3)</th>
<th>Change (5)</th>
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<tbody>
<tr>
<td>Total capital / RWA</td>
<td>19.97%</td>
<td>20.97%</td>
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<td>1.00%</td>
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<tr>
<td>RWA / Total Assets</td>
<td>63.10%</td>
<td>63.10%</td>
<td>0.00%</td>
<td>0.00%</td>
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<tr>
<td>Shareholder’s equity</td>
<td>13.50%</td>
<td>14.13%</td>
<td>0.63%</td>
<td>0.63%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.71%</td>
<td>1.08%</td>
<td>-0.63%</td>
<td>-0.63%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Interest income on loans</td>
<td>1.67%</td>
<td>1.67%</td>
<td>0.00%</td>
<td>1.67%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.13%</td>
<td>3.13%</td>
<td>0.00%</td>
<td>3.13%</td>
</tr>
<tr>
<td>Interest income</td>
<td>4.80%</td>
<td>4.80%</td>
<td>0.00%</td>
<td>4.80%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.00%</td>
<td>2.97%</td>
<td>-0.03%</td>
<td>2.97%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>1.80%</td>
<td>1.83%</td>
<td>0.03%</td>
<td>1.83%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.91%</td>
<td>0.91%</td>
<td>0.00%</td>
<td>0.91%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>2.71%</td>
<td>2.74%</td>
<td>0.03%</td>
<td>2.74%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>2.14%</td>
<td>2.14%</td>
<td>0.00%</td>
<td>2.14%</td>
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<tr>
<td>= Pretax income</td>
<td>0.57%</td>
<td>0.60%</td>
<td>0.03%</td>
<td>0.60%</td>
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<tr>
<td>NET INCOME</td>
<td>0.48%</td>
<td>0.51%</td>
<td>0.03%</td>
<td>0.51%</td>
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<tr>
<td>Return on equity</td>
<td>3.57%</td>
<td>3.62%</td>
<td>+0.05%</td>
<td>3.57%</td>
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</table>
### Table A-2013 - Impact of CARs on LSR among 39 Representative Banks, yearend 2013

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<th>Change in lending spread</th>
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</thead>
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<td></td>
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<td>After (2)</td>
<td>Change (3)</td>
</tr>
<tr>
<td></td>
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<td>After (4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Change (5)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>20.44%</td>
<td>21.44%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>60.34%</td>
<td>60.34%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Shareholder’s equity</td>
<td>12.58%</td>
<td>13.18%</td>
<td>0.60%</td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>1.73%</td>
<td>1.13%</td>
<td>-0.60%</td>
</tr>
<tr>
<td>Increase in lending spread</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.018%</td>
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<tr>
<td>Interest income on loans</td>
<td>1.69%</td>
<td>1.69%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.16%</td>
<td>3.16%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Interest income</td>
<td>4.85%</td>
<td>4.85%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.01%</td>
<td>2.97%</td>
<td>-0.03%</td>
</tr>
<tr>
<td>= Net Interest income</td>
<td>1.84%</td>
<td>1.87%</td>
<td>0.03%</td>
</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.90%</td>
<td>0.90%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>2.73%</td>
<td>2.77%</td>
<td>0.03%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.91%</td>
<td>1.91%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Pretax income</td>
<td>0.83%</td>
<td>0.86%</td>
<td>0.03%</td>
</tr>
<tr>
<td>NET INCOME</td>
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<td>0.73%</td>
<td>0.03%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>3.60%</td>
<td>5.56%</td>
<td>-0.04%</td>
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### Table A-2014 - Impact of CARs on LSR among 37 Representative Banks, yearend 2014

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<td></td>
<td>After (2)</td>
<td>Change (3)</td>
</tr>
<tr>
<td></td>
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<td>After (4)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Change (5)</td>
</tr>
<tr>
<td>Total capital / RWA</td>
<td>21.96%</td>
<td>22.96%</td>
<td>1.00%</td>
</tr>
<tr>
<td>RWA / Total Assets</td>
<td>59.74%</td>
<td>59.74%</td>
<td>0.00%</td>
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<tr>
<td>Shareholder’s equity</td>
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<td>0.02%</td>
</tr>
<tr>
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<td>1.69%</td>
<td>1.69%</td>
<td>0.00%</td>
</tr>
<tr>
<td>+ Interest income ex loans</td>
<td>3.18%</td>
<td>3.18%</td>
<td>0.00%</td>
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<tr>
<td>Interest income</td>
<td>4.87%</td>
<td>4.87%</td>
<td>0.00%</td>
</tr>
<tr>
<td>- Interest expense</td>
<td>3.09%</td>
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<td>-0.03%</td>
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<tr>
<td>= Net Interest income</td>
<td>1.78%</td>
<td>1.81%</td>
<td>0.03%</td>
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<tr>
<td>+ Noninterest income</td>
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<td>0.95%</td>
<td>0.00%</td>
</tr>
<tr>
<td>= Revenue</td>
<td>2.73%</td>
<td>2.76%</td>
<td>0.03%</td>
</tr>
<tr>
<td>- Operating expense</td>
<td>1.74%</td>
<td>1.74%</td>
<td>0.00%</td>
</tr>
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<td>= Pretax income</td>
<td>0.84%</td>
<td>0.87%</td>
<td>0.03%</td>
</tr>
<tr>
<td>NET INCOME</td>
<td>0.70%</td>
<td>0.73%</td>
<td>0.03%</td>
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<tr>
<td>Return on equity</td>
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<td>-0.04%</td>
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Table A - 2015 - Impact of CARs on LSR among 36 Representative Banks, year 2015

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<th>Change (3)</th>
<th>After (4)</th>
<th>Change (5)</th>
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<td>1.00%</td>
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</tr>
<tr>
<td>RWA / Total Assets</td>
<td>61.82%</td>
<td>61.82%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
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<td></td>
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<tr>
<td>Shareholder’s equity</td>
<td>13.96%</td>
<td>14.58%</td>
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<td>0.62%</td>
<td>0.62%</td>
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<tr>
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<td>-0.62%</td>
<td>-0.62%</td>
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<tr>
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<td>0.00%</td>
<td>0.08%</td>
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<tr>
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<td>1.71%</td>
<td>0.00%</td>
<td>1.73%</td>
<td>0.02%</td>
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<tr>
<td>+ Interest income ex loans</td>
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<td>3.20%</td>
<td>0.00%</td>
<td>3.20%</td>
<td>0.00%</td>
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<td>Interest income</td>
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<td>4.91%</td>
<td>0.00%</td>
<td>4.93%</td>
<td>0.02%</td>
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<td>3.19%</td>
<td>3.15%</td>
<td>-0.04%</td>
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<td>= Net Interest income</td>
<td>1.72%</td>
<td>1.76%</td>
<td>0.04%</td>
<td>1.78%</td>
<td>0.06%</td>
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</tr>
<tr>
<td>+ Noninterest income</td>
<td>1.02%</td>
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<td>0.00%</td>
<td>1.02%</td>
<td>0.00%</td>
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</tr>
<tr>
<td>= Revenue</td>
<td>2.74%</td>
<td>2.78%</td>
<td>0.04%</td>
<td>2.80%</td>
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<td>0.00%</td>
<td>1.70%</td>
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<td>0.04%</td>
<td>1.10%</td>
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### Table A - 2016 - Impact of CARs on LSR among 36 Representative Banks, year 2016

