

**THE RELATION BETWEEN CREDIT RATING, CORPORATE  
GOVERNANCE, FIRM PERFORMANCE AND STOCK  
RETURNS: EVIDENCE FROM PAKISTANI LISTED FIRMS**



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## ***DEDICATION***

*This thesis is dedicated to my beloved parents who have been supporting me all the way since the beginning of study, and who believe in the richness of learning.*

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## ABSTRACT

The first aim of this study is to investigate the determinants of credit ratings of firms in Pakistan. Secondly, this study also examined the effect of credit ratings on firm performance and stock return for firms in Pakistan. Financial attributes, corporate governance attributes and business conditions are considered to achieve the objectives of this study. For empirical analysis of this study, panel data of 63 financial and nonfinancial firms rated by Pakistan Credit Rating Agency (PACRA) and Karachi Stock Exchange covering period from 2007-2011 is used on the basis of availability of data. The results are obtained by applying two estimation techniques. First, to estimate the determinants of credit rating Ordered Probit approach is used. Second, the generalized method of moments (GMM) technique is applied on panel data to estimate the relationship between credit rating and firm performance and also for credit ratings and stock returns. The results illustrate that firm specific factors and corporate governance attributes important factors in predicting firms' credit rating in Pakistan. The analysis suggests that, firms with higher credit ratings have higher corporate performance. Moreover, the results reveal that firm with higher credit ratings tends to have higher stock returns. Further firm specific factors such as leverage, firm size, profitability, and growth opportunities and dividend per share significantly influence the credit ratings of firm. Similarly corporate governance factors such as board size, block holders, shareholder's rights and CEO duality also significantly related with firms' credit ratings. The analysis of this study might facilitate debt holders, investors, shareholders and other stake holders to understand the significance of credit ratings and its influence on performance and stock returns of firms.

**Key Words:** Credit Ratings, Financial Attributes, Corporate Governance Attributes, Business Conditions, Stock Returns, Ordered Probit Model, PACRA

**JEL Classification:** G10, G11, G30, G32

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# Chapter 1

## INTRODUCTION

### 1.1 Background

A firm's credit rating reflects a rating agency's opinion of an entity's overall creditworthiness and its capacity to satisfy its financial obligations (Standard & Poor's, 2002). Credit agencies are concerned with governance because weak governance can impair a firm's financial position and leave debt stakeholders (hereafter referred to as bondholders) vulnerable to losses (Fitch Ratings, 2004). Credit ratings express forward looking opinions regarding the creditworthiness of issuers and issues. The term creditworthiness refers to the likelihood of an issuer to make timely payments of interest and principal, in accordance with its contractual terms, but it is not an absolute measure of default probability (S&P Global Credit Portal, 2009). A credit rating embodies multiple factors that compose the overall assessment of creditworthiness. Besides the likelihood of default, it also encompasses payment priority, recovery and credit stability. The Credit Rating Agencies (CRAs) do not have a "formula" for combining various factors, and the relative importance of the factors may vary between types of securities, firms and industries, between regions, currencies and different situations.

Credit ratings are issued by credit rating agencies to measure companies' ability to meet its financial obligations. The credit rating agencies base their ratings on both publicly held information and private information, as well as their ratings on their subjective view of a company. Since companies cannot exactly overview a counterpart's financial situation, many companies rely on rating agencies to get an accurate depiction of a debtor's ability to repay the obligation. This means that a favorable credit rating is very important to get beneficial terms and

conditions when firms issue debt on financial markets. Hence, CRAs must use a great deal of subjective judgment during the credit rating process. Furthermore, the rating symbols are intended to reflect the same general level of creditworthiness for issuers and issues regardless of different sectors, industries, and at different times (S&P Global Credit Portal, 2009).

Credit ratings are used by large number of issuers, investors, intermediaries, financial institutions and nonfinancial institutions used to assess credit risk for their own purpose and use. Investors exploit the credit ratings to assess credit risk and evaluate different issuers and debt issues in making investment decisions. To assist the flow of capital from investors to issuers investment bankers use credit ratings. Financial institutions use credit rating in order to do credit sensitive transactions and to assess the credit risk of counter party. Issuers, such as corporations, governments, and municipalities, use credit ratings to obtain independent analysis of their creditworthiness and the quality of debt issues (Hyleen Ostlund 2009). Furthermore, Credit ratings provide timely an independent assessment of a company's ability to service its debt. Credit ratings can effect on firms' cost of debt and their capital structure; ultimately determining probability of survival. Furthermore, rated firms' business and financial strategies can potentially affect the rating and their future cost of capital (Graham and Harvey, 2001).

Credit ratings can raise economic development; develop access of consumer to essential resources and help in allocation of risk, costs and economic and financial reserves. Credit ratings assists consumers and private firms to perform the transactions munificently among each other. In his study Turner (2006) suggests that credit rating and credit score are very significant throughout Latin America to facilitate and resolve three main economic problems. First it improves insufficiency of financial sector, secondly, private sector lending is increasing



throughout Latin America, and thirdly it decreases the risk of economic and a financial crisis, which is typically, result of adverse selection and moral hazards exist in the banking sector.

The nature of the rating methodology has attracted many researchers to gain an insight into the exact inputs of the rating agencies' models. The first empirical study research on credit rating is attempted by Horrigan (1966) for US corporate bonds rated by US rating. It is acclaimed that credit ratings provide with a useful, comparable, and summarized measure for financial position and health and credit worthiness of rated firms of large and diverse group of decision makers.

Many studies have focused on credit ratings in different countries, for instance United States (Blume *et al.*, 1998), United kingdom (Adams and Hardwick 2003), Australia (Gray *et al.*, 2006), Jordan (Al-Khawaldeh, 2012) but in case of Pakistan, the credit ratings have never been given greater importance. Raqeeb *et al.* (2012) investigated the credit rating impact on manager's decision of choosing debt level in capital structure of the company. As credit rating is getting huge importance worldwide in decision making for capital structure of firms; there is need of such research in Pakistan to examine the relationship between credit ratings, stock return, firm performance and corporate governance variables of financial and nonfinancial sector.

There are two main and internationally famous rating agencies in world such as Moody's and Standard and Poor's (S&P). Pakistan Credit Risk Agency Limited (PACRA) is a reputable and important credit rating agency operating in Pakistan and this is the one chosen for present study.

Financial ratios play as important factors while analyzing the financial position of an organization in risk. Due to the significant in practice, profitability ratios such as, liquidity and asset quality are analyzed in this study in order to predict the credit risk rating of listed firms in

Pakistan. Thus this study aims to examine the individual as well as joint importance of various financial and non-financial variables as determinants of credit ratings for companies in Pakistan.

The managers are more concerned about credit rating due to their influence on the opinion of different company's partners. As a result the credit rating is an important factor to status of firm. Therefore, the major concern of manager is to improve their current rating and they follow good governance practices. This study examines the effect of governance practices on their credit ratings.

Credit ratings have significant impact on firm performance. Many researchers highlighted the effect of credit rating on firm performance in their respective studies for instance, Holthausen and Leftwich (1986), Pottier and Sommer (1999), Graham and Harvey (2001), Dichev and Piotroski (2001), De and Kale (1993), (Sylla, 2001), Adams *et al.* (2003), Czarnitzki and Kraft (2004), Garg *et al.* (2004), Daniels *et al.* (2009), Gonis *et al.* 2012). However, Daines, Gow, and Larcker (2010) explored the significance governance ratings in predicting the future performance of firm. This present study highlights the importance of credit rating in firm financial performance.

Corporate governance attributes are analyzed in several prior studies to examine the effect of these attributes on firms' credit ratings, such as Jensen and Meckling (1976), Sengupta (1998), Bhoraj and Sengupta (2003), Ashbaugh-Skaife *et al.* (2006), Bradley *et al.* (2008), Mungniyati (2009), Ouni and Omri (2010), Al-khawaldeh (2012) and Alali et al (2013). Some researchers incorporated corporate governance attributes to explore the relationship between corporate governance variables and firm performance for instance, Berle and Means (1932), Gompers *et al.* (2003), Shaheen and Nishat (2005), Bhagat and Bolton (2008), Lucian and Bebchuck (2010),

Samontaray (2010), Sunil and Ghoshb (2012). This study also adds governance variables to examine the determinants of credit ratings.

According to Jensen and Meckling's (1976) agency theory, there should be positive relationship between corporate credit ratings and firm performance. They stated that higher corporate governance rating leads to better actual corporate practices and higher corporate ratings leads to better and improved firms' operating performance and stock market return. This return is may be in form of dividends or/and increased market value. A firm with higher profit ratios has higher positive cash flows and more profit to distribute, this state attracts potential investors to increase the share prices and hence the market value of firm. Therefore, in current study corporate governance variables are used to predict the crediting of firm as well as to investigate the effect of these corporate governance proxies on firm performance and stock returns.

Numerous studies have attempted to provide evidence the link between economic conditions (such as inflation, money supply and exchange rates, consumer price index, gross domestic product) and ratings, among others, have been identified as having explanatory power over stock returns (Pinches and Singleton (1978), Kaplan and Urwitz 1979), Wakeman (1981), Griffin and Sanvicente (1982), Holthausen *et al* (1985), Elayan *et al* (1990) and (2003), Hand *et al.* (1992), Cantor and Packer (1997), Dichev (1998), Pottier and Sommer (1999), Dichev and Piotroski (2001), Flannery and Protopapadakis, (2002), Creighton *et al.* (2007) Poon and Chan (2007) Choy *et al.* (2006), Avramov *et al.* (2009), Giulio *et al.* (2010). This study also analyses the effect of changes in credit ratings on stock return. The present study is extended on the basis of previous researches such as Chen, Roll and Ross (1986), Altay (2003); Rashid (2008), Fills (2009), Izedonmi and Abdullahi (2011), Apergis, Artikis & Eleftheriou (2011), Ahmed *et al.* (2013), Abdul and Suleman (2012) and Mehr-un-Nisa and Nishat (2011).

## **1.2 Objectives of the Study**

There are three main objectives of this study.

- To examine the determinants of credit ratings in Pakistan,
- To examine the impact of credit ratings on firm financial performance after controlling firm specific variables, corporate governance attributes and macroeconomic conditions,
- To examine the impact of credit ratings on stock returns after controlling firm specific variables, corporate governance attributes and macroeconomic conditions.

## **1.3 Significance of Study**

The significance of credit ratings and its effect on firm performance, stock market performance and on corporate governance has never been deeply studied in Pakistan. The significance of credit ratings in financial and investment decisions can be demonstrated in numerous several previous studies. This study therefore contributes to the literature by examining the significance of credit ratings in determining the financial performance, stock market performance and also testing the impact of corporate governance variables on credit ratings for both financial and nonfinancial firms in Pakistan. In case of Pakistan credit rating is still at its initial stage, however, regulatory authorities such as State Bank of Pakistan (SBP) and Security Exchange Commission of Pakistan (SECP) made it obligatory for banks to obtain credit ratings on regular basis. The purpose is to provide yardstick to the market participants and stakeholders for informed decision making, promote healthy competition and induce financial institutions to improve their state of financial affairs.

#### **1.4 Plan of the Study**

The remaining part of the study is organized as follow. Second chapter overviews the credit ratings and credit rating methodologies in banking and corporate sector of Pakistan. Third chapter reviews the literature on the issue. Fourth chapter presents theoretical framework. Fifth chapter consists of model specification, methodology, data and variables description, and development of hypotheses. Sixth chapter presents empirical results and discussions. Seventh, the last chapter concludes the study and gives some policy recommendations.

## Chapter 2

### OVERVIEW OF CREDIT RATING IN PAKISTAN

This chapter discusses the credit rating agencies and credit rating methodologies in Pakistan and around the world.

#### 2.1 Credit Rating Agencies (CRAs)

Credit rating agencies allocate credit ratings of different kinds of debt obligation for issuers. They credit rating agencies judge creditworthiness of financial instruments, nonfinancial sectors investments, intermediaries and Governments. CRAs analyses the firms on basis on financial statements, value of franchise, and quality of management and position of firm as compare to other firm within industry (Gonzalez et al. (2004)). Keeping in mind the credit conditions and microeconomic conditions and financial distress, credit rating agencies evaluate performance of firms.

Many studies suggest that rating agencies have information that is not available in the public domain and that the stock market reacted significantly to the relevant information. Ederington and Yawitz (1987) pointed out that credit- rating agencies are the low cost providers of such information . Danos *et al.* (1984) concluded that credit rating agencies possess expert judgment and are specialists at processing information related to firm's financial condition. Cornell *et al.* (1989) argued that revisions in bond ratings may have information content because they reflected a more informed estimate of the intangible asset values of a firm and the implicit claims on an entity by other stakeholder . Tuner (2006) described credit agencies' role that it helps various entities to measure the default risk and make it easy to financial market participant to

assess them with the risk concerned in the process of investment. Organizations can borrow funds easily from financial intermediaries without going through long-drawn-out evaluations from each individual lender individually. He also suggests that governments and businesses can issue debt in various treasuries and corporate bonds to catch the attention of investors based upon the credit ratings.

CRA's are endowed with enhanced efficiency in the credit markets and allow for more fluency and transparency in dealings. The ratings help to evaluate and monitor the credit reliability and soundness of a range of borrowers through a set of well-defined and precise rules. The credit ratings of different borrowers can be easily compared using ratings provided by a credit rating company and the applications can be easily sorted (Ultzig, 2010).