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<th>After (4)</th>
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<td>20.58%</td>
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<td>1.00%</td>
<td></td>
<td></td>
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<tr>
<td>RWA / Total Assets</td>
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<td>0.00%</td>
<td>0.00%</td>
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<td></td>
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<tr>
<td>Shareholder’s equity</td>
<td>13.34%</td>
<td>13.95%</td>
<td>0.61%</td>
<td>0.61%</td>
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<td></td>
</tr>
<tr>
<td>Wholesale funding</td>
<td>2.07%</td>
<td>1.46%</td>
<td>-0.61%</td>
<td>-0.61%</td>
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<td></td>
</tr>
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<td>Increase in lending spread</td>
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<td>0.00%</td>
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<td>0.029%</td>
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<td>1.70%</td>
<td>0.00%</td>
<td>1.71%</td>
<td>0.01%</td>
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<tr>
<td>+ Interest income ex loans</td>
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<td>3.12%</td>
<td>0.00%</td>
<td>3.12%</td>
<td>0.00%</td>
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</tr>
<tr>
<td>Interest income</td>
<td>4.82%</td>
<td>4.82%</td>
<td>0.00%</td>
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<tr>
<td>- Interest expense</td>
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<td>2.94%</td>
<td>-0.03%</td>
<td>2.94%</td>
<td>-0.03%</td>
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<tr>
<td>= Net Interest income</td>
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<td>0.03%</td>
<td>1.88%</td>
<td>0.03%</td>
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</tr>
<tr>
<td>+ Noninterest income</td>
<td>0.91%</td>
<td>0.91%</td>
<td>0.00%</td>
<td>0.91%</td>
<td>0.00%</td>
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<tr>
<td>= Revenue</td>
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<td>2.79%</td>
<td>0.03%</td>
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</tr>
<tr>
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<td>0.00%</td>
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<tr>
<td>= Pretax income</td>
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<td>0.90%</td>
<td>0.02%</td>
<td>0.91%</td>
<td>0.03%</td>
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</tr>
<tr>
<td>NET INCOME</td>
<td>0.74%</td>
<td>0.76%</td>
<td>0.02%</td>
<td>0.77%</td>
<td>0.03%</td>
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<tr>
<td>Return on equity</td>
<td>5.54%</td>
<td>5.49%</td>
<td>-0.05%</td>
<td>5.54%</td>
<td>0.00%</td>
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</tr>
</tbody>
</table>
Preliminary Insights on the Adoption of International Financial Reporting Standard (IFRS) for Small and Medium Enterprises (SMEs) in Pakistan

1 Zeeshan Mahmood, 2 Allah Bakhsh Khan, 3 Asad ur Rehman, 4 Samreen Atta

1 Assistant Professor, Department of Commerce, Bahauddin Zakariya University, Multan, Pakistan. zeeshanmahmood@bzu.edu.pk
2 Assistant Professor, Department of Commerce, Bahauddin Zakariya University, Multan, Pakistan. abkhan@bzu.edu.pk
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Keywords

ABSTRACT

This study aims to investigate the perceptions of accountants regarding the possible adoption of International Financial Reporting Standards (IFRS) for SMEs in Pakistan. IFRS for SMEs were issued by the IASB in 2009. The adoption of the IFRS for SMEs in Pakistan has been proposed by the Institute of Chartered Accountants of Pakistan (ICAP) and in 2015 the Securities and Exchange Commission of Pakistan (SECP) has approved the adoption of the ‘International Financial Reporting Standard for Small and Medium Sized Entities. We conducted seven semi-structured interviews with the chartered accountants based in Multan that were providing accounting and consultancy services to various SMEs. The findings of the research confirmed the reasonable level of awareness among chartered accountants regarding IFRS for SME. Our respondents perceive high-quality comparable financial information as the most significant advantage of applying IFRS for SMEs whereas cost burdens on firms and lack of trained personnel were perceived as major obstacles for the adoption decision. The findings also suggest that diligent IFRS awareness and training programs must be organized by all regulatory and professional bodies (like SECP and ICAP) on both country and firm level to achieve the true purpose of this adoption.

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1. Introduction

Because of rapid globalization, those business entities (whether large or small) are well recognized that are using international standards (Zeghal & Mhedhbi, 2006). International integration of the markets also poses unique challenges to business entities, whether large or small. These challenges are further exacerbated because of the differences in the cultural, economic, social, historical and political structures of different countries which leads to diversity of accounting technologies (Haverty, 2006). One solution to this problem is the standardization of financial reporting that should decrease the diversity of accounting practices and enables globalization and greater economic integration (Cai & Wong, 2010). International
Accounting Standards Board (IASB) was created to serve this purpose. To enhance the comparability of financial statements across the world, the IASB issued a common set of standards known as International Financial Reporting Standards (IFRS). Large-sized companies remained the main subject of these IFRS whereas financial reporting needs of small and medium enterprises were largely ignored.

The small and medium enterprises (SMEs) are considered as the engine of prosperity, economic growth and national development, both in developed and developing countries (Ojeka, 2011). SMEs represent somewhere around 70% and 90% of employment and greater than 70% of national yield. Within the European Union (EU), SMEs constitute at least 99% of all enterprises, maintain nearly 65% of the employment in the private sector and produce considerably more than 50% of the gross domestic product (Mantzari et al., 2009). Emerging and developing economies (like Taiwan and China) are also dominated by SMEs. Taiwan is the most flourishing developing nation over the last 50 years; build on an energetic SME sector. The SME sector of Pakistan also represents 90% of the entire business enterprises and contributes 40% to national GDP.

It is time-consuming, expensive, complex, and burdensome to get the understanding of any SMEs financial statements which are prepared according to its own jurisdiction’s standards and regulations. It is only possible with the adoption of globally accepted standards to achieve the international comparability in financial reporting by listed entities as well as non-listed entities. Therefore, a group of practitioners consisting of business entities, financial institutions, regulatory authorities, auditors and accounting professionals accepted the need for internationally accepted financial reporting standards. These practitioners develop a standard with such qualities and acceptable features to gain momentum all over the world. First, International Financial Reporting Standards were built to meet the requirements and needs of listed entities also called full IFRS. Secondly, another set of standards, named as International Financial Reporting Standard for Small and Medium-sized Entities (IFRS for SMEs) were built to fulfill the needs of the SME sector. IFRS for SMEs is considered as an important milestone in the development of international accounting harmonization. The adoption of IFRS for SME deemed to improve the confidence level of worldwide investors and investment analysts in the financial statements of companies (Okpala, 2012).

Adoption of IFRS is not just an accounting practice, but it is an adaptation that requires contribution and enforcement from all stakeholders including preparers, auditors and users. This fact must be considered that in certain cases adopting and implementing IFRS may cause unjustified suffering to the business. For example, Pakistan’s banking sector was not equipped to apply the requirements of IAS 39 at once because of capacity and some other associated issues. Some short-lived actions had to adopt, like to provide them with adequate time for gradual implementation ("Review of practical implementation issues", 2007). The adoption of the IFRS for SMEs in Pakistan has been proposed by the Institute of Chartered Accountants of Pakistan (ICAP) and in 2015 the Securities and Exchange Commission of Pakistan (SECP) has approved the adoption of the 'International Financial Reporting Standard for Small and Medium-Sized Entities. The IFRS for SMEs would replace the Pakistani Accounting and Financial Reporting Standards for Medium Sized Entities issued by the ICAP. The IFRS standard SMEs consists of 35 chapters, 230 pages addressing all the requirements for SMEs.

The purpose of this paper is to get preliminary insights on the level of preparedness of SMEs for the adoption of the IFRS for SMEs. Entities’ preparedness will be measured by the indicators such as the training of accounting professionals, availability of training material regarding IFRS for SMEs in documented form, seminars, workshops and use of accounting software. We examined emerging market like Pakistan because emerging market seems more eager to adopt international standards. The implementation of IFRS for SMEs in emerging markets is likely to improve the economy’s flow of capital, distribution of resources, countrywide financial reporting model and will give an image and reputation as an up to date, well organized and well-regulated economy to conduct business activities (Jermakowicz and Gornik-Tomaszewski, 2006; Irvine, 2008; Madawaki, 2012).
The most significant actor in the adoption process of IFRS for SMEs are the accounting professionals. Their support, obligation and commitment are very important in an effective adoption process. All the possible problems, issues and obstacles in the adoption process can be resolved by the joint efforts and support of SMEs, regulatory bodies, and accounting professionals. Therefore, the preparedness as well as the perception of professional accountants regarding the challenges and benefits of IFRS for SMEs will play a very important part in a victorious adoption procedure. Our research is aimed to investigate the perception of the accounting professionals regarding the level of preparedness of Pakistani SMEs and the associated benefits and challenges in the adoption of IFRS for SMEs. This research has implications for regulators and practitioners in the adoption process. This paper informs regulatory bodies to take some measures for the effective adoption and implementation of IFRS for SMEs. This paper contributed to the limited literature on IFRS for SMEs adoption in emerging and developing economies. Many jurisdictions are planning not to adopt this set of standards due to various complications and contentious issues in the adoption of IFRS for SMEs. On the contrary, many jurisdictions around 78 out of 150 jurisdictions adopted or are in the process of adopting IFRS for SMEs. The following study will consider the thrust for successfully achieving accounting convergence with IFRS for SMEs in one of these jurisdictions like Pakistan.

2. Literature Review
IFRS for SMEs is an essential landmark in the development of global accounting synchronization. It was published to make financial reporting simple all over the world. In July 2009 the IASB released IFRS for SMEs. This was a five-year development process involving wide-ranging global consultation. IFRS for SMEs is a self-sufficient standard well suited to fulfil the requirements and competencies of smaller entities. IFRS for SMEs provides a standard for those entities in any jurisdiction where there is no national GAAP. One of the purposes behind the establishment of IFRS was to provide with a substitute to those countries that already have an established national GAAP and hence will be familiar across diverse territories. It will be easy for the emergent entities switch to full IFRS when they develop into publicly accountable entities. It can be adopted by any jurisdiction for small and medium sized entities. It is up to the jurisdiction to decide which enterprises should use this standard. There is only one restriction on this adoption is that listed companies and financial institutions should not use it. Internationally more than 99% of private enterprises are expected to be qualified to adopt this IFRS in their jurisdictions for SMEs (PWC, 2009).

The IFRS for SMEs is a self-contained, 230-page standard designed to produce general purpose financial statements that represent financial position, cash flows and operating results of SMEs. Based on a full set of IFRS, the simplifications were made by taking into consideration different user needs. It is customized for the competencies and requirements of smaller businesses. It is well understood all over the world. There are five main types of simplifications in the IFRS for SMEs as compared with full IFRS and many other national GAAPs. These simplifications make IFRS for SMEs smoother and easier than the full set of IFRS. Some topics were omitted in the IFRS for SMEs as they were irrelevant to typical SMEs, e.g. earnings per share, interim financial reporting, and segment reporting are omitted in IFRS for SMEs. For example, amortize goodwill; expense all borrowing and R&D costs; cost model for associates and jointly-controlled entities; no available-for-sale or held-to-maturity classes of financial assets. Substantially fewer disclosures (3000 disclosures vs 300) are required in IFRS for SMEs. IFRS for SMEs are less intricate as compared to full IFRS. In IFRS for SMEs there is simplified redrafting for easier understandability and translation.

2.1 Adoption of IFRS for SMEs around the world
IFRS for SMEs is warmly welcomed by many international accounting groups like the World Bank, the G20, ACCA, European Federation of Accountants, IMF, Basel Committee, IOSCO and IFAC and the AICPA. According to these global accounting groups the quality, reliability and comparability of
financial reports of small and medium sized entities will be enhanced by this adoption all over the world. Capital access for SMEs will also gain momentum across the border. By this adoption all users like suppliers, creditors and investors will get benefits. All these benefits are the main reason for the development of IFRS for SMEs. When the investor will get reliable information from the financial statements, then an important public interest will be served. Similarly, when creditors gain the confidence on the financial statements of SMEs, it will become easy for the SMEs to gain capital. So, by this adoption all the benefits will be attained by the SMEs (Pacter, 2014).