Altman and Rijken (2004) investigated the conflicts of interests arising from the credit rating agencies often competing objectives of providing ratings that are timely, stable, and accurate predictors of defaults. They show that credit ratings agencies focus on the stable credit risk factor when assigning ratings by using credit scoring models. In addition, they argue that CRA's are slow in ratings adjustments and that the slow response is the most significant cause of stability of rating. Companies' financial trustworthiness evaluation is a main concern for CRA's which represent one of the key communication vehicles in providing an independent assessment of the probability of default, thus providing information to debt-market participants additional to publicly available sources (Reiter and Ziebart, 1991). As financial statements are not enough to meet all requirements of market participants, thus evaluations CRA assist all stakeholders and users and provide suitable and relevant information on the organization (Ederington *et al.*, 1987; Pottier, 1998; Pottier and Sommer, 1999). Credit rating agencies play a main role in financial markets in the production of credit risk information of company's and its allocation to market

participants. To become well-known with credit rating agencies, this section will provide information of the rating industry.

### **2.1.1 The Big Three**

Moody's, Standard and Poor's and Fitch Ratings are the most important credit rating agencies in the world and are called the big three. Moody's was established in 1909 and it is the first main credit rating agency. Standard & Poor's started in 1961 soon after Moody's credit rating agency and then Fitch followed in 1924. These three credit rating agencies are explained below.

#### **Moody's**

Moody's investor service is a full-service credit rating agency and with issuing credit ratings. Moody's investor service is part of Moody's Corporation together with Moody's analytics. The Moody's credit ratings are a measurement of the likelihood of default risk and the loss amount after default.

#### **Standard & Poor's(S&P)**

Since 1916 Standard & Poor's issued credit ratings and it is global issuer of credit ratings. They cover 112 countries with 40 offices and 1400 analysts. They use the analyst-driven approach to carry out credit ratings. The analyst performs an assessment of the corporate performance, risk management strategies, policies, economic conditions and business environment of the issuer. Their qualitative measurement is done while evaluating the ability of an issuer to pay their financial obligations on due time.



## **Fitch Ratings**

Fitch group is a subsidiary of FIMALAC (Financière Marc de Lacharrière) and Hearst Corporation and Fitch ratings is a part of Fitch group. The credit rating agencies' role is becoming more important because credit agencies have significant role in regulation of financial market

### **2.2 Credit Rating Agencies in Pakistan**

There are two main credit ratings agencies are providing their services. The first one is Pakistan Credit Rating Agency (PACRA) and second is Japan Credit Rating-Vital Information Services (JCR-VIS).

#### **JCR-VIS**

In January 2001 Japan Credit Rating agency limited and Vital Information private limited entered into joint venture agreement whereby Japan Credit Rating agency (JCR) acquire fifteen percent share in DCRVIS credit rating corporation limited Pakistan and name changed to JCR-VIS. This was approved by Security Exchange Commission of Pakistan (SECP) and State Bank of Pakistan (SBP).

##### **2.2.1 PACRA (Pakistan Credit Rating Agency)**

Pakistan credit rating agency is the first national rating agency established in 1994 as a joint venture of Fitch, International Financial Corporation (IFC), Lahore Stock Exchange (LSE) and International Bank Credit Analysis (IBCA). The main purpose of PACRA is to evaluate the capability and keenness of business entities to admire their corporate commitments. Ratings issued by PACRA reflect an autonomous, proficient and impartial assessment of the credit risk

that is coupled with a conscientious debt certificates and instrument or an overall position of a financial entity.

### **2.2.2 Products of PACRA**

PACRA's products have extended from small entity to structured finance ratings. Each product has a diverse audience and conveys a specific meaning, drawing upon the methodology designed especially for it. PACRA rate entities, instruments, structure finance, project grading and insurer financial strength.

Under entity rating PACRA signifies the level of investment risk and the capacity and willingness of an entity to meet its financial obligations. The risk level is indicated by the long and short term ratings. Instrument ratings covers all non-equity instruments including both long and short-term term Finance certificates (TFCs). Structured finance rating is done by PACRA for expertise to rate debt instruments with features of structural finance. Such instruments may have a variety of credit improvement features designed for reducing either the investment risk, default risk or both. Project grading is an opinion on specific project being managed by any real estate entity. Project grading different projects on the basis of their individual attributes; the concept is that projects of the same developer could have different grading. Insurer Financial strength rating represents an opinion of an issuer's financial strength and business continuity from holder's prospective.

### **2.3 Rating Methodology**

The credit rating agencies use their own method in the measurement of creditworthiness and make use of a specific credit rating scale to announce its ratings opinions.

## Rating Agency Credit Scale

Moody's	S&P	Fitch	Meaning
Aaa	AAA	AAA	Highest quality; EXTREMELY STRONG capacity to meet financial obligations
Aa1	AA+	AA+	High quality; VERY STRONG capacity to meet financial obligations the top-line rating only in small degree
Aa2	AA	AA	
Aa3	AA-	AA-	
A1	A+	A+	High quality; STRONG capacity to meet financial obligations but is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions
A2	A	A	
A3	A-	A-	
Baa1	BBB+	BBB+	Medium grade; ADEQUATE capacity to meet financial obligations but adverse conditions or changing circumstances are more likely to lead to a weakened capacity to meet financial commitments
Baa2	BBB	BBB	
Baa3	BBB-	BBB-	
Ba1	BB+	BB+	(Lower medium grade; LESS VULNERABLE but faces major ongoing uncertainties and exposure to adverse conditions which could lead to in adequate capacity to meet financial commitments
Ba2	BB	BB	
Ba3	BB-	BB-	
B1	B+	B+	Low grade; MORE VULNERABLE and adverse business, financial, economic conditions will likely impair its capacity or willingness to meet financial commitments
B2	B	B	
B3	B-	B-	
Caa	CCC	CCC	Poor quality; CURRENTLY VULNERABLE and dependent upon favorable conditions to meet commitments.
Ca	CC	CC	Poor quality; CURRENTLY HIGHLY-VULNERABLE.
	C	C	CURRENTLY HIGHLY-VULNERABLE to nonpayment.
C	D	D	FAILED to pay one or more of its financial obligations

Source: <http://www.pinoymoneytalk.com/meaning-of-credit-ratings>

Together with the above mentioned agencies, Japan Credit Rating Agency, Ltd (JCR) is one of the four major credit rating agencies in the world. JCR was established in 1985 by more than 100

leading institutional investors, including major insurance companies and banks. JCR ratings range, similar to Fitch and S&P Ratings, for long-term issues and issuers are as follows: AAA, AA+, AA, AA-, A+, A, A-, BBB-, BBB, BBB+, BB+, BB, BB-, B+, B, B-, CCC, CC, C, D. Grades above BBB- are considered as investment grades, while below BB+ to C fall in the speculative grade and D is the default grade.

### **2.3.1 Rating Methodology in Pakistan**

Rating agencies such as Pakistan Credit Rating Agency (PACRA) and JCR-VIS Credit Rating Corporation limited possess information on business plans, capital expenditures, or future dividend policy, which a common investor cannot analyze (Raqeeb *et.al* 2012).

Rating analysis of financial and nonfinancial sector of Pakistan is based on several qualitative and quantitative factors which play very vital role in the process of credit ratings. The major factors included; corporate governance, market capitalization, liquidity, risk management, funding, business diversification and performance and earnings are taken under consideration in PACRA when evaluating credit ratings of banks and corporate entity.

#### **2.3.1.1 Bank Rating Methodology**

Bank rating is the methodology to understand the business of banks, risk inherent to business, the objectives of its management, the environment it operates in and most likely the future developments of its business. This analysis also helps us in recognizing the bank's competitive position in banking sector. Rating examines the accounting policies of bank, its financial performance and balance sheet integrity. The analytical process consists of some qualitative and quantitative factors. Risk management, credit risk, market risk, operational risk, reputational risk,

capitalization, fund and liquidity, earnings and performance, diversification of business and franchise, management and strategy and ownership and support are taken into consideration while rating banks in Pakistan

Under risk management PACRA analyzes bank's desire for risk and the system it has for the managing risk. In credit risk analysis PACRA looked at all credit risks arise from on-balance sheet and off-balance sheet activities. Under market risk PACRA analyzes structural risk concerned with assets and liability management strategy, role of position taking, hedging and accounting in this strategy and trading risk, in which the foreign exchange risk and interest rate on balance sheet are analyzed. Under operational risk the agency focuses on organizational structure, approach and assessment of risk, data collection effort and operational management. PACRA employ its own set of principles to analyze the capitalization that is applied to all banks. One of the imperative measures is pure common equity to a proportion of total assets of banks. Diversification and structure of funding base of banks and external and internal liquidity sources are analyzed by PACRA under fund and liquidity analysis. While evaluating earnings and performance PACRA observed the previous trends of earning performance of banks. PACRA evaluates diversification of the business activities initiated by the corporations in diverse industrial segments and geographical and diversification in products and services. Under management and strategy, PACRA looks at the bank's organizational structure, the management team dependence on one or more persons, and independence of management from main shareholders, sustaining operating efficiency and strengthening the market position of bank. The ownership and support is essential for rating process in banks. PACRA analyses the constancy of bank's shareholding structure, as well as the ability and motivation for either its government or owners to assist the bank in case of need.

### **2.3.1.2 Corporate Rating Methodology**

Framework of PACRA for evaluating credit quality makes use of both quantitative and qualitative analysis to evaluate the business and the financial risk of corporate entity. Quantitative analysis includes; cash flow focus, earnings and cash flows, capital structure, financial flexibility, earning measure, coverage ratios and leverage measures whereas industry risk, operational environment, market position, management and accounting are taken into consideration in qualitative analysis.

Under industry risk PACRA establishes a rating of company within the content of industrial fundamentals of each company. Industries that are in decline, highly competitive, capital insensitive are riskier than stable industries having good structure, high barriers to entry, national rather than international and having good demand levels. PACRA explores the possible risks and opportunities in company's operating environment resulting from social, demographic, regulatory and technological changes. In market position of company credit rating agency analyses the share in market, product dominance, product diversity and cost of production. PACRA's assessment of management focuses corporate, risk tolerance, funding policies, corporate goals and growth of company. PACRA also examined the accounting policies and the extent to which they accurately reflect a financial performance of company.

### **2.4 Evaluating Credit Rating in Pakistan**

Pakistan credit rating agency (PACRA) is evaluating corporate ratings by considering following factors: First of all Ownership & Governance is evaluated in which PACRA measures the Owners credit history and business acumen & financial strength. Governance structure measures distinction in roles, board oversight, processes to avoid conflict of interest, Transparency and

accountability. Second factor is Sponsor Support, where Sponsors commitment is studied and classified as “Core Strategic” or “Non-Strategic Investment” and also look at the sponsors ability and willingness to provide support in times of crisis. The third important factor is Management Quality rating agency study the organizational structure, quality of management, its Stability, delegation of responsibility and management’s accountability mechanism. Systems and Controls is forth factor which is constituent of policies & procedures, control mechanism, management information system (MIS) (Reporting), technology infrastructure. A clue is taken to their appropriateness and effectiveness. Then Business Risk is measured, starting with factors such as current economy, sector performance, entity positioning, and diversification are studied. Then companies’ own strategy of performance is analyzed. And finally the Financial Risk Detailed analysis of company capital structure and cash flows is undertaken by credit rating agencies.

## Chapter 3

### LITERATURE REVIEW

Credit Ratings are tools provided to evaluate the chance investors have of receiving interest and principal repayments on a debt as scheduled in the involved contract issued by the borrower. Credit Ratings have an effect on capital markets, influencing them directly and/or indirectly through rating based regulation. The direct effect of ratings on yields implies that ratings contain information that is publicly unavailable, and that markets are therefore not efficient. In this sense, empirical studies on market dynamics test the theoretical concept of market efficiency. Further the effect of credit rating on firm performance and stock returns is also investigated. This chapter provides the review of most relevant literature covering determinants of credit rating in section 3.1; impact of credit rating on firm performance in section 3.2 and finally impact of credit rating on stock return in section 3.3 respectively.

#### 3.1 Determinants of Credit Ratings

The previous empirical literature has used firm specific factors, corporate governance variables and macroeconomic variables as determinants of credit rating. The determinants of credit rating have been analyzed by researcher using financial ratios. For example Horrigan (1966), Ederington (1986), Adams and Hardwick (2003) and Al-khawaldeh (2012), while Raqeeb *et al.* (2012) examined the effect of credit ratings on capital structure of non-financial sector of Pakistan.



### **3.1.1 Impact of Firm Characteristics on Credit Rating**

Financial ratios are the fundamental determinants of credit quality of any firm. The strong correlation between credit ratings and financial statements in prior studies underlines that credit ratings and financial statements are alternative measures of corporate default.

Altman (1968) has used five financial ratios such as working capital to total assets, retained earnings to total assets, earnings before interest and taxes total assets, market value of equity to book value of total assets, and sales to total asset to predict the bankruptcy. The study concluded that these variables have statistically significant effects in a default prediction exercise and the model is found to be highly accurate for predicting bankruptcy. Moreover it is suggested that the model is an accurate forecaster of failure up to two years prior to bankruptcy. Kaplan & Urwitz (1979) have conducted research on statistical model of bond ratings, their study has revealed that the model may be predict the actual risk of a bond better than the rating agency. They use interest coverage ratio, the long term debt to total assets ratio, the long term debt to net worth ratio, the net income to total assets ratio, the coefficient of variation of total assets, the coefficient of variation of net income, and total assets in their study.