The adoption of IFRS for SMEs is not uniform and is questionable. Developed economies are reluctant to embrace this standard as compared to emerging and developing economies. The reason behind reluctance for the adoption is that developed countries have their own well-established standards. They claimed that these standards are unsuitable for their SMEs sector as their markets are more established as compared to those in the emerging and developing countries. For instance, well-known and developed economy embraced full IFRS like UK, Australia and European Union member states have not adopted IFRS for SMEs. Australia clearly declared that it will not implement this standard for SMEs. Australia is with the view that this reporting standard has many inherent flaws. The implementation of IFRS for SMEs is difficult as there is a low level of corporate culture in SMEs. The difference between tax legislation and IFRS for SMEs is also the reason behind its non-adoption (Poroy & Sipahi, 2007). There were 66 jurisdictions in September 2010 that have adopted or planned to adopt IFRS for SMEs. This quantity is raised to 73 jurisdictions in January 2011. According to International Accounting Standards Board (2012), some of the emerging countries like Argentina, Brazil, Egypt, Hong Kong, Malaysia, Nigeria, Peru, the Philippines, Turkey, Venezuela, Zambia, Zimbabwe, Singapore, etc. had planned to adopt the IFRS for SMEs after the subsequently three years following the year of 2012. It can be shown from this record that most of the emerging economies have embraced or plan to embrace the IFRS for SMEs in their jurisdictions in the nearby future (Vasek, 2011). According to Stainbank (2008) South Africa was the first economy to adopt the IFRS for SMEs across the world. In Asian context, countries that have adopted the IFRS for SMEs include; Bangladesh, Hong Kong, Israel, Myanmar (Burma), Singapore and Sri Lanka, Turkey, Netherlands, Romania, Fiji, South Africa, Kenya, Tanzania, Zimbabwe etc. Countries that have planned the adoption are Bhutan, Jordan, Lebanon, Pakistan, Palestine, Qatar and Saudi Arabia etc. Countries – that have not adopted the standard are India, China, Malaysia, Japan, Indonesia, Middle East (Saudi Arabia, Jordan, Lebanon, Qatar and Palestine) and Korea etc.

2.2 IFRS for SMEs in Pakistan

In Pakistan there are nearly 50,000 non-listed companies as compared to 600 listed companies. So, there is a need of separate accounting standards for SMEs to meet the needs of users of such enterprises. On 01 July 1961, The Institute of Chartered Accountant of Pakistan (ICAP) came into existence with the key intention of regulating the profession of accounting in Pakistan. ICAP is working as a leading regulatory authority for the progress and development of the accounting profession in the Pakistan. It works in connection with the Securities and Exchange Commission of Pakistan (SECP). The SECP has the power to report accounting principles for both listed and non-listed companies. On 15 September 2015, the Securities and Exchange Commission of Pakistan (SCEP) issued Statutory Notifications 928(I)/2015 and 929(I)/2015 for adoption of financial reporting standard for small and medium sized entities. As per the notification, following companies are mandatorily required to use IFRS for SMEs for preparation of their financial statements: Medium Size companies (other than public interest companies) which have paid up capital above Rs.25 million, but less than 200 million or turnover exceeding Rs.100 million, but less than Rs.1 billion. Not for Profit Small and Medium Sized Company (other than large sized companies) which has annual gross revenue/grants/income/subsidies/donations) including other income/revenue less than Rs.200 million. These companies have the option to choose full IFRS Standard being adopted in Pakistan (http://www.ifrs.org). Small size companies (other than public interest companies) having paid up capital not exceeding Rs.25 million, and turnover not exceeding Rs.100 million have an option to prepare their financial statements. Although SECP has issued Accounting and Financial Reporting Standards (AFRS) for Small Sized Entities (SSE).
2.3 Stakeholders’ Perception of IFRS adoption for SMEs

Since the IASB issued IFRS for SMEs, few surveys were conducted for understanding the views of practitioners, academicians, and other professionals (see e.g., Durocher & Fortin, 2011). Few short articles have been written in professional accountancy magazines about the adoption of IFRS for SMEs. Except few studies, discussed in this literature review, there is a scarcity of research on the topic. (Christie, Brozovsky, & Hicks, 2010; Jermakowicz & Epstein, 2010; Seifert & Lindberg, 2010). Albu et al., (2013) explored the perceptions of the users of SMEs in four growing economies, including the Czech Republic, Hungary, Romania, and Turkey. Semi-structured interviews were conducted to investigate the possible adoption issues of the IFRS for SMEs. The results showed that the respondents support a mandatory approach rather than convergence approach and their perception about the benefits of this adoption includes improved clearness, comparability, highly credible accounting and financial information, foreign investments, and increased financing opportunities. This adoption will provide new ventures to establish business on both national and international level. It is illustrated that mandatory adoption of IFRS for SMEs is highly supported by the end users and auditors of financial statements. Preparers and professional bodies favor voluntary adoption of IFRS for SMEs to prepare themselves for better and effective adoption.

Many US studies have assessed the relevance and implementation of IFRS in the context of its benefits to the preparers and users of the financial information. Brown (2011) investigated the benefits to be gained by the preparers and users by this adoption. The financial statements become comparable, transparent and more relevant.

Alp & Ustundag, 2009 carried on the debate on issues of IFRS adoption for SMEs. They investigated that the transition process towards IFRS for SMEs has started with the commencement of full IFRS. They reported many implication problems in the transition from national and local standards to international financial reporting standard for non public firms. Uyar & Güngörmiş (2013) conducted a questionnaire survey in Turkey to explore the awareness and knowledge of the accounting personnel regarding international financial reporting standards for small and medium sized entities. The results showed that the accountants less informed about the omitted topics. Their information about the measurement and recognition principle is satisfactory. The advocates of this adoption exceed the number of opponents.

Kennedy and Emmanuel, 2013 conduct study and revealed that even with the benefits, the SMEs are less sure about the benefits and more concerned about its adoption cost. As a result, varied reactions are continuous to be voiced through the debates on the eradication of local reporting standards for international reporting standards.

Uyar and Ataman (2014) reported the reasonable level of awareness of Turkish accountants regarding the adoption of international financial reporting standards for small and medium sized entities. Albu et al., (2013) investigated the knowledge and perception of stakeholders regarding the possible challenges to be faced by this adoption. The stakeholders perceived that the conversion cost to this standard includes trainings of personnel, cost of hiring expert and auditors and cost of upgrading the previous accounting software. Even with the challenges they are much sure about the benefits of this adoption like it would bring positive and healthy change in the accounting traditions and cultural values. It will also change the attitude of professional accountants and corporate culture in SMEs.

3. Research Methods

This paper adopts the qualitative methodology. Semi-structured interviews were conducted with the Chartered Accountants (CA) firms that deal with small and medium enterprises in Multan, Pakistan. CA firms were taken into consideration as their accountants are dealing with SMEs and they are aware of both the international developments regarding IFRS and local issues regarding SMEs. These chartered accountants provide the SMEs with consultation services, audit services and assist these SMEs in the preparation of financial statements. We conducted seven interviews from chartered accountants in Multan. We adopted convenient sampling approach for the selection of interviews. We prepared and followed the
interview guide (see Appendix A) that was used to probe themes related to the research objectives of this study. The interviews were then transcribed and analyzed manually to get empirics related to various issues related to the IFRS for SMEs adoption in Pakistan. The following section presents empirical findings that came out from this analysis.

4. Findings and Discussion
4.1 Level of preparedness of IFRS for SMEs in Pakistan
The IFRS adoption will be effective if there is an appropriate level of awareness among the SMEs, accounting professionals, academic persons and all other stakeholders. All these parties play a significant role in the effective adoption process. The cooperation and collaboration among all these parties will make it easy to carry on the transition process towards IFRS for SMEs in a smooth manner (Kenneth & Grazyina, 2013). When the discussion on IFRS adoption for SMEs is started with the interviewees they all were aware about this standard to be applied in the following financial period. All of them knew about the implementation of this standard. The financial period in Pakistan ends in June. From January 2015 to June 2017 there is a transition period. Financial statements made from June 2018 onwards will be according to this standard. As the accounting professionals are closely dealing with the preparation if financial statements so they are well informed about the adoption process of IFRS for SMEs. However, in the view of accountants, the awareness level of owners and managers of SMEs is low.

“We are very aware regarding IFRS for SMEs. The previously used Accounting and Financial Reporting Standards (AFRS) for SMEs are now replaced by IFRS for SMEs. Now we are switching towards IFRS for SMEs and are facing the transition phase,... but when we talk about the owners and managers of SMEs they have low level of awareness about this standard.”

All the preparers and users of financial statements, auditors and regulatory authorities must have adequate practical knowledge for sensible execution of IFRS. The lack of well trained personnel and accountants might lead towards poor implementation of IFRS for SMEs. This poor implementation is based on the approach adopted by the SMEs for IFRS adoption (Adekoya, 2011). When asked about the number of training sessions attend by the accountants, they revealed they attend just one training out of four tainting sessions conducted by ICAP Multan.

“We actually don’t need too much training as compared to the managers and owners of SMEs as we are already dealing with full IFRs for large sized companies, so we have to just use smaller contents for IFRS for SMEs as compared to full IFRS.”

There must be a sufficient time span between the effective and implementation date of IFRS for SMEs. But this time span is usually not provided in many jurisdictions. If there will be ample of time for the trainings of personnel then this adoption will truly fulfil its essence (Adekoya, 2011).

“There must be enough time for the trainings of accountants. In Pakistan there is ample time between the decision date and implementation date to make necessary measures for the implementation of this standard.”

After the adoption of IFRS for SMEs, SMEs and accountants might encounter the cost of adopting new accounting software systems (Tyrrall et al., 2007). In the adoption of IFRS for SMEs the SMEs must bear the cost of upgrading their accounting software programs to match the requirements of this standard (Ballas et al., 2010). Inadequate level of education among the preparers of financial statements along with the poor accounting programs results in poor implementation of IFRS for SMEs (Roberts and Sian, 2006). When asked about the interviewee whether they are using the previous accounting systems or switching to new systems, one of the respondents responds in this way.

“There is not an issue working with the previous accounting software systems as our software is compatible with IFRS for SMEs.”

Professional accountants play a vital role in the successful adoption process. There must be sufficient training materials on IFRS for SMEs that should be easily accessible at minor cost or free of cost from the
regulatory authorities in each jurisdiction. The SMEs have to face the affordability cost in terms of training resources and arranging meeting from the spare time of daily operations (Adekoya, 2011). When asked about the training resources and meeting regarding IFRS for SMEs, one of the interviewee replied. “We have pocket guides provided by SECP in which there is a complete package of understanding about IFRS for SMEs. There are just a few meetings conducted in this respect which is sufficient for our understanding and applicability of this standard.”

The aptitude of accounting professionals depends on accountant’s knowledge regarding full IFRS, promptly upgrade and adopt the new regulations, and on the sufficient trainings of accounting personnel on a regular basis (Chand et al., 2015). It is necessary to arrange meetings regarding IFRS for SMEs must be held to make sure about the pure application by the professional accountants.

The implementation of IFRS for SMEs in developing economies is less favorable due to the shortage of expertise and insufficient resources. In the developing countries there is inadequate facilitates to make advancements in infrastructure (Briston 1978; Wallace 1990; Nobes 1998). The cultural values of developing countries are typically dominated by a concept of an entity that is part of the community with respect for family and tradition, and cooperative behaviour in a hierarchical form (Liñán and Fernandez-Serrano, 2014). When asked about whether it is economically favorable for the SMEs to adopt these standards some interviewees favor this adoption while some go against this due to low level of corporate culture is SMEs. One of opponents among the interviewees said, “In the economy of Pakistan, where the SMEs are facing low corporate culture, so they are hesitant in the adoption of any new regulations and standards, the applicability of IFRS for SMEs is seemed to be difficult.”

The adoption of IFRS for SMEs will enhance the comparability of financial statements within and across the industry. By adopting same accounting reporting standard comparability will be enhanced (Aljifri & Khasharmeh, 2006). The adoption of IFRS for SMEs will enhance internal reporting reliability as the credibility of financial information will be enhanced (Ballas et al., 2010). “IFRS for SMEs is economically favorable in Pakistan as it will raise the awareness in the users and owners of SMEs to adopt these standards so that in future when their business will grow into big companies they would have already moved towards standardization. So, it would be definitely favorable for Pakistan economy as it will bring all SMEs at one point in adoption of standard imposed by SECP.”

Albu et. al., (2013) examined the perception of stakeholders regarding this adoption. The stakeholders even with the challenges of high compliance cost are much sure about the benefits of this adoption as it would bring positive and healthy change in the accounting traditions and cultural values. It will also change the attitude of professional accountants and corporate culture in SMEs. “The adoption of IFRS for SMEs is good in one respect that it will bring uniformity in financial statements. But the negative side of IFRS for SMEs is that is thought to be too large for SMEs to implement. Moreover, its implementation requires the small and large sized companies to have chartered accountants. This will be an additional cost for the SMEs.”

The preparers, auditors, and regulatory bodies must have sufficient technical knowledge about the implementation of IFRS for SMEs. The users of financial statements must also have adequate level of information about the IFRS for SMEs. The accounting department must have business skills and some knowledge in legal aspect (Adekoya, 2011). When asked about requirements of the level of education and information to be required for successful implementation of the IFRS for SMEs then all the respondents are on the same views that the accountants must be well known about the three areas such as business, economics and law. “The SMEs must have professional and trained accountants having good knowledge of business and legal requirements as IFRS for SMEs are complicated as compared to previous set of accounting
and financial reporting standards (AFRS) for SMEs. “The chartered accountants have more business information and knowledge as compared to those having degrees of bachelors and masters’ in business and commerce. So, SMEs must have some chartered accounts in its accounting department.”