Horrigan (1966) has conducted study on determinants and characteristics of the bonds issuing firms. He used two-step analytical approach in order to predict the bond rating based on financial ratios and characteristics of ratings. For bond ratings he has used ordinary least-squares (OLS) regression with different combinations of variables, from accountings data (1961-1964) to predict the ratings of newly issued bonds as well as any changes in bond rating. He has explained 65% of variation in the bond rating and also found that total assets have the most significant impact on bond ratings.

Beaver (1966) used financial ratios such as cash flow ratios, profitability ratios, liquidity ratios and turnover ratios, from financial statements available for first year before failure of firm to predict firm failure. Assets size and data for non failed firm and failed firm from same industry is taken in order to keep the data balanced. A profile analysis is done by comparing the mean values of financial ratios for each failed and non- failed firms in each year prior to failure. He applies dichotomous classification test to predict the failure of the firm. The results suggest that financial ratios can be a source of predictability at least five years before failure. Further it is suggested that all financial ratios do not have the same capability to predict the failure status of any firm.

Pinches & Mingo (1973) have employed financial ratios to predict the industrial bond ratings. They have used six financial ratios such as earnings ratios, debt ratios, total assets, working capital ratios, net income sales worth, debt and debt coverage ratios and means for percentage changes in sales. The model is unable to correctly predict 69.70 per cent of the actual ratings in the original sample, and predicted approximately 60 per cent of the ratings for a holdout sample and another sample of newly rated bonds. The variables concerning to size, debt and debt coverage stability, earning stability, return on investment and financial leverage, are simulated the results of Moody's ratings.

Ederington (1985) have used interest coverage, the long term debt to capital ratio, and total assets in his research for comparison of bond rating models and statistical methods. The financial ratios employed in this study have statistically significant impact on credit ratings. Kumar & Arora (1995) have taken performance data from financial statements of banks to develop risk rating schemes. The performance variables included in their study are liquidity, asset quality, earnings and management capital adequacy. These variables are categorized into various sets. To

predict failed and non-failed firms linear logit model and quadratic model are employed. The conclusion of their study reflected that while testing classification performance for the sample with linear logit model 96 percent of the failed banks are correctly classified and 70 percent of the non-failed were correctly classified, whereas, in testing the classification performance for the learning sample with quadratic model 95 percent of failed banks and 75 percent of the non-failed firms are correctly classified.

Pottier (1998) have used various financial ratios to study the effectiveness of Best's rating and changes in rating while predicting the life insolvency of insurer. The ratios included in the study are profitability, leverage and liquidity ratios. He uses three different models with given independent variables, the first is based financial ratios, second is developed on basis of ratings and rating changes and last one is based on merging financial ratios. Logistic regression method is employed in the research. He finds that predictive ability is improved with combination of ratings and rating changes as compare to financial ratios for the cost ratios. Moreover, the findings suggested that rating changes should be incorporated in insolvency prediction models as these are important predictors of insurer collapse even when pooled with financial ratios.

Blume *et al.* (1998) conduct study on the declining quality of U.S. corporate governance debt in a panel regression from 1978 to 1995. They employ financial ratios for pre-tax interest coverage, operating income to sales, long term debt to assets, total debt to assets, and total assets. Their results suggested that the long term ratio is significantly related to credit ratings whereas the total debt ratio is insignificant, this due to high correlation between these two variables the total debt ratio should be negatively related to credit ratings or due to multicollinearity as pointed out by Amato and Furne (2004).

Carty, (2000) works on credit ratings dynamics. He has employed public credit ratings of companies to proxy for default risk and investigated the pattern in which default risk changes over time. Due to ordinal nature of credit rating the Ordered Probit Model is adopted. The variables included in the research are market value, long term debt, interest coverage, total debt coverage and operating margin. The results suggest that if it are not for the use of more stringent rating standards, the level of bond ratings might higher at the time of research than past. Another explanation concluded that the meanings of the firm variables used in the study have changed over time i.e. the rating standards stringent in terms of explanatory variables. Moreover the results also reflected that market based risk measures and accounting ratios are more informative for larger companies as compare to smaller companies.

Kamstra *et al.* (2001) has employed net income plus interest expenses divided by interest expenses to represent interest coverage, a debt ratio measured by total debt divided by total assets, profitability captured by the net income total assets ratio, and firm size measured as book value of firm assets. They find that the debt ratio is negatively related to credit ratings whereas return on asset is positively related to credit ratings. The firm's size significantly affects ratings and leads to higher credit ratings. On the contrary interest coverage has no significant impact on ratings thus they suggest that interest coverage did not determine the credit ratings.

Adams and Hardwick (2003) have examined the determinants of credit ratings and investigated the likelihoods of being external rated of financial sector in case of United Kingdom firms. The financial ratios used in the study are profitability, growth, leverage, firm size, organizational form, and business activity. To find out the rating likelihood a multinomial logit model is used. The findings conclude that the probability of being rated is positively related to profitability of insurer and negatively related to leverage of firm, although some differences in the determinants

of the likelihood of being rated by UK rating agencies. The results also proposed that higher ratings can be achieved through higher levels of profitability and liquidity. Furthermore, there is an inverse relationship between ratings and leverage because lower financial leverage leads to higher credit ratings.

Bissoondoyal-Bheenick (2005) have examined the quantitative determinants of credit ratings using the financial ratios for the companies. The main findings suggest that profitability, size and leverage ratios have a significant impact in predicting credit ratings. Further the results also indicate the earlier evidence pertaining to the effect of rating changes whereby, only credit rating downgrades influence the market cannot be applied to all the credit rating agencies.

Gray, Mirkovic and Rangunathan. (2006) have worked on determinants of Australian credit ratings by testing the association between financial ratios and industry variables. They have taken profitability, leverage, cash flow ratios and interest coverage ratios. They adopted Ordered Probit Model approach in their study. The results suggest that leverage ratios and interest coverage have significant effect on credit ratings. However, it is also observed that industry variables and profitability ratios have very important impact on credit ratings in evaluating determinants of Australian credit ratings.

Tanhanongsakunm and Treepongkaruna (2008) have compared the market based model and accounting based model and examined the likelihood of both models in explaining the credit ratings. They take market to book ratios and firm size proxy for market based model and debt leverage ratios and interest coverage ratio for accounting based model. They have employed ordered Probit model methodology. The findings reflect the likely relationships between the credit ratings and all independent variables while the market based model's variables are found

more significant than that of accounting based model variables. However, Gray *et al.* (2006) find the leverage ratios and interest coverage ratios more significant while considering accounting based model than market based model.

Rashid and Abbas (2011) have conducted study to predict the bankruptcy of nonfinancial sector in Pakistan. They use twenty four financial ratios to measure financial characteristics of companies, for instance, profitability, liquidity, leverage, and turnover ratios were examined for a five-year period before bankruptcy. They suggest that financial ratios are important in predicting bankruptcy of companies during the period of 1996 and 2006. The discriminant analysis produced thrifty models of sales to total assets, EBIT to current liabilities, and cash flow ratio. Their results reflect that the “firms having Z value below zero fall into the “bankrupt” whereas the firms with Z value above zero fall into the “non-bankrupt” category”. Moreover, the model achieved 76.9% prediction accuracy when it is applied to forecast bankruptcies.

Gonis *et al.* (2012) have investigated the determinants of corporate credit ratings of UK non-financial firms to solicit a credit rating by using non-financial variables. To differentiate between rated and non-rated companies, the rating likelihood models are used. Their finding suggest that the rated firms have stronger financial profiles and more profitable than non-rated counterparts. However, due to poorer ability to access capital market nonrated firms hold more liquid assets than rated firms.

Al-khawaldeh (2012) has conducted study on determinants of credit ratings. Firm specific variables used in the study are profitability, leverage, capital intensity, growth opportunity and firm size whereas audit quality is used as corporate governance proxy. The results in conclusion suggested that firm characteristics variables have significant impact on firm’s credit ratings.

Profitability has positive impact on credit rating for all models, while leverage and loss propensity are negatively associated with credit ratings for all models. Capital intensity is insignificant thus it does not determine the credit ratings of firm. The growth potential which is measured by Tobin's Q and firm size are highly positively associated with credit ratings.

### **3.1.2 Corporate Governance**

Many previous studies have used corporate governance proxies to investigate the effect of these variables on credit ratings (Bhojraj and Sengupta 2003; Ashbaugh-Skaife *et al.* 2006). The governance variables such as shareholder rights, CEO duality, board size, block holders and audit quality are used in current study. The term corporate governance came into popular use in the 1980's to broadly describe the general principles by which the business and the management of companies were directed and controlled. There is no universally accepted definition of the corporate governance it provides a general framework of discussion.

Corporate governance is referred as complementary set of legal, economic, and social institutions that protect the interests of a corporation's owner in broader sense. The concept of corporate governance presumes fundamental tension between shareholders and corporate managers (Berle and Means (1932) and Jensen and Meckling (1976). While the objective of a corporation's shareholders is a return on their investment, managers are likely to have other goals, such as the power and prestige of running a large and powerful organization, or entertainment and other perquisites of their position. In this situation, managers' superior access to inside information and the relatively powerless position of the numerous and dispersed shareholders.

Corporate governance has been practiced with the existence of corporations. It is basic feature of an organization differentiated by ownership and control. However, as a research area corporate

governance has been considered for only 30 years. The evaluation of modern corporate governance research can be traced back to eighteenth century and Adam Smith's "The wealth of nations". Where the author notices that people in charge of other people's money would not take as much precaution as they would with their own. In their paper "the modern corporation and private property" Berle and Means (1932) have revisited the idea of separation of ownership and control.

Jensen and Meckling (1976) with their agency theory, which incorporated the theory of property rights and finance theory, brought yet closer the conception of modern corporate governance with their theory of the firm. Under the agency theory bondholders face two kinds of conflicts that can reduce the value of firm by increasing the probability of default risk. The first conflict is that one between manager (equity) and all stakeholders (debt), and the second conflict is between bondholders and shareholders (debt providers and equity providers).

The researchers have offered a number of solutions for this agency problem between shareholders and managers which fall under the categories of incentive alignment, monitoring, and discipline. Incentives of managers and shareholders can be aligned through practices such as stock options or other market-based compensation (Fama and Jensen 1983a). Monitoring by an independent and engaged board of directors assures that managers behave in the best interests of the shareholders (Fama and Jensen 1983a). Further, 'Chief Executive Officer (CEO)'s who fail to maximize shareholder interests can be removed by concerned boards of directors, and a firm that neglects shareholder value is disciplined by the market through hostile takeover' (Ruback and Jensen 1983).



Agarwal and Knoeber (1996) present the view that agency problem between managers and shareholders can control by seven control mechanism insider shareholdings, institutions and block-holders, the use of outside board of directors, labor market, debt policy and the market for corporate control. Their finding suggests that cross-sectional OLS regressions of firm performance on single mechanism may be misleading. They find that in large sample firms there should be independence among these control mechanisms. They further argue that when all of the mechanisms are included in single ordinary least square regression the effect of insider shareholdings vanishes and effect of debt and when simultaneous estimations are made corporate control activity also disappear.

In today's strong regulatory setting corporate governance practices provide sources to justify risks of firm and maximize firm performance at the same time. Gompers et al. (2003) have argued in their study that if performance of firm is determined by corporate and their association is fully incorporated by the stock market movements, then stock return should quickly correct to any significant change in the governance of firm. Further, Samontaray (2010) has suggested that corporate governance sets framework for creating long-term faith between company and stakeholders. Moreover, Shaheen and Nishat (2005) have argued that firms with poor governance have lower valuation, while firms with good better governance have higher valuations.

Various studies measure the influence of corporate governance on firm performance. A review of the state of corporate governance research is provided by Bhagat and Bolton (2008) and Lucian and Bebchuck (2010). Corporate governance is measured by the Gompers et al. (2003) index is positively correlated with better operating performance. Moreover, they argue that contrary to previous studies, governance measures are not correlated with future stock market performance, if endogeneity is adequately addressed.

Beasley (1996) has documented a negative association between the proportion of the board that is composed of outsiders and the probability of financial statement fraud. Furthermore, Sengupta (1998) find a positive (negative) association between the quality of corporate disclosure and bond ratings (yields), suggesting that governance mechanisms can affect bond ratings and yields indirectly through a reduction in information risk.

Bhoraj and Sengupta (2003) link corporate governance factors, credit ratings, and bond yields, in doing so they link corporate governance mechanisms to higher credit ratings. The results showed that firms with greater institutional ownership and stronger outside control of the board enjoy lower bond yields and higher ratings on their new bond issues. They further suggest that corporate governance mechanisms can reduce information asymmetry between firms and lenders. They also point out that a likelihood of firm default risk depends on the availability of plausible information to assess the default risk and agency costs. Brown et al. (2011) work has focused on corporate governance. The choice of investing as a bondholder or as stockholder is the main issues Shleifer & Vishny (1997) research.

In their study of relationship between corporate governance and credit ratings, Ashbaugh- Skaife *et al.* (2006) find that firms with higher values of the corporate governance (which is denoted by GINDEX) have higher credit ratings. They also find that credit ratings are negatively associated with both the number of block holders who own at least 5% shares of firm, and CEO power on the board, while credit ratings are positively related to: the degree of financial transparency; overall board independence, board stock ownership and board expertise. They show that moving from the lower quartile to the upper quartile of the GINDEX doubles a firm's chances of receiving an investment grade credit rating. In so doing they also suggest that weak governance can result in firms incurring higher debt financing costs.