Professional accountants are looked upon to ensure successful implementation of IFRS. All the users of financial statements such as creditors, suppliers and investors must have an adequate level of information about the IFRS adoption for SMEs. The regulatory bodies must also have sufficient information about this standard. All these parties are responsible in the implementation of IFRS for SMEs. So, they must be trained for the proper adoption of IFRS for SMEs.

“For the adoption of International Financial Reporting Standards for SMEs, the accounting professionals and the management of SMEs must have legal, economic, both academic and practical knowledge of accounting and standards. There must be an evaluation appraisal to check and balance the IFRS adoption in a complete manner.”

Those accountants who have degree of chartered accountancy are more professional as compared to those employing in SMEs.

“A healthy no of professional accountants has a good knowledge of full IFRS already. Accountants working in non-IFRS environment need to upgrade their knowledge. In addition, they must have the knowledge in three areas of business, economics and law.”

Before making decision about the IFRS for SMEs, the regulatory authority must conduct some research to test the suitability of this standard in any jurisdiction. This result will elaborate about the local circumstances and user needs of SMEs in a specific territory. Without conducting research about the possible issues of implementation, the SMEs might take this adoption as a burden if it is not in accordance with the local standards (Samujh & Devi 2015).

4.2. Challenges in adoption of IFRS for SMEs

The small and medium sized entities are short with financial resources. So, they must bear huge compliance cost for the adoption of IFRS for SMEs. There must be some time span for the preparation of this adoption. Therefore, this adoption should be made voluntary so that SMEs can prepare themselves for this adoption (Samujh & Devi 2015). A sufficient amount of time will provide the accountant to train themselves for this adoption (Adekoya, 2011). The regulatory authorities must adopt strict enforcement program for effective and successful implementation of IFRS for SMEs. Some of the interviewees are in the favor of mandatory adoption while the rest said it should be voluntary in the beginning but later it must be mandatory.

“The adoption of IFRS for SMEs should be mandatory to pressurize the SMEs to adopt the standard. Strict enforcement plans must be adopted by SECP to make sure the complete adoption of the standard.”

Before deciding about the adoption of this standard the SMEs must take into account the true definition of SMEs. The SMEs must also consider the suitability of certain disclosures requirements. The first task which must be taken by the SMEs is to announce the transition date. An opening statement of financial position of the SMEs must be generated on this transition date to evaluate how much cost is incurred on the compliance with this standard (Vasek, 2011).

“The adoption of IFRS for SMEs would be mandatory in the beginning so that SMEs can get some time to prepare themselves for the complete adoption of IFRS for SMEs. But later this adoption should be mandatory after transition phase.”

According to Companies Ordinance 1984 5th schedule Medium Size companies (other than public interest companies) having paid up capital exceeding Rs.25 million, but less than 200 million or turnover
exceeding Rs.100 million, but less than Rs.1 billion are legally bound to follow IFRS for SMEs in their financial statements.

One of the interviewee said that there must be more relaxation in its adoption by further classifying the paid-up capital into two or three categories. He expressed his views with these words.

“There must be some slabs of paid up capital which would identify whether this adoption should be voluntary or mandatory. According to Act 2017 the medium sized entities (MSEs) having paid up capital greater than 25 million but less than 200 million must adopt IFRS for SMEs. There must be further categorization in paid up capital like for MSEs having paid up capital between 25 million to 100 million there is voluntary adoption and MSEs having paid up exceeding 100 million but less than 200 million there should be mandatory adoption."

The operations of small and medium sized entities are limited in scope. As the SMEs are domestically based firms hence their requirements are limited. The users of financial statements of SMEs are the suppliers, banks and investors. Among all these users only banks require specific information for granting loans to the SMEs (Chand and White, 2005). Another user of SMEs is supplier. The supplier makes dealing with the SMEs on credit bases. To check the financial position and cash flows of SMEs the supplier is very much concerned about the financial statements of SMEs as these reporting will give reliable information. Simply the main users of SMEs are mostly the banks, investors and government and tax authorities. When asked whether IFRSs for SMEs suitable for SMEs in developing countries like Pakistan where the users have limited informational requirements, one of the interviewee said these words.

“IFRS for SMEs in emerging economies like Pakistan is less suitable as information requirements of users are narrow in scope as they are operating domestically. These users just make confirmation to the local laws. These users are not concerned about the international standards and benchmarks. The reporting obligations are smaller in scope. Therefore, the costs incurred on the preparation, audit and the reporting requirement of the additional disclosures cannot validate this adoption.”

The SMEs users just want to know about cash flows, liquidity and solvency. The users of SMEs are mainly concerned on short term forecast rather than long-term forecasts. On the other hand, the users of large companies are concerned about the earnings and share prices (Causer, 2015).

“The main concern of the users of financial statements of SMEs is to get the information about the financial position, performance and cash flows of SME.”

Unlike large sized companies which have more options to raise finance from the credit market and other alternative markets, small firms mainly rely on bank lending. Therefore, among the users of SMEs banks are more concerned about the financial statements of SMEs (Hutchinson and Xavier, 2006).

“Most of the users of SMEs don’t even concern about which standards are being followed by the SME in which they are investing. The users perform the dealings based on personal relations.”

The users of SMEs are less aware about the accounting information revealed by the financial statements. There is a need of awareness programs for all the users who don’t even consider the importance and value of financial statements. These users perform dealings with SMEs through word of mouth communication.

“The users of financial statements are less focused towards the financial statements and hence they don’t have any concern which accounting, and reporting standards are being used by the SMEs. The users of SMEs must be aware of accounting and financial reporting standards.”
Compliance cost includes all the direct and indirect cost that SMEs must bear in order to make necessary adjustment to meet the requirements of international standards. The SMEs must bear the cost on the trainings of accountants and upgrading of accounting programs. Compliance costs also include the cost of time and money incurred on reporting. When asked the interviewees about the compliance cost exceeds benefits, half of interviewees said.

“Exceeding compliance cost than benefits depend on the lenses of seeing this cost. If it is considered as incurring cost at the point of time, then it will seem to exceed the benefits. When looking through the lenses of long term perspective it seems to be more favorable for the economy.”

“The compliance cost for adoption of IFRS for SMEs in early rears will exceed more than benefits but later it will be minimized.”

It has been argued that IFRS reporting costs have fixed reporting segments that cannot be compromised. But these reports and additional disclosure requirements will be burdensome for SMEs (Hail et al. 2010). The SMEs must incur fees on audit of financial statements following the adoption of IFRS (George et al., 2012).

Accounting personnel in the current situation needs training to be able to cope up with the transition phase since IFRS for SMEs is complicated hence difficult to understand so extra knowledge and extra work would require for switching to IFRS for SMEs. So the companies have to put extra cost and time.

“The small and medium sized entities have limited resources and hence they can’t afford big audit and CA firms. This cost can be minimized if they train their own employees.”

Some participants have the vision that the training of personnel will not be high. The training of employees requires minimum affordable cost. One of the participant gave his remarks,

“IFRS for SMEs are not complicated that SMEs have to bear huge cost on the training of their personnel. The IFRS for SMEs is itself stand-alone standard which requires no need to hire expertise.”

SMEs have insufficient financial resources to guarantee compliance with this standard. The SMEs must outsource the accounting professionals. There is a lack of competent accounting accountants and other expertise in the SMEs. Therefore, more training would be needed in its implementation.

“The SMEs are short with both financial resources and relevant expertise which is an obstacle towards this adoption. SMEs can benefit from this adoption in the long run when the initial cost of adoption in future will reduce to zero.”

White et al. (2015) studied that many disclosures in this standard is burdensome and costly. For example, compensation and related party disclosure are burdensome. Small-sized entities generally do not have sufficient financial capacity to overcome the cost of additional disclosure. Furthermore, size is an important factor that determines entities’ ability to adopt the international reporting standards because larger entities have more resources to spend on their preparation and on compliance with them (Murphy, 1999; Jones and Higgins, 2006; Al-Shammari et al., 2008) Some of the respondents have the views that there would be an extra cost on disclosure by adopting IFRS for SMEs. One of the respondents said these words.

“SMEs have insufficient financial resources, so they have to bear cost of additional disclosures in the adoption of IFRS for SMEs and it will be surely cost the SMEs.”
One of the respondents opposed this view of huge cost of disclosure. They argued this adoption will lessen the burden of disclosures.

“There will be reduction in the burden of interpreting accounting principles and complying with differences in reporting requirements. So SMEs will not have to incur cost of additional disclosures.”

4.3. Benefits in adoption of IFRS for SMEs

There are benefits achieved from the adoption of IFRS for SMEs. This adoption will generate more transparent, comparable, and reliable financial information (Jermakowicz & Gornik-Tomaszewski, 2006; Ballas et al., 2010; Uyar & Gungörmü, 2013). The quality of information in turn enables all the users to understand its meaning (Alfredton et al., 2009).

“IFRS adoption for SMEs will facilitate the financial statements with high quality and comparability to the SMEs. The most significant advantage that this standard will bring is the quality of financial information and the financial statements become comparable within and across the industry.”

According to the respondents, comparability of financial statements is the highest-ranking advantage of the IFRS for SMEs. Comparability refers to the consistency in the financial statements from one to the next period within and across different entities.

“There would be uniformity in financial statements with other countries and easy way of consolidation after the adoption of IFRS for SMEs. Potential advantages of IFRS adoption for SMEs consist of greater transparency in financial statements and providing credible information in accordance with the standards.”

Previous studies showed that the adoption of IFRS for SMEs increases internal reporting reliability and thus reduce the chances of internal corruption (Ballas et al., 2010). IFRS for SMEs will reliability to the financial information. Reliability refers to the information that is unbiased and free from any type material inaccuracy. All the information will truly depict all the transactions or events that it claims to represent (Alfredson et al., 2009, p.16).

“The various benefits associated with this adoption include streamlining of records as all the users of SMEs will easily understand the financial statements and this will lead towards elimination of internal corruption as all the record will be organized in the same way and even more organized information to the management and users of financial statements.”

In some countries the main financing institutions are banks. But these banks don’t rely on the financial statements hence there is no role played by the financial statements in capturing capital nor do these standards enhance relationships with banks (Carini et al., 2013). Van Wyk and Rossouw (2009) studied that the banks do not need the detailed financial information in accordance with IFRS for SMEs.

The effectiveness of financial reporting can be ensured as a result of effective communication with related parties, such as the government, banks, shareholders, and partners (Rezaee et al., 2010, Kouset et al., 2012). The IFRS for SMEs will improve this effective communication between related parties (Siam & Rahahleh, 2010).

“In Pakistani SMEs investments are done on the basis of word of mouth communication being applied. The investors are not concerned about which standards are being applied by the SMEs.” So, this adoption of standard will not enhance the investment opportunities for small and medium sized entities.
This adoption also attracts foreign direct investment. The investors across the globe will confidently invest in the SMEs by relying on financial statements under the IFRS for SMEs (Aljifri & Khasharmeh, 2006; Tyrall et al., 2007).

“In Pakistan foreign investment is welcomed in the family-oriented business. Like if the relative or siblings of the SMEs’ owners are in some foreign country they are very much willing to invest in those SMEs.”

It is argued from some investigators that there is no benefit for domestic firms to follow IFRS for SMEs as they are not interested in international trading (Lungu et al., 2007).

“In Pakistan there is less attraction by foreigners to invest in SMEs. Mostly local investors are willing to invest in SMEs. There is no direct foreign investment in SMEs as the foreign are less interested in SMEs as they are operating domestically. Foreign investors are willing to invest in large and economically significant companies. So Pakistani SMEs will not get benefit in the regard of attracting foreign direct investment by adopting IFRS for SMEs.”

Based on the results of the study conducted in Nigeria by Gabriel Isu et al., 2014 it is concluded that the progress and success of the SMEs depends on the combined efforts and cooperation by the users of financial statements, accountants and owners of SMEs. They gave the opinion that however the adoption of IFRS for SMEs is expensive and troublesome, yet this adoption will improve sustainability, competitive advantage and potentials for growth of SMEs.

“IFRS alone is not responsible for the enhancement of potential growth, competitive advantage and sustainability of SMEs. IFRS is not the factor influencing potential growth, competitive advantage and sustainability of SMEs rather other factors like the availability of finance, high quality of product, effective management, legal policies of the country, competitive environment and market sustainability.”

Many of the executives in Fiji said some disclosure requirements in this standard are burdensome like related part disclosure and compensation disclosure. They opposed this extra burden of disclosure requirements for SMEs (White et al., 2015). Emergent economies are most probably being motivated towards the adoption of good quality standards of IFRS for SMEs with more organized financial disclosure requirements to gain attention from international financial institutions like World Bank or IMF. Besides the fact that there are many differences between the national accounting standards and IFRS for SMEs, yet these economies are ready to embrace this adoption (Barth et al. 2008, Gordon et al. 2012).

“There is reduction in the burden of interpreting accounting principles and complying with differences in reporting requirements. With every standard there are some interpretations are disclosures which is an essential part of every standard.”

This benefit is less observed in the literature that IFRS for SMEs reduce the burden of disclosure requirements.