Bradley *et al.* (2008) explore the impact of corporate governance on credit ratings, in doing so they found that governance attributes relating to transparency, ownership structure, shareholder rights, board structure and executive compensation are significantly related to credit ratings as well, even after accounting for the firm's financial condition. Their empirical results suggest that board tenure, stable boards, and classified board structures, have higher credit ratings and lower bond spreads. They further speculate that stable boards may be better positioned to take into consideration the longer term interests of the firm as a whole, thereby benefiting the firm's bondholders.

According to Mungniyati (2009) corporate governance and earning information effect bond rating and bond yield, he is of view that the existence of independent commissioner has significant influence on both bond yield and ratings. To value the efficiency of corporate governance, there are also some corporate governance rating firms that seek to provide assistance to investors. The results of Daines *et al.* (2010) suggest that these commercially available corporate governance rankings provide no useful information to shareholders.

Ouni and Omri (2010) examine the relationship between financial attributes, corporate governance and target credit ratings they find that governance mechanisms and financial attributes are used by managers to achieve desired credit rating. They further deduce that firms set credit ratings targets first then make decisions to bring their credit ratings to those fixed targets. They also find that the deviations from the target credit ratings provide different information and can influence the firm's financing choices.

Alali *et al.* (2012) have used governance score (Gov-score) of Brown and Caylor (2006), the Gomper's G index and an entrenchment score of Bebchuk *et al.* (2009) to proxy for corporate

governance. Their findings suggest that firms with stronger corporate governance have a significantly higher credit rating, and that this association is emphasized smaller firms relative to larger firms. They further find that an 'improvement in corporate governance is connected with improvement in bond-ratings'.

Sunil and Ghoshb (2012) have assessed the relationship among corporate governance attributes and corporate disclosure. Their conclusion reflected a positive relationship between liquidity, ratio of audit committee members to total board members, board size, firm size, family control, profitability, CEO duality, and the extent of corporate disclosure. However, leverage, board composition and firm's age has negative impact on the degree of corporate disclosure.

### **3.2 Impact of Credit Rating on Firm Performance**

Some studies have investigated the impact of credit rating on firm performance. In this regard Singal (2013) has conducted research on credit rating and its impact on firm performance. According to study credit rating is intended to measure a solvency of firm and it depends on previous and current and expected future performance of firm. The study further illustrate that credit rating is apposite measure for performance assessment and there credit rating measure should directly related with expected performance measures. Firms with highly capital-intensive and leveraged use credit rating as measuring tool to assess the financial condition of their firms. Certainly, a study has shown that credit rating changes straight away influence the stock prices and bond prices in the expected direction (Holthausen and Leftwich 1986). Therefore, they have considered firm's credit rating as important measure of performance of an organization.

Dichev and Piotroski (2001) have discussed many points in their study regarding to bond rating changes and its impact on stock market performance. They argue that small firms are

underperformed due to low credit quality and larger downgrades. This is may be because of information inefficiencies for small firms and less analyst exposure. The study further argues market fails to predict the inverse inferences of downgrades on future performance of firm. Moreover, credit rating changes reflect the changes in fundamentals of firm, especially distribution of future cash flows.

Graham and Harvey (2001) have conducted research on theory and corporate finance practice. They found credit rating as important factor in debt decision, because it provides an independent valuation firms' ability to timely payment of debts. Thus, credit ratings can affect the cost of debt and financing structure of firm; eventually it determines the probability of survival of firm. Furthermore, rated businesses and financial strategies of firms can greatly influence future cost of capital and hence; performance of firms.

De and Kale (1993) have conducted research on topic "Information in Bond Ratings and the Demand for Rating Services". In the context of signaling theory, they argue that firm has confidential information about their financial strength and it shared this information with public at a cost. They found that financially strong firms have the higher returns and good credit ratings, which signals good firm quality. Similarly, in this context, Kisgen (2006) has suggested that credit ratings are signal to firm quality, and if markets identify them as adding value, then credit ratings changes can signal changes creditworthiness of firm. Paul and Wilson (2007) have investigated the determinants of trade credit. They have argued that financial strong firms face low default risk and expected to remain solvent. Rösch (2005) has suggested that credit ratings can distinguish between surviving firms and failing firms.

Czarnitzki and Kraft (2004) have established relationship between research and development (R&D) and firm corporate performance and credit rating, they argue that improvements in R&D increases the firm financial performance and thus this leads firm to achieve higher credit ratings. Garg *et al.* (2004) examine the business performance, the study posit that growth in business improves profitability and as well as creditworthiness of firm. Pottier and Sommer (1999) and Adams *et al.* (2003) also support this statement that higher business growth is an indicator of better financial strength of firm. Thus these statements indicate a positive association between growth of firm and credit ratings, as ratings monitors the agents of firms (Sylla, 2001). In addition, higher growth rates in corporate activities are related with better credit ratings. Moreover, profitability is a apparent sign of the risk level that is related with firms (Fink *et al.*, 2006) and their capability to examine debt; it is also related with propensity to default of firm (Altman, 1968). Furthermore, Adams *et al.* (2003) argue that higher profitability of firm associated with lower insolvency risk; at the same time as Daniels *et al.* (2009) support that profitability plays a significant role in helping to entry to capital markets. Thus, higher profitability levels are related with a greater propensity and better credit ratings (Gonis *et al.* 2012).

Daines and Larcker (2010) have investigated the importance of rating and also evaluate role of governance ratings in determining the expected future performance of firm. They posit that a governance rating is measures of both quality of governance and useful indicator of firm future operating performance. In this regard, Renders *et al.* (2010) have empirically examined the relationship between corporate governance rating and firm performance. They find a positive association between corporate governance ratings and firm performance. Further they posit that a

corporate-governance ratings improvement over time leads to decrease in remuneration in terms of performance.

### **3.3 Impact of Credit Rating on Stock Returns**

Modern finance theory postulates a positive relationship between risk and return. Various researchers have explored the relationship between credit risk and return through different methods (Pinches and Singleton, 1978). Kaplan and Urwitz (1979) have examined the impact of credit rating announcements on the security returns and found no significant returns and their results also suggest that credit rating agencies only has access to public information and their ratings have no added value to the investors. On the other hand, the results of other researchers argued that the rating agencies have information that is not available in the public domain and that the stock market reacted significantly to the relevant information.

Ederington and Yawitz (1991) have indicated that the rating agencies are the low cost providers of such information. Danos, Holt, and Imhoff (1984) have concluded that bond rating agencies possess expert judgment and are specialists at processing information related to firm's financial condition. Cornell, Landsman and Shapiro (1989) also argued that modifications in bond ratings may have information content because they reflected a more informed estimate of the intangible asset values of a firm and the implicit claims on an entity by other stakeholders. Some researchers investigated that firms with lower credit ratings have higher return than good rating firms. For example, Dichev (1998), Campbell, Hilscher and Szilagayi (2008), Garlappi, Shu and Yan (2006) and Avramov et al. (2009) have reported that cross-sectional relationship between credit risk and return is significantly negative.

Pinches and Singleton (1978) have examined the impact of bond rating changes on stock returns. They have found that there is no evidence of any upward or downward drift in the cumulative abnormal returns before or after the month of the bond rating change. Their results indicate that the investors have realized the overall improvement or deterioration in a firm's financial condition and the information content of the rating changes have been fully discounted by the month of the change. A study by Griffin and Sanvicente (1982) partially has confirmed these results. In their study they have examined the adjustments of common stock prices eleven months prior and in the month during the rating change announcement. Grier and Katz (1976) have also found that the new information is not instantaneously absorbed by the industrial bond price and there is a step-by-step price adjustment after the rating change for a significant period.

Griffin and Sanvicente (1982) have explored the common stock price reaction to the rating changes. They examined the price changes in the eleven months preceding the announcement and during the month of announcement itself. They have used a controlled portfolio method to test the cumulative residuals significance between the event and controlled samples. The control portfolios used in their study are constructed by matching on beta, industry, and key financial variables. They have found that the cumulative abnormal returns are significant in either the preceding eleven months or the month of announcement for the downgrading stocks, whereas, are insignificant in the month of announcement for the upgrading stocks.

Holthausen *et al* (1985) have used daily stock returns to investigate the effect of bond rating changes on stock prices. They argued that using monthly data may increase the probability that the price response is due to other information released during the month. They perform the statistical test on the two groups separately and also investigate the potential determinants of the cross-sectional variation in the price response to rating changes. The results suggest that the



downgrades are related to negative abnormal stock returns in the two-day window either in the contaminated or non-contaminated group. There is little evidence of abnormal returns associated with upgrades changes in ratings.

Matolcsy *et al.* (1995) investigated the incremental informational content of changes in bond rating in case of Australian stock market. Their findings reflected that the informational content of unexpected accounting income number as the confounding announcements. There are significant abnormal returns that could be explained by the joint information content of unexpected accounting income numbers and the rating changes. They further argued that the abnormal returns were significant for the downgrading bonds and non-significant for the upgrading bonds.

Hand *et al.* (1992) and Creighton *et al.* (2007) have examined the effects of rating changes with change in both stock returns and bond yield. Thus they have found significantly negative average abnormal bond and stock returns in downgrades, whereas weaker positive average abnormal bond and stock returns in upgrades. Creighton *et al.* (2007) observe that both positive and negative rating movements affect bond and stock prices; hence stock return, and the rating announcement effects are larger for small firms especially being downgraded from investment to speculative grade in Australian market.

Elayan *et al.* (1990) have examined the stock returns response to positive, negative and false signals placements on CreditWatch that are not followed by a rating change of the indicated direction. They divided the data into positive placement and rating subsequently raised, and positive placement and rating affirmed, negative placement and rating subsequently lowered, negative placement and rating affirmed. The empirical results show that there is a negative stock

price response to negative placements that are followed by rating affirmation, but there is no response at the time of placement for negative reasons with a subsequent lowering of the rating for firm placed. There is no response to positive placement whether or not the rating subsequently is increased and no response at the time of elimination from the list of CreditWatch.

Elayan *et al* (2003) have investigated effects of credit rating announcements on the share prices in case of New Zealand stock market. They employed the daily stock return data from July 1990 to June 2000. They found significant price reaction with rating announcements. Weinstein (1977) found evidence of price change during the period from eighteen to seven months before the rating change is announced, but no evidence of any reaction during six months prior to the rating change, and there is little reaction during the month of the change or for six months after the change.

Cantor and Packer (1997) and Pottier and Sommer (1999) have subscribed to the notion that if there is greater uncertainty about their true default risk companies solicit a credit rating. They have hypothesized that a higher probability of default is a strong reason for firms to attain additional rating in an attempt to communicate information about true credit quality. On the other hand, firms facing higher chances of bankruptcy are less likely to seek a rating, since resulting low rating and associated higher debt costs will outweigh any benefits. An implicit element of returns for both downgrades and upgrades can arise due to the fact that for companies in emerging business risk assessment is business growth. The positive signals sent by increases in business outweigh the potential shortcomings of high growth.

Dichev and Piotroski (2001) have investigated the long-term stock returns following bond rating changes. The abnormal returns and buy-and-hold returns are calculated in terms of three-month, six-month, first-year, second, year, and third year. Their results reflect that the upgrade rating stocks have no significant abnormal returns and downgrade ratings stocks have significant abnormal returns. They have also conducted the test on the long-run returns conditional on firm size, a preceding quarter's earnings surprise and credit quality. The statistical results are consistent with the downgrade underperformance. Underperformance used for small firms and firm with low credit quality. . Choy *et al.* (2006) also conduct study on the impact of credit rating revisions on stock returns in case of Australian firms rated by Standard & Poor's and Moody's. Their results reflect that only downgrades contain price-relevant information.

Linciano (2004) has investigated effect of credit rating changes on stock returns of Italian listed firms announced by Moody's, Fitch and Standard & Poor's for. According to anticipation, direction, sector of issuer, reason of rating action and presence of concurrent news rating changes are categorized. They have concluded in their results that stock return response to credit rating changes is comparatively moderate or insignificant in general where as significant abnormal returns are only included for negative watches and for actual.

Poon and Chan (2008a) have investigated the determinants of credit rating and relationship between credit rating and stock returns in case of Chinese listed firms. They find profitability, firm size, and capital structure and past stock market performance as significant determinants of Chinese credit ratings. They further suggest that firm with higher credit ratings tends to have higher returns on their stocks. Further, Poon and Chan (2008b) conduct a study on the information content of credit rating announcements in China. The analysis shows an asymmetric

certification effect and an information content of credit rating changes. When there are changes in credit ratings the firm size and manufacturing industry add to the negative abnormal returns.

Giulio *et al.* (2010) have conducted study on credit ratings in which they argue that credit ratings represent, by construction, a short-run prediction of default, plausibly embedding many dimensions which are not completely measured by financial and economic regressors they further argue that accuracy of standard risk assessment devices, such as official credit ratings or risk management procedures internally maintained by financial institutions might possibly devote too few attention to some important, economic rather than financial factors.

### **3.3.1 Impact of Economic Conditions on Stock Returns**

The relationship between economic fundamentals and stock returns has been studied by a large number of researchers. For instance, Chen, Roll and Ross (1986) have studied ‘The Effect of Macroeconomic Factors on the London Stock Return (a Sectoral Approach) and conclude that the macroeconomic factors have a significant effect on the UK stock exchange. In their research, they find that several of these economic variables to be significant in explaining expected stock return during the tested period. They observe that industrial production changes in risk premium, twist in the yield curve, and measure unanticipated inflation and changes in expected inflation during period when these variable, are highly volatile, are significant in explaining expected return. They find that consumption, oil prices and market index are not priced by the financial market. They conclude that stock returns are exposed to systematic economic news that is priced by the market. Poon and Taylor (1991) support this result and find that there is no relationship between the macroeconomic variables and stock market return. However, each macroeconomic variable is insignificantly influences the stock returns in different manner. That is,

macroeconomic variables might positively insignificantly influence one sector, but other sector might be negatively and insignificantly affected.

Altay (2003) uses various economic variables such as; industrial production index, money market interest rate, consumer price index, imports, wholesale price index, export foreign exchange rate and average yield of public bonds. He derived the factor analysis process and factor realizations of principle economic phenomenon for two countries Germany and Turkey. He found that only one factor beta, unexpected interest rate level factor beta, reward in the market for German Stock Market. As for as Turkey Market is concerned, the result can not present evidence for unexpected beta on expected asset returns is statistically significant during the period tested.

Rashid (2008) by using cointegration and Granger causality tests suggest that there is cointegration between the stock prices and macroeconomic variables such as consumer prices, industrial production, exchange rate and the market rate of interest. Estimates of bivariate error-correction models revealed that there is long-run bidirectional causation between the stock prices and all the said macroeconomic variables with the exception of consumer prices that only lead to stock prices. Industrial production is an economic report that measures changes in output for the industrial sector of the economy. The industrial production is highly sensitive to interest rates and consumer demand. This makes industrial production an important tool for forecasting future GDP and economic performance. Fills (2009) established the relationship between stock market, consumer price index (CPI) and industrial production in Greece and the impact of oil prices, and suggested that industrial production affects stock market cycles positively but the influence is not significant.

Izedonmi and Abdullahi (2011) have researched on the influence of business conditions on Nigerian stock exchange. They concluded that business conditions have no significant impact in the Nigerian stock exchange market. They point out that other macroeconomic variables might affect the stock returns in Nigeria, stock exchange or the multi factor Arbitrage Pricing Theory model with macro economic variables fail to explain the effect in the Nigerian stock market.

Apergis, Artikis and Eleftheriou (2011) examine the relationship between excess stock returns and the business conditions for emerging markets. The panel Generalized Method of Moments (GMM) estimator methodology is used in their study. The empirical results reflected that various macroeconomic factors such as gross domestic product (GDP), consumer price index, liquidity, short-term interest rate, trade deficit and government deficit plays vital role in explaining excess returns.

Ahmed *et al.* (2013) have investigated the co-determinants of capital structure and stock returns of nonfinancial firm listed in KSE. They used GMM technique to deal with endogeneity. Their results suggested that stock returns and leverage affect each other but leverage effect the stock returns more than stock returns effect leverage. The results further show that firm specific factors are significant determinants of leverage and stock returns. The firm specific factors such as profitability is negatively related to leverage and positively related with stock return, growth is positively influenced the leverage and stock return whereas liquidity is negatively influenced the leverage and stock returns. Moreover, they find insignificant effect of firm size on leverage and firm's stock returns.

Abdul and Suleman (2012) have examined the relationship among macroeconomic determinants and stock returns by evaluating macroeconomic variables' reaction on individual equity returns.

The finding suggested that volatility and GDP are significantly positively related with individual equity return, whereas, inflation, money supply, interest rate and budget deficit has significant and negative relationship with individual equity return. They further suggest that exchange rate is significantly positively related with equity return of textile sector. Mehr-un-Nisa and Nishat (2011) have also investigated the empirical association between the stock prices, financial factors and macroeconomic factors in KSE. They find significant relationship between behavior stock price, financial factors of firm and macroeconomic factors.

### **3.4 Conclusion**

The literature review suggests that credit ratings provide an independent assessment of ability of firm pay its financial obligations in due date. The theory suggests that there are two main categories of determinants of credit ratings. The first category consists of financial data and financial ratios. Leverage, size profitability and growth are important proxy firm specific factors in predicting credit rating of firm. Corporate governance attributes are fall in second category. Ownership structure, board size, transparency, board structure and share holder's right are significant in determining the credit rating of firm. Credit rating is considered as important tool for evaluating financial performance of firm in all industries. Theories suggest positive relationship between firm performances. Furthermore, changes in credit rating have significant effect on stock returns. Higher credit rating reduces the default risk and cost of debt, hence; firm achieves higher return on their stock. These issues are not examined for Pakistani listed firms. In case of Pakistan practice of credit rating is at initial stages and research on credit ratings and its significance is yet to be explored. No specific study has been done in Pakistan regarding to credit rating. This study will fill the gap in academic research as combination of entity rating, firm performance, stock return and governance, which has not been studied before in Pakistan.

## Chapter 4

### **CONCEPTUAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT**

This chapter discusses the theoretical foundation and conceptual framework of the model for empirical testing. The working hypotheses are also developed based on the theoretical literature and empirical literature presented in chapter 3.

#### **4.1 Theoretical Framework**

##### **4.1.1 Agency Theory**

In general terms, agency is the relationship between two parties such as principal and agent. This relationship occurs when one party (principal) hire the other party (agent) to perform services on behalf of principal. If there are inefficiencies and incomplete information agency problem can arise. Hence Agency theory is concerned with resolving problems that can exist between principal and agent. Credit rating has information content that reduces agency conflict between management and small shareholders.

Jensen and Meckling (1976) agency theory framework, two types of agency conflicts faced by debt stakeholder, which increase the probability of default risk, hence, reduce the value of their claims. The first conflict exists between management and all external stakeholders (bondholders and shareholders). When manager have inducement to chase their own interests at the expense of external bondholders then moral hazard problem create by information asymmetry. Managers with self-interest incentives can take several forms including overcompensation, shirking, consumption of perquisites, all of these factors increase the agency risk and decrease the expected value of the cash flows faced by firms and external stakeholders, and when the firm's



expected cash flows decline, the default risk increases and hence results lower credit ratings (Ashbaugh-Skaife *et al.* 2006)

The second conflict is between bondholder and shareholders. In levered firms Shareholders have incentives to transfer wealth from bondholders. This transfer can impact mean and the variance of future cash flows of firm in many forms. For instance, if shareholders demand for repurchases or dividends from firm's assets (direct payouts) thus do not support manager to invest in projects with positive net present value, and mean of future cash flows distribution of firms will be lower. Hence the reduction in expected future cash flows of firms increases default risk of bond holder. Similarly, the variance of expected cash flows of firms will be increased if shareholder forces manager to make investment in riskier projects, thus, higher default risk will be faced by bondholder. In above two examples bondholders faced greater risk in that their financial obligations on the cash flows of firm will not be fully paid whereas shareholders potentially are better off (Ashbaugh-Skaife *et al.* 2006).

Based on agency theory (Jensen & Meckling, 1976), there is positive relationship between corporate-governance ratings and company performance exist. The extent that higher corporate-governance ratings proxy for better actual corporate-governance practices, higher corporate-governance ratings should translate into improved operating performance and a higher market value.

#### **4.1.2 Wealth Redistribution**

Zaima and McCarthy (1988) are among the first who investigated the effect of bond ratings on stock price, and risk. They stated that there is an intrinsic conflict between bondholders and shareholders. Further they suggested that according to the wealth redistribution hypothesis, a

downgraded credit rating should be associated with increased share price and vice versa. Goh and Ederington(1993) have separated the credit rating downgrades in their study. They conclude that the market value and risk of firm can adjust gradually and continually, and therefore when the actual rating change occurs it only reflects information already incorporated in the market price.

Wealth redistribution hypothesis indicating that rating upgrades are followed bond and stock return downgrades (Zaima and McCarthy (1998)). In levered firm shareholders have incentive to transfer wealth form bondholder. So shareholders increase their returns at expense of bondholders. Shareholders engaged in riskier project in pursue of higher returns, which impact the value of firm and stability of cash flows and hence the credit ratings of firm

An alternative explanation for wealth redistribution hypothesis is that a greater variance of investments and cash flows might lead to a lower credit rating, because variance in investment in cash flows increases the default risk of firm which ultimately influences the credit ratings of firm.

Ederington et al. (1987) have found that investors use credit ratings and accounting data to shape their financial decisions. In addition, they have found that ratings provide information further than that of accounting statistics. Barron *et al.* (1997) enclosed the conflict between shareholders and bond holders in the wealth redistribution hypothesis. Gompers *et al.* (2003) found that stronger shareholder and firm value are highly correlated.

Ashbaugh-Skaife *et al.* (2006) have analyzed corporate governance structure and practices of firm. They tested for possible wealth redistribution effects. They have found that number of block holders of firm has negative influence on firm's credit ratings; this is consistent with

wealth redistribution hypothesis. Moreover their results show that shareholder rights have negative impact on credit ratings. They suggest that greater shareholder rights negatively related to firms' credit rating and hence, support wealth redistribution hypothesis. Ashbaugh-Skaife *et al.* (2006) further find that board independence and financial transparency has positively affected the credit ratings of firm consistent with results of Bhojraj and Sengupta (2003). The hypothesis are also developed in chapter five on the basis of this conceptual framework.

#### **4.1.3 Information Content Hypothesis**

The credit rating agencies describe the ability of firms to repay their financial obligations, and thus disclosing essential information to the lender. The credit rating agencies' capability to overcome the problem with information asymmetry depends on to what extent the reports contain new information for the market. This is often referred to as the information content.

Most credit ratings studies focused on whether changes in credit rating encompass pricing-relevant information. Changes in credit ratings can give signal to market as the creditworthiness of the issuer is changed. Usually changes in stock return are significantly aroused with credit rating changes. According to the information content hypothesis stock prices are expected to react on the date of announcement of credit rating change.

Foster (1986) said that the function of ratings are source of information to the company ability, municipal or government to pay bond and interest, source of credit information with intercompany lower cost municipal and government, source of additional financial and other management representation.

#### **4.1.4 Signaling Theory**

Companies are rated by credit rating agencies on basis of publicly available information. Signaling theory explained why company should give information of financial reporting to external parties. This is result of an information asymmetry between managers as internal parties and shareholders as external parties. That is, managers have more knowledge more about the firm's prospect than investors (Mungniyati, 2009). Giving signal to external parties (shareholders), provide reliable financial reporting is one of many methods to reduce information asymmetry. It can shrink indeterminacy of company outlook in future (Wolk et al. 2000)

Signaling theory suggest that how company should provide its financial reporting for its users. This information about what management has done to realize the purpose of share holder. This is used to promote the company and to show that company is better than others (Mungniyati).

#### **4.2 Development of Hypothesis**

Based on the empirical literature presented in chapter 3 and theoretical foundation mentioned above the following hypothesis are formed:

***H<sub>1a</sub>: firm specific variables are determinants of credit ratings in Pakistan***

***H<sub>1b</sub>: corporate governance variables are determinants of credit ratings in Pakistan***

***H<sub>2</sub>: There exist a relationship between credit ratings and firm performance,***

*H<sub>2.a</sub>: there is a relation between firm size and credit ratings.*

*H<sub>2.b</sub>: there is a relationship between leverage credit ratings.*

*H<sub>2.c</sub>: there is a between growth and credit ratings*

***H<sub>3</sub>: There is a relationship between credit ratings and stock return***

*H<sub>3a</sub>: firm specific variables influence stock return*

*H<sub>3a</sub>: Corporate governance Variables influence on stock return*

*H<sub>3a</sub>: macroeconomic variables to stock return*

***H<sub>4</sub>: There is a relationship between all corporate governance practices and credit ratings***

*H<sub>4.a</sub>: there is a relationship between board size and credit ratings.*

*H<sub>4.b</sub>: there is a relationship between ownership and credit ratings.*

*H<sub>4.c</sub>: there is a relationship between shareholder's rights and credit rating.*

*H<sub>4.d</sub>: there is a relationship between CEO Duality and credit rating.*

## Chapter 5

### METHODOLOGY AND DATA

This chapter presents the model specification analytical framework, variable description, data and data sources.

#### 5.1 Model Specification

This section discusses the empirical model specification of determinants of credit rating, impact of credit rating on stock prices and firm performance.

##### 5.1.1 Determinants of Credit Ratings

Based on the theoretical and empirical literature mentioned in chapter 3 firm specific variables and corporate governance variables determine the credit rating of the firm. The function form that has been used in this study is:

$$\text{Rating of firms} = f(\text{Firm characteristics, Corporate Governace})$$

As suggested by Altman and Rijken (2004), Ashbaugh-Skaife *et al.* (2006), Al-Khawaldeh (2012) and Alali *et al.* (2012) the following empirical specification is used to estimate determinants of credit rating:

$$CR_{it} = \alpha_0 + \alpha_1 LEV_{it} + \alpha_2 Size_{it} + \alpha_3 ROA_{it} + \alpha_4 TQ_{it} + \alpha_5 CAP\_INT_{it} + \alpha_6 LOSS_{it} + \alpha_7 TYP\_SEC_{it} + \alpha_8 BS_{it} + \alpha_9 BH_{it} + \alpha_{10} DUAL_{it} + \alpha_{11} SHT_{it} + \alpha_{12} AQ_{it} + \epsilon_{it} \dots \dots \dots (1)$$

Where; Credit rating of firm (CR) is dependent variable, other independent variables such as leverage (LEV), firm size (Size), Tobin's q<sup>1</sup>(TQ), capital intensity (CAP\_INT), Loss Propensity

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<sup>1</sup> Tobin's q is used as proxy for growth opportunities in determinants of credit rating in Pakistan

(LOSS) and Type of sector (TYP\_SEC) are used as firm specific variables. Corporate governance proxies such as board size (BS), number of block holders (BH), CEO duality (DUAL), shareholder's rights (SHT), audit quality(AQ) used in the study to predict the credit rating of firms in Pakistan.  $\varepsilon_{it}$  is error term.