“There is a reduction in disclosure requirements only when we compared the IFRS for SMEs with full IFRS. But when we compared IFRS for SMEs with previous AFRS for SMEs, there is definitely a burden for the SMEs in terms of these additional disclosures.”

5. Conclusions
This paper concludes that chartered accountants are well aware and prepared for the adoption and implementation of IFRS for SMEs in Pakistan. This awareness and preparation is because of the number of training sessions and the guidelines that were provided by ICAP. All the accountants have an adequate level of skills and information on business, economics and legal aspects. However, the perception of accountants varies regarding the challenges and benefits associated with the adoption and implementation of IFRS for SMEs in Pakistan. Some argued that the SME sector of Pakistan has lack of finances to train their employees and establish a new accounting system. In Pakistan markets are less established. The IFRS for SMEs is suitable for the established markets. However, some respondents favor the IFRS for SME adoption to meet the international requirements. This adoption will help in building the image of Pakistan as a modern economy that is willing to embrace globally recognized standards. The responses of
the respondents vary as all of them have different level of experiences. Therefore, it seems that the professional accounts are ready to embrace the IFRS for SMEs and their preparation is satisfactory to fulfil the requirements of this standard.

In the perception of accountants, the challenges and obstacles in the successful implementation of IFRS for SMEs include the lack of finances with SMEs. The SMEs are hesitant towards this adoption as they have to bear the compliance cost of training, upgrading the IT department for the upgrading of the accounting department. The compliance exceeds than benefits in the first-time adoption of IFRS for SMEs however later it will be minimized. The compliance costs may include cost in terms of money and time for trainings of personnel and consultancy services. The IFRS adoption for SMEs must be mandatory in the initial time of adoption and then after three to four years of complete understanding of this standard it should be made mandatory adoption.

The needs of users of SMEs in developing countries like Pakistan are limited such as their concern is on short term cash flows and liquidity. The SMEs are limited in scope like they are more focused on survival rather than on growth and profit maximization. Therefore, a question arises about the suitability in this case with limited needs. Although it is the matter of the fact the needs of users of SMEs are limited yet it should be adopted to raise awareness in the users of SMEs to rely the financial statements. The various cost incurred in this adoption may include the cost of additional disclosure requirements and hiring consultants or expertise or outsource professional accountant. Fair value accounting problems also arises as it requires professional judgements about the market fluctuation and market prevailing prices.

There are many expected benefits which the accountants are looking forward after this adoption. After this adoption the financial statements of SMES will become more transparent, comparable and reliable. As reliability means the information that is unbiased and free from any type of material inaccuracy which leads to eradicate the internal corruption and increase the credibility of financial information. IFRS adoption for SMEs would enhance the market efficiency and reduce the cost of raising capital along with making the market tough and raise a competition among the SMEs to gain capital from the banks. It will be easy for the banks to compare the financial statements of different SMEs. This adoption will also attract domestic investment opportunities. There is very low level of foreign direct investment in Pakistan SMEs. There is also a reduction in the burden of interpreting accounting principles as compared to full IFRS but still there is a burden in financial disclosures.

The banks, investors and suppliers which are the main users of financial statements don’t focus on which standards are employed by their SMEs clients. In Pakistan most of the business dealings are conducted and approached based on word of mouth communication. There is need of conducting some sort of awareness programs for the users of the SMEs so that could be willing to focus on the financial reporting standards in conducting business dealings rather than their personal contacts.

This paper has certain limitations. This research focused on the preparedness and perception of accounting professionals regarding the adoption of IFRS for SMEs in Pakistan. It does not explore the preparedness and perception of the managers and owners of the SMEs. Due to time and cost limitation the focus of our research work was only on SMEs in Multan. For data collection our respondents are CA firms. The respondents must include the SMEs to capture more information. The study can be extended to other cities and both accountants and managers perception may be explored and then compared. Despite these limitations, the results of this study will be insightful for several parties, including standard authorities, regulatory bodies, entities, accounting professionals, and academicians. For the effective implementation of this standard the regulatory bodies (ICAP and SECP) must take some essential measures for the strict enforcement of this standard. The government and other professional bodies like ICMA must collaborate and coordinate for the effective implementation of this standard in Pakistan. The results of this study may be beneficial also for the standard authorities of other emerging countries. Other emerging countries’ standard authorities will take into consideration the findings of this academic study in similar countries to achieve a more effective adoption process.

Appendix A: Interview Guide
The interview guide is ordered into three segments.

- First segment will gather the insight about preparedness of accountants for IFRS for SMEs.
Second segment deals with the challenges in this adoption and
The last segment deals with the benefits of this adoption.

Level of Preparedness
1. Are you aware about the IFRS adoption for SMEs in Pakistan?
2. Do you think it will be economically favorable for the SMEs to be imposed with a statutory regulation (SECP and ICAP) to use IFRS for SMEs in their financial statements?
3. How many training workshops and seminars have conducted for personnel and management in order to adopt IFRS for SMEs?
4. For the application of IFRS for SMEs an accountant is required to have knowledge of business and economics along with some skills in account and legal aspects. What is your opinion about it?
5. Have you upgrade your accounting software programs to meet the needs of IFRSs for SMEs?
6. Do you have any pocket regarding IFRS for SMEs guide that supports you in the adoption of this standard?

Perception of Challenges
1. What is your opinion about the requirement (voluntary or mandatory adoption) for the implementation of International Financial Reporting Standards (IFRS) for SMEs in Pakistan?
2. Do you think that IFRSs for SMEs are suitable for developing countries like Pakistan since the information needs of users will be limited in developing countries like Pakistan?
3. What is your perception of the various costs associated with the adoption and implementation of IFRS for SMEs?
4. Do you think costs of complying with the IFRS are far greater than the corresponding benefits?
5. Do you think that SMEs in comparison to large companies has limited resources which are one of the major hindrances for going towards IFRS adoption?
6. What is your perception of the level of accounting education and training that is required for the adoption and implementation of the IFRS for SMEs?
7. Do you think that accounting department is capable to move towards the IFRS for SMEs, or the services of consultants are required?

Perception of Benefits
1. What is your perception of various benefits associated with the adoption and implementation of IFRS for SMEs?
2. Do you think that IFRS for SMEs will bring transparency, quality and comparability to the financial statements?
3. Does the IFRS adoption reduces the burden of interpreting accounting principles and complying with differences in reporting requirements?
4. Do you think that investors have more confidence on companies that adopts IFRS?
5. Do you think that IFRS adoption increases market efficiency and reduces cost of raising capital?
6. Does IFRS reporting attract foreign direct investment providing greater access to capital?
7. Does the adoption of IFRS will enhance competitive advantage, potentials for growth and sustainability of SMEs?

References


Conference, Finland, Tampere