### 5.1.2 Impact of Credit Ratings on Firm Performance

The following regression to examine the impact of credit ratings on firm performance following the study of Holthausen and Leftwich (1986), Pottier and Sommer (1999), Graham and Harvey (2001), Ashbaugh-Skaife *et al.* (2006), Bissoondoyal-Bheenick *et al.* (2011), Alali *et al.*(2012) and Singal (2013).

$$Perf_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LEV_{it} + \beta_3 Size_{it} + \beta_4 DPS_{it} + \beta_5 LOSS_{it} + \beta_6 SP_{it} + \beta_7 BS_{it} + \beta_8 BH_{it} + \beta_9 DUAL_{it} + \beta_{10} GDP_{it} + \varepsilon_{it} \dots \dots \dots (2)$$

Performance is measured by Tobin Q and return on assets. To examine the impact of credit ratings on firm performance following Other firm specific variables included in the study are leverage, firm size, loss propensity, dividend per share and share prices whereas CEO duality, Board size, and Block holders are used as corporate governance proxy variables. GDP is use in this study to examine the impact of economic conditions on performance in Pakistan.

### 5.1.3 Impact of Credit ratings on Stock Return

In this Model the effect of credit rating along with the firm specific variables and macroeconomic variables are estimated in the spirit of Chen, Roll & Ross (1986). The relationship of credit rating and stock return is shown as:

$$SR_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 LEV_{it} + \beta_3 Size_{it} + \beta_4 ROA_{it} + \beta_5 TQ_{it} + \beta_6 LIQ_{it} + \beta_7 DPS_{it} + \beta_8 BS_{it} + \beta_9 DUAL_{it} + \beta_{10} SHT_{it} + \beta_{10} AQ_{it} + \beta_{10} GDP_{it} + \beta_{10} EXR_{it} + \beta_{10} CPI_{it} + \varepsilon_{it} \dots (3)$$

SR is stock return. Leverage, firm size, return on assets, liquidity, Tobin's q and dividend per share are used as firm specific variables. Corporate governance variables are included in this model are CEO duality, board size, shareholder's right, audit quality and block holder. Whereas, exchange rate, inflation (measured by consumer price index), GDP per capita, inflation (measured by CPI) and exchange rates are used to capture the influence of macroeconomic conditions on stock return.

## 5.2 Estimation Technique

Two estimation techniques are followed in this study. To estimate the determinants of credit rating Ordered Probit approach is followed as estimation technique. The panel data estimation technique is adopted to estimate relationship between credit rating and firm performance and also for credit rating and stock returns.

### 5.2.1 Ordered Probit Model

Previous studies employ deferent statistical models to predict ratings. Three major models have been examined in the literature, namely, ordinary least squares, multiple discriminant analysis (MDA), and ordered probit model. In present study Ordered Probit model is used due to three categories of dependent variable which is credit rating. Secondly we used Generalized method of Moments (GMM) is used to examine the link between performance and stock return on credit rating.



The structural credit rating model used in this study is built on the model developed by Adams *et al.* (2003). Mckelvey and Zavoina (1975) introduced the Ordered Probit model is intended to solve problems with the ordinal nature. In the previous literature the use of this regression model has been justified by Pottier and Sommer (1999), Bissoondoyal-Bheenick (2005). Following latent variable model is considered:

$$y_i^* = x_i \beta + \varepsilon_i \quad (4)$$

where  $y_i^*$  is an unobservable latent variable that measures the level of risk,  $x_i$  is a vector of explanatory variables of firm 'i',  $\beta$  is a vector of unknown parameters and  $\varepsilon_i$  is a random disturbance term. If the distribution of  $\varepsilon_i$  is chosen to be normal, then ultimately this produces an Ordered Probit model, which appropriate than OLS in this situation because of the ordinal nature of the dependent variable (Ederington 1985, Pottier and Sommer 1999).

As usual,  $y_i^*$  is unobserved. We assume is that  $y_i^*$  is related to the observed variable  $y_i$ , in this case, long term ratings which are expressed in the following way:

$$\begin{aligned} y_i &= 1 \text{ if } \varepsilon_0 < y_i^* \leq \varepsilon_1 \\ &= 2 \text{ if } \varepsilon_1 < y_i^* \leq \varepsilon_2 \\ &= 3 \text{ if } \varepsilon_2 < y_i^* \leq \varepsilon_3 \end{aligned}$$

here the  $\varepsilon$ s ( $\varepsilon_1 < \varepsilon_2 < \varepsilon_3$ ) are unknown parameters to be estimated. The ordinal variable,  $y$ , is coded on a four-point scale from 1 to 3, where 1 represents the poorest condition and 3 superior financial strength. A higher value of a variable with a positive coefficient,  $\beta$ , indicates a greater probability of a higher rating. To estimate the model, the variables that constitute  $x_i$  must be

selected, which in this case are the financial ratios based on prior studies (Horrigan 1956; Blume *et al.* 1998 and Adams *et.al* 2003)

This model is further extended by including corporate governance attributes in the basic model. Governance variables are included in the model to examine whether; they predict the credit rating of firms in Pakistan.

$$Y_{ij}^* = x_i \beta + \gamma_j \alpha + \varepsilon_j \quad (5)$$

$y_{ij}^*$  is an unobservable latent variable that measures the level of credit rating of firm 'i' and 'j'. ' $\gamma_j$ ' is vector for corporate governance of variables of firm 'j', and ' $\alpha$ ' is unknown parameter and ' $\varepsilon_j$ ' is error term in the model. Corporate governance proxies are taken in the study on the basis of prior researches (Ashbaugh-Skaife *et al.* (2006), Alali *et al.* (2012), Al-Khawaldeh (2012) and Singal (2013).

### 5.2.2 Panel Data Estimation Technique

In dynamic panel models, when time span is small, the usual fixed effects estimator is inconsistent (Nickell, 1981), as is the ordinary least squares (OLS) estimator based on first differences. The Arellano-Bond estimator formed moment conditions using lagged-levels of the dependent variable and the predetermined variables with first-differences of the disturbances. Arellano and Bover (1995) and Blundell and Bond (1998) have found that if the autoregressive process is too persistent, then the lagged-levels are weak instruments. To avoid the weak instrument problem when the dynamic panel autoregressive coefficient ( $\rho$ ) approaches unity, they proposed a system GMM procedure that uses moment conditions based on the level equations together with the usual Arellano and Bond type orthogonality conditions. To get these

additional moment conditions, they assumed that panel-level effect is unrelated to the first observable first-difference of the dependent variable.

So Panel Data Estimation Technique is used to estimate the effect of credit rating on firm performance and stock returns as panel data estimation technique is suitable for this purpose. Empirical researches on credit rating and performance and stock returns possibly go through from two sources of discrepancies which are missing variables and endogeneity biases and generalized method of moment GMM estimator which help to correct problem of omitted variable and endogeneity biases.

When panel data is used, one faces a question whether the individual effect is taken as a common, fixed or random. To compare between common effect model and fixed effect model F test is used. For that purpose two models are estimated separately: common effect model; that constant term are all equal and fixed effect model; intercepts are different. Then F test is applied to check the null hypothesis that there is no difference in common effect model and fixed effect model.

In a random effect model the intercept is taken as constant and not any more shows an individual cross section unit. While  $\epsilon_{it}$  the assumed error term becomes the disturbance specific to cross section unit  $\epsilon_{it} = \mu + v_{it}$ . It shows the error basic disturbances and has no constant variance anymore. The individual specific effects are normally distributed and random as  $(\mu \rightarrow IIN(0,))$ . Residual term are also normally distributed as  $(\mu \rightarrow IIN(0,))$  and individual specific effects are independent of residual terms. Hausman test is performed to select the most suitable model between fixed effect model and random effect model. It has the null hypothesis that assumed error term and independent variables are not correlated.

Correia da Silva et al. (2004) and Georgen et al. (2004) have also used this method to examine dividends behavior. GMM estimators are consistent under two conditions. First instruments should be valid and second error terms should not be serially correlated. Arellano and Bond (1991) have suggested two tests to deal with this issue. First test is a Sargen test of over identifying restrictions. It checks the overall validity of the instrumental variables by examining the sample analog of the moments conditions. Its null hypothesis is that instruments are valid. Second test check whether error terms are serially correlated

### **5.3 Sample and Data**

Data for credit rating is collected from Pakistan credit rating agency (PACRA). This study has selected the firms whose entity rating available from PACRA for the analysis. The data for all firm specific variables is collected from Karachi Stock Exchange (KSE), Securities & Exchange Commission of Pakistan (SECP), analysis of balance sheet, companies' annual reports, and data for macroeconomic variables is obtained from monthly statistic bulletin, State Bank of Pakistan (SBP) covering the period of 2007-2011. The table for list of firm with their respective sectors and table for retailed measures of variables are presented in Appendix B.

### **5.4 Variable Description**

#### **5.4.1 Credit Rating (CR)**

The Credit Risk Rating of the financial and non financial firms are assigned by Pakistan Credit Rating Agency (PACRA) was obtained from the PACRA web site. The main interest of this study is in entity ratings assigned by PACRA. The standard rating scale as defined by PACRA is presented below:

<b>Long term Rating</b>	<b>Description</b>
AAA	Highest credit quality
AA	Very high credit quality
A	High credit quality
BBB	Good credit quality
BB	Speculative- possibility of credit risk developing
B	High Speculative
CCC,CC,C	High default risk

**Source: PACRA**

Credit ratings are represented using string variable, a need to convert this into numeric scale exists in order to run the required statistical tool and generate reliable results. Therefore, the procedure attempted by (Adams, Burton, & Hardwick, 2003). PACRA divided credit ratings into two categories such as short term ratings and long-term ratings. The ratings considered in the current study are long term ratings keeping in mind the long term stabilization of a firm. For the dependent variable we warped the multiple ratings into three categories of credit ratings, which convey ordinal risk evaluation. Each category is mapped into a range of credit ratings as follows:

**Rating category 1: AAA, AA, A**

**Rating category 2: BBB, BB, B**

**Rating category 3: CCC, CC, C, D**

#### **5.4.2 Firm Specific Variables**

Financial ratios are the fundamental determinants of credit quality of any firm. The strong importance and impact that are measured emphasize the strong correlation and dependence credit

ratings and financial statements have and underline the observation that credit ratings and financial statements are alternative measures of corporate default.

The proxy firm-specific explanatory variables are included in the rating models based on a survey of prior research on the determinants of corporate credit ratings for firm characteristics variables (Horrigan (1966), Beaver (1966) Atman(1968), Kaplan & Urwitz (1979), Ederington (1985), Ziebart and Reiter, (1992), Ashbaugh-Skaife (2006), Al-khawaldeh, (2012), Alali *et al.* (2012).

Horrigan's (1966) conducted first main study on determinants and characteristics of the bonds issuing firms. He used two-step analytical approach in order to predict the bond rating based on financial ratios and characteristics of ratings. On bond ratings he used ordinary least-squares (OLS) regression with different combinations of variables, from accountings data (1961-1964) to predict the ratings of newly issued bonds as well as any changes in bond rating. Beaver (1966) used financial ratios from financial statements available for first year before failure of firm in this way he showed new aspect of financial ratios to predict firm failure. Assets size and data for non failed firm and failed firm from same industry was taken n order to keep the data balanced. In this study cash flow ratios, profitability ratios, liquidity ratios and turnover ratios were used as variables for predict firm failure.

In his research Ederington (1985) used interest coverage, the long term debt to capital ratio, and total assets in his research for comparison of bond rating models and statistical methods financial ratios employed in this study have statistically significant impact on credit ratings. Recently Al-khawaldeh (2012) conducted study on determinants of credit ratings. Various firm specific

variables in the study included profitability, leverage, capital intensity, growth opportunity, firm size.

### **Firm size**

Firm size play vital role in determining performance of the firm. Large firms faced lower default risk because large firm have more diversified products ranges and demographics which led them less susceptible to the risk of bankruptcy (Titman and Wessels, 1988). Firm size is included in the study because larger firms face lower risk, and thus is expected to have higher credit ratings. Horrigen (1966); Adam et al. (2003); Ashbaugh-Skaife et al. (2006) and Al-khawaldeh (2012) and Alali *et al* (2012) found positive relationship between firm size and credit ratings of firm. Smaller firm are considered to have higher default risk than bigger firm and vice versa (Bhojraj and Sengupta, 2003) the higher the default risk, and hence the lower the credit rating. We expect positive relationship between firm size and credit ratings.

### **Leverage**

In perfect capital markets, the capital structure does not influence a value of firm (Modigliani and Miller, 1958). However, capital structure does matter if the assumptions of the perfect capital markets are relaxed. Stiglitz and Weiss (1981) have examined this relationship in the context of asymmetric information where leverage is treated as a signaling device. Al-khawaldeh have (2012) found negative relationship between credit rating and leverage. Ashbaugh-Skaife *et al.* (2006); Bhojraj and Sengupta (2003) Alali *et al.* (2012) have found inverse relation between leverage and credit rating. Chen and Chen (2011) found that leverage is negatively related to profitability (ROA). Ahmed *et al.* (2013) also found inverse relation relationship between leverage and stock return and profitability, while Bhandari (1988) and Yang and Lee (2010)

found positive relationship between leverage and stock return they stated that if firm is highly leveraged, then investors demand higher return on their stock because of high risk of bankruptcy. A large strand of literature provides evidence of both positive and negative relationship of leverage and firm performance.

### **Growth Opportunities**

Growth opportunities facilitate investments in new equipment and technologies that promote the production process and when production increased firm financial performance will improve and hence, this led higher credit ratings of firm. Al-khawaldeh (2012) found that growth opportunities are positive related with firm performance and hence with credit rating. He stated that “higher growth may signal to investors to exhibit high performance which should result in higher future profits, as result firm achieve high credit ratings”. Chen and Chen (2011) found a positive effect of growth with stock return they argue that the variations in the value of firms are caused by growth and greater variations are related with higher risk. Ahmed *et al.* (2013) also found positive relationship between growth and stock return.

### **Profitability**

Gray *et al.* (2006) found profitability ratios to have a significant impact on credit rating of firms. Ashbaugh-Skaife *et al.* (2006) suggested that expected the bigger company size (SIZE) and better profitability (ROA) can lead to lower default risks and better credit ratings. Performance variable measured by ROA is positively related with credit ratings (Al-khawaldeh, 2012). The study of Alali *et al.* (2012) indicates that higher performance is related with higher credit ratings. Performance is also measured by Tobin’s q and it is positively related with firm performance



(Antonio *et al.* 2003). Ahmed *et al.* (2013) found positive relationship between profitability and stock return, they argued that firm with higher profits exhibits more return on their stocks.

### **Loss Propensity**

Ashbaugh-Skaife *et al.* (2006) and Alali *et al.* (2012) found that loss is negatively related to performance and credit ratings of firm. They stated that when a firm incurs operating losses, the chances of paying off creditors could diminish thus credit ratings are lower for firm reported operating loss. Al-Khawaldeh (2012) also found negative relationship between loss propensity and credit rating.

### **Liquidity**

Various prior studies found a negative association between liquidity and stock returns while examining the influence of liquidity on stock returns. Most empirical studies have verified negative influence of liquidity on stock returns since liquid stock involves less risk, so the return on liquid stock is low (Chen & Chen, 2011; Yang *et al.*, 2010). Ahmed *et al.* (2013) found negative relation between liquidity and stock return. They argued that firm with greater liquid stock provide low return on their stocks because stocks with high liquidity carry no risk and investors will purchase such stock even at low required return.

### **Capital intensity**

Ashbaugh-Skaife *et al.* (2006) found positive association between capital intensity and credit rating. They suggested that the capital intensity of firm is incorporated to control for differences in the asset structure of firm, where lower capital intensity of firms are related to higher default

risk and thus lower credit ratings, and vice versa. Where Alali *et al.* (2012) found no significant association between capital intensity and credit ratings.

### **Share price**

Previous literature showed that stock prices respond quite moderate or insignificant to credit rating upgrades; on the other hand they found that a significant reaction of stock prices to credit rating downgrades (Holthausen and Leftwich, 1986; Goh & Ederington, 1993; Linciano, 2004). However, it is also expected that the stock prices react to credit rating upgrades. Firm with low credit ratings tends to have lower stock price because of higher uncertainty about future earnings (Avramov *et al.* 2009). Nishat and Mehr-un-nisa, (2011) showed positive and significant association between share price and stock return.

### **5.4.3 Corporate Governance Variables**

The aim of this study is to examine the effect of corporate governance on credit ratings, based on the theory that firms with good corporate governance benefit from higher credit rating than firms with weak governance (Ashbaugh-Skaife, 2006). In this study corporate governance proxies have been used to investigate the effect of corporate governance on credit ratings.

### **Board size**

Corporate Governance Codes (2002) recommended that depending on diversification of an organization boards should have an ideal size lie between 5 and 16. A board consists of internal directors and external directors. Fama and Jensen (1983a) identified that internal directors possess more information, by virtue of their positions, are likely to conspire with managers and

make decisions against shareholders. In this regard external director in a neutral position, acting as supervisor and hence eliminates principal agent problem.

Bhoraj and Sengupta, (2003) found positive association between large board size and Brown and Caylor (2004) also suggested that a size of board between 6 to 15 members is an ideal to improve the firm performance. Yermack (1996) acknowledged that firms with smaller board sizes have higher stock market value. Mishra *et al.* (2001) suggested that decisions were taken more quickly in firms with small board size. Kathuria and Dash (1999) argued with increase in board size of firms the performance will also increased but contribution of additional member of board will decrease. Bacon (1973) suggests that larger board entails members with diverse background and viewpoints, which is helpful for the quality of decisions; additionally, a wide range of their interests may neutralize decisions. Also, Zahra and Pearce (1989) revealed that board size is positively related to corporate performance, and hence higher credit ratings. Some studies found negative relationship between board size and firm performance such as; Eisenberg *et al.* (1998) and Carline *et al.* (2002). Aggarwal *et al.* (2007) discovered no relationship between board size and firm performance.

### **Block holders**

Ownership is measured by block holders. Negative relationship is observed by Ashbaugh-Skaife *et al.* (2006) in their study. The wealth redistribution hypothesis state that due to influential shareholders of firm, block holders can exercise influence over management to secure benefits that are unfavorable to bondholders. Bhojraj and Sengupta (2003) also find negative impact of block holders on bond ratings. However, Mirza and Javed (2013) have found positive association

between block holders and return on asset. They suggest that block holders increase the monitoring power which prompts firm to invest in profitable projects.

### **Shareholders Right**

Ashbaugh-skaife *et al.* (2006) measure of shareholder rights, a score counting single shareholder rights is negatively related to credit ratings. This suggests that greater shareholder rights are negative for credit ratings. Gompers *et al.* (2003) have found that stronger shareholder rights of firm have higher value of firm and have higher profits. Wealth redistribution hypothesis states that bondholders may experience the potential wealth transfer effects related with stronger shareholder rights. That is to say, from the bondholders' point of view, the wealth transfer risk, that result from stronger shareholder rights overshadow the positive value of firm.

### **CEO Duality**

CEO duality means that the chairman simultaneously plays role of the executive and supervisor. Thus the board could lose its independence and monitoring power, as a result performing a weak function in organization. Based on agency theory, Fama and Jensen (1983a) suggest that the CEO duality hinders board ability to monitor management and therefore increase the agency problem. Further agency theory suggests that, CEO duality increases management entrenchment and reduces board independence. Dahya *et al.* (1996) confirmed that CEO duality deteriorate corporate performance of firm and linked CEO duality with ineffective governance. Rechner and Dalton (1991) conclude that firms with independent leadership outperformed those practicing CEO duality. On the other hand, Organization theory suggests that CEO duality create strong and explicit leadership. This indicates that having two positions in an organization CEOs are more responsible towards making corporate decisions and perform in a way to achieve firms' objectives.

This finding is consistent with Peng *et al.* (2007) and Dahya and Travlos (2000). However, Daily and Dalton (1992) have found no relationship between CEO duality and operating performance.

### **Audit Quality**

It is believed that a higher quality level of audit forms part of a good governance mechanism. Certainly, auditors and audit committee play a key role in supervising financial management of the company improving performance therefore. Most empirical works (Ho 2005) have positive findings in their empirical works, at the same time like Brown and Caylor (2004); have found relationship between audit quality, governance and financial performance, but the significance of the link lies between audit quality and dividend yield and not with operating financial performance. Al-khawaldeh (2012) have found insignificant influence of audit quality on credit ratings. He argues that firm's quality is more important than audit quality in case of Jordanian companies.

### **5.4.4 Macroeconomic Variables**

Many studies have support the fact that ratings are significantly linked with selected economic fundamentals. In this study three macroeconomic variables, inflation, and exchange rate has been used to capture the effect of economic conditions on stock return which ultimately effect the credit ratings of the firm. Economic indicators such as inflation, money supply and exchange rates, among others, have been identified as having explanatory power over stock returns (Flannery and Protopapadakis, 2002). In this study macroeconomic variable are used on basis of previous studies (Chen Roll & Ross (1986); Suleiman *et al.* (2009); Sohail and Hussuain, (2012); Abdul and Suleiman (2012); Hassapis and Kalyvitis (2002) and Apergis, Artikis and Eleftheriou (2012).

### **GDP (Gross Domestic Product)**

Hassapis and Kalyvitis (2002) and Abdul and Suleiman (2012) have found a positive and significant relationship between GDP and stock return. They suggest that high GDP improves stock market performance and business conditions that leads to higher stock returns. Further, Apergis, Artikis and Eleftheriou (2012) argue that the positive relationship is mostly due to the stock market participants' response to macroeconomic variables tight to higher or lower output, for instance, high or low employment, which consequently, positively associated with earnings and future business conditions. Zhao (1999) has examined the association among output, inflation and stock prices in the Chinese economy. The results showed that output growth has negative and significant impact on stock prices. Flannery and Protopapadakis (2002) have found insignificant influence of GDP and industrial production on stock return.

### **Inflation (Consumer Price Index)**

Many empirical studies indicate negative relationship of inflation rate on stock return, such as Chen et al. (1986), Flannery and Protopapadakis (2002) and Zhao (1999). In this regard Maysami and Koh (2000); Suleiman *et al.* (2009) and Abdul and Suleiman (2012) argue that high inflation leads rigid monetary and fiscal policies in Pakistan which causes decline in equity return. Whereas, Ibrahim and Aziz (2003) and Apergis, Artikis & Eleftheriou (2012) have found positive association of inflation with stock return, "Which is probably explained by the insufficiency of the hedging role of stocks against inflation". Sohail and Hussain (2011) also have found significant and positive relationship between inflation and stock return in long run. Poon and Taylor (1991) and Izedonmi *et al.* (2011) have found no significant association between inflation and stock return.

## **Exchange Rate**

Sulaiman *et al.* (2009) have conducted study on stock market. They use various macroeconomic variables to examine the effect of these variables on stock return. They find inverse relationship between exchange rate and stock return. In this framework, Sohail and Hussain, (2012) and Abdul and Suleiman (2012) also find negative association between exchange rate and stock return. They argue that when domestic currency depreciates, goods become cheaper for foreign a market which ultimately increases the exports and hence equity return of exporting firms. On contrary, Sohail and Hussain (2011) have found positive association between exchange rate and stock return in long-run while analyzing relationship among macroeconomic variables and stock return. While, Izedonmi *et al.* (2011) have found no significant relation between exchange rate and stock return.

## Chapter 6

### EMPIRICAL RESULTS

The empirical results and results discussion are presented in this chapter

#### 6.1 Descriptive Analysis

The summary statistics of the all independent continuous variables performed over the period of 2007 to 2011 on the sample of 63 financial and nonfinancial firms of Pakistani listed at Karachi stock exchange (KSE) presented in Appendix A Table 2. The results show the leverage is 3.18 percent of total equity that is, the higher side of debt shows that Pakistani firms depend on debt rather than equity. The average profitability (ROA) is 9.7265 indicating that the firms in sample are profitable, and are strong enough to face financial distress. The average log of total assets (size) is 4.56 indicates that large firms achieve from economies of scale and are stronger enough to of risk of default; hence large firms gain higher credit rating, lower default risk. The average capital intensity is 31.17 percent, which shows that 31.17% of a firm's assets are fixed assets. The average Tobin's q is 0.5191 and its median is 0.3377. Tobin's q measures growth opportunities, which are considered to be an indicator for the success of firm and the height of its profitability. The low average dividend per share ratio (0.0051) shows that firms in the sample do not pay dividends. We find that average of block holders that own 10 % or more is 2.01 and 2.00 median. Board size is comparatively smaller in firms in Pakistan. The average (median) GDP is 3.9(4.3) representing the deteriorating economic position of Pakistan during the period. Inflation is on average around 13% in Pakistan reflecting higher price of consumer goods indicating weaker position of investors.



### **6.3 Correlation**

All the variables in current study are approximately normally distributed. In Appendix A table 3 the correlation matrix shows that all variables are less correlated (less than 0.5) with one another, this means that there is no multicollinearity problem exists between the explanatory variables used in this study.

Panel (A) present correlation among firm specific variables and with credit ratings. The correlation results shows that ROA, size, industry type, DPS and share price are positively and significantly correlated with credit rating, and Tobin's Q is insignificant. Leverage, loss and capital intensity is negatively and significantly correlated with credit ratings. Correlation among corporate governance variables and between these variables and credit ratings is presented in panel (B). All governance variables are significantly correlated with credit rating at 0.01 levels or below. Block holder is negatively and significantly correlated with credit rating. Panel (C) presents correlation between macroeconomic variables and between these variables with credit rating.

### **6.4 Regression Results**

This section presents the regression results for the models specified in above.

#### **6.4.1 Results of Determinants of Credit Ratings in Pakistan**

In the analysis of determinants of credit rating three models are estimated in this study. Model 1 firm specific variable are used to test the predicted relations between firm characteristics and credit rating. In model 2 governance variables are included as determinants. Model 3 reports full model consisting of both firm specific factors and corporate governance variables to test their

relationship with credit ratings. The study uses Probit regression model to estimate the regression for these variables because dependent variable that is credit rating is ordinal in nature this model is also evidenced in prior studies such as Ederington, 1985; McKelvey and Zavoina (1975), Pottier and Sommer (1999); Adams et al. (2003) and Bissoondoyal-Bheenick (2005).

The first model considers the firm specific variables to test whether profitability, leverage size, growth opportunities, capital intensity industry type, propensity of loss are related with credit ratings of firm. The results of model 1 show that profitability, size and growth opportunities show significant and positive relationship with credit rating of firm. This indicates that more profitable, large sized firms with more growth opportunity are likely to have higher credit rating. Whereas firms with more leverage and loss propensity are less likely to be rated high as their coefficients are negatively and significant related with firm's credit rating.

Probit regression result indicates inverse relationship between debt level and credit ratings of firms in Pakistani context. A positive relationship between the firm's size and credit ratings revealed that firm size is an important decisive factor in determining credit ratings. These results are consistent with Horrigen (1966); Adam et al. (2003); Ashbaugh-Skaife et al. (2006) and Al-Khawaldeh (2012) and Alali et al. (2012). These results also supports the signaling theory, which states that larger firms have higher expected future cash flows and are stronger enough to face financial distress and bankruptcy hence larger firm achieve higher credit ratings. Positive relationship between growth variable (Tobin's q) and credit ratings indicates higher growth opportunities in Pakistani firms. According to Al-Khawaldeh (2012) "higher growth may signal to investors to exhibit high performance which should result in higher future profits, as result firm achieve high credit ratings". Signaling theory supports this positive and significant influence of growth opportunities on credit rating. Similarly, the positive association between

capital intensity and credit ratings indicates lower default risk and higher credit ratings (Ashbaugh-Skaife *et al.* 2006).

**Table 4: Results of Determinants of Credit Ratings**

Variables	Model 1	Model 2	Model 3
<b>Leverage</b>	-0.14** (-1.80)		-0.12** (-1.83)
<b>Profitability</b>	0.10*** (2.40)		0.08** (1.84)
<b>Firm size</b>	0.52** (1.80)		0.41** (1.93)
<b>Growth opportunities</b>	1.20** (1.22)		1.15 (1.14)
<b>Capital intensity</b>	1.21 (0.27)		1.26 (0.24)
<b>Loss propensity</b>	-0.93** (-1.75)		-0.55** (1.80)
<b>Industry type</b>	0.76 (1.49)		-0.14 (-1.85)
<b>Audit quality</b>		0.015 (0.002)	-0.007 (-0.001)
<b>CEO duality</b>		0.99*** (2.20)	1.05*** (1.86)
<b>Block holders</b>		-0.57*** (-2.52)	-0.61*** (-2.43)
<b>Board Size</b>		1.44*** (2.35)	1.28** (1.73)
<b>Shareholders right</b>		0.91** (1.85)	0.99** (1.79)
<b>Pseudo R<sup>2</sup></b>	0.31	0.32	0.36
<b>Observations</b>	313	313	313

Notes: The left-hand side variable is the credit rating of firm. Robust coefficients and z-statistics reported in this table. \* Significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

Model 1: Credit Ratings = f (firm specific variables)

Model 2: Credit Ratings = f (corporate governance variables)

Model 3: Credit Ratings = f (firm specific variables, corporate governance variables).

The result shows that both financial and nonfinancial industry have potential to determine the credit rating of firms in Pakistan, although the percentage of firms in higher credit categories is

larger for financial firm than non-financial firms in current study. This result is in line with Horrigan, (1966); Kaplan and Urwitz, (1979), Ashbaugh-Skaife *et al.* (2006); Al-Khawaldeh, (2012).

The second Model considers corporate governance variable to test whether they predict the credit ratings of firm. Pseudo  $R^2$  is increase from 0.30 to 0.32 when corporate governance variables are introduced in this model. This shows that governance variables more explanatory power to explain firm credit ratings. Additionally, corporate governance variables capture more variation in credit ratings than firm specific factors (Ashbaugh-Skaife *et al.* 2006).

The Probit estimation results show audit quality has insignificant influence on credit ratings of firms in the context of Pakistan indicating that independent auditor increase the likeliness of higher rating for firms. This result suggested that quality of firm is more important than quality of audit firms in determining the firms' credit ratings (Al-Khawaldeh 2012). CEO duality is positively significantly related to credit ratings. This indicates that having two positions in an organization CEOs are more responsible towards making corporate decision ns and perform in a way to achieve firms' objectives. This finding is consistent with Peng *et al.* (2007) and Dahya and Travlos (2000). The negative coefficient shows that there is significant and inverse relationship between number of block holders and credit rating and as block holding increases the probability of the firm to be rate rated lower increases. This result is in line with Bhojraj and Sengupta (2003) and Ashbaugh-Skaife *et al.* (2006). This result also supports wealth redistribution hypothesis that due to influential shareholders of firm, block holders can exercise influence over management to secure benefits that are unfavorable to bondholders. Large board size and credit ratings are positively related, because large board size faces low agency risk and leads to higher ratings (Bhoraj and Sengupta, 2003). The positive and marginally significant

relationship between shareholders' rights and credit ratings reflects that stronger shareholder rights of firm have higher value of firm and have higher profits (Gompers *et al.* (2003)). This result is reliable with previous studies such as Ashbaugh-Skaife *et al.* (2006) and Warga and Welch (1993).

The Third model considers firm specific variables and corporate governance variables to examine the combine effect of both attributes on credit ratings. The model is more significant with 0.36 Pseudo R<sup>2</sup> than Model 1 and Model 2. In summary, the results reflect that corporate governance variables and firm specific variables determine the credit rating of firms; however, corporate governance variables exhibit more proportion in predicting credit ratings of firm than firm specific factors. Firm specific factors provide extra information for credit ratings.

#### **6.4.2 Results of Impact of Credit rating on Firm Performance**

To estimate the impact of credit rating on firm performance, the credit rating, firm specific variables and economic conditions are regressed on firm performance. Two indicators of firm performance are used: ROA and Tobin's q. The panel data estimation technique is applied and common effect model, fixed effect model and random effect model are estimated. The F test is used to compare between fixed effect model and common effect model that supports fixed effect model. Latter fixed effect model and random effect is compared by Hausman test. To deal with endogeneity the generalized method of moments (GMM) is used in this study. The coefficients and their corresponding t-values in parenthesis are presented in Model 1 of Table 5. In this study to examine the impact of performance of firm on credit ratings three econometric regression models are developed. Performance is measured by ROA and Tobin's q in Model 1 and Model 2 and respectively.

The results of performance models are reported in Table 5. In above analysis, credit rating shows significant and positive effect on firm performance in all three models. The loss propensity is negatively associated with ROA and Tobin's q whereas with book to market value has no significant impacted. The positive association between credit ratings and ROA indicates that a firm with higher credit ratings likely to have higher corporate performance (Ouni and Omri 2010). The firm specific factors such as size, DPS and growth opportunities (measured by Tobin's q); have positively and statistically significant relationship with firm performance. This shows that firm with large firm size, higher market to book value and growth opportunities; increases the performance of firm and hence; firm achieves higher credit ratings. Whereas the negative co-efficient of leverage and loss propensity reveals inverse relation with firm performance. The results also reveal positive and significant relationship of dividend per share and share price with performance of firm at 5% significance level.

The positive relationship between block holder and ROA shows "that block holder increases monitoring and control which motivates firms to invest in more profit generating projects" (Mirza and Javid 2013). The GMM estimation results reveal that all corporate governance variables such as CEO duality, board size and block holders are positively significant related with firm ROA. The positive association between CEO duality and ROA shows that CEO duality creates sense of strategic decision making and strong management thus strong leadership and management leads firm to achieve better financial performance this finding is in line with Peng *et al.* (2007) and Dahya and Travlos (2000).

**Table 5: Results for Impact of Credit Rating on Firm Performance**

Variables	Model 1	Model 3
	ROA	Tobin's Q
<b>Credit Ratings</b>	1.21*** (2.45)	0.12** (1.99)
<b>leverage</b>	-0.42 (2.10)	0.89*** (4.15)
<b>size</b>	0.87 (1.56)	-0.09*** (-3.45)
<b>DPS</b>	0.05 (0.78)	0.02 (1.13)
<b>Loss</b>	-0.30*** (-2.01)	-0.05*** (-2.05)
<b>Share price</b>	0.04** (1.89)	0.06*** (2.23)
<b>CEO duality</b>	0.43*** (2.79)	0.06 (1.67)
<b>Board size</b>	2.87*** (2.56)	0.09** (2.48)
<b>Block holders</b>	0.84** (1.23)	0.08*** (2.57)
<b>GDP</b>	0.45 (0.23)	0.055 (1.10)
<b>R-Squared</b>	0.25	0.32
<b>J-stat (p value)</b>	1.66	1.41
<b>Hausman (p value)</b>	0.00	0.00
<b>Observation</b>	63	63

Notes: The left-hand side variable is the credit rating of firm. Coefficients and t-statistics reported in this table. \* Significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%. The Hausmen test suggest Fixed effect Model  
 Model 1: ROA = f (Credit ratings, firm specific variables)  
 Model 2: Market- to-book value = f (credit ratings, corporate governance variables)  
 Model 3: Credit Ratings = f (credit ratings, firm specific variables, corporate governance variables)

The second column presents GMM results using Tobin's q (performance measure) as dependent variable. The results indicate that credit rating is positively related with firm performance measured by Tobin's q. since Tobin's q is depends on growth opportunities and growth may signal to investors to exhibit higher performance and also increase in future profits hence firm achieve higher credit rating. All independent variables are positively related with Tobin's q except size, which is negative and statistically significant with Tobin's q. this result is in line with Fama and French, (1992), who states that there is inverse relationship between size and financial performance of firm. The positive and significant relation between leverage and Tobin's q indicates that lenders pay attention on financial performance of firm and have potential to reduce the agency problem (Harris & Raviv, 1991). This result is in line Jensen (1986) hypothesis that "leverage increases the risk level of the company, which requires managers to work harder to generate and pay off cash flows to the outsiders". The positive effect of block holders on firm performance measured by Tobin's q indicates that block holder better monitors the performance of manager's performance which leads to improved performance of the firm. This supports monitoring hypothesis of Shleifer and Vishny (1997). To test the macroeconomic condition Gross domestic product (GDP) is used in this study which is positive but insignificant in all three model this indicates that GDP is not substantial in determining the firm financial performance in case of Pakistan. In summary the results in table 5 support Nishat and Mehr-un-Nisa (2011) and Ahmed et al. (2013).



### **6.4.3 Result of Impact of Credit Ratings on Stock Returns**

Table 6 presents estimation results of model assessing how credit rating along with other firm specific, governance specific and economy specific variables effect stock returns. The high p-value of the J-statistics shows that all instruments used in the study are valid.

Model 1 analyzes the results of credit rating with firm specific variables and their influence on stock return. The positive coefficient indicates that credit ratings are statistically significantly positively related to stock returns. This shows that credit rating is an important determinant of stock returns in case of Pakistani firm. That is to say that a firm with higher credit ratings tends to have higher stock returns. This result is in line with Poon and Chen (2008a). This result also support signaling theory that credit ratings are signal to market participants to take decision about buying or selling stocks, because according to efficient market theory investors are indecisive about buy a stock at lower price or sell their stocks at higher price thus to achieve higher returns investor purchase high rated investment (Bissoondoyal-Bheenick et al. 2011).

The financial variables results in Model 1 such as profitability, size and growth opportunities are significantly positively related with stock returns. That is, firm with large size, high profitability and higher growth opportunities provide high return on their stocks in Pakistan. Whereas, leverage and liquidity are negatively significantly affect stock returns. The negative and significant relation between leverage and stock returns indicates that firms pay long term interest debt which reduces company profit hence low return on stocks in Pakistan. The negative and significant relationship between liquidity and stock returns shows that firm with greater liquid stock have low return. These results are in line with Yang et al., (2010), Chen & Chen, (2011) and Ahmed et al (2013). Model 2 considers corporate governance variables with credit ratings to

examine the influence of these variables on stock return. Credit rating is positively related with stock returns. Governance variables such as CEO duality, shareholder's right and board size is positively related with stock return and block holders is negatively related with stock return. But this relationship is insignificant as all variables have low co-efficient. This indicates that

**Table 6: Results of Impact of Credit Rating on Stock Returns**

Variables	Model 1	Model 2	Model 3	Model 4
Credit Ratings	<b>0.57**</b> (1.89)	<b>0.53*</b> (1.80)	<b>0.11*</b> (2.01)	<b>0.54**</b> (2.10)
Leverage	<b>-0.44</b> (-0.95)			<b>-0.84**</b> (-1.76)
Size	<b>0.16***</b> (2.83)			<b>0.43</b> (0.18)
Profitability (ROA)	<b>0.013***</b> (2.77)			<b>0.05</b> (1.51)
Growth opportunities	<b>0.51</b> (0.01)			<b>-1.65***</b> (-2.11)
Liquidity	<b>-0.12</b> (-0.54)			<b>-0.19***</b> (-2.61)
Dividend per share	<b>0.08***</b> (2.63)			<b>0.06***</b> (1.04)
CEO duality		<b>0.32</b> (0.71)		<b>0.10</b> (0.55)
Board size		<b>0.34</b> (0.81)		<b>0.03</b> (0.12)
Shareholder's rights		<b>0.31</b> (1.05)		<b>0.05</b> (1.71)
Audit quality		<b>0.06</b> (0.33)		<b>0.01</b> (0.07)
Block holders		<b>-0.11</b> (-0.83)		<b>-0.08</b> (-0.73)
Exchange rate			<b>0.18***</b> (5.45)	<b>0.17***</b> (5.63)
Inflation			<b>-0.13***</b> (-5.11)***	<b>-0.23***</b> (-3.55)
GDP			<b>0.59***</b>	<b>0.71***</b>

			(6.99)	(4.32)
<b>R-Squared</b>	<b>0.13</b>	<b>0.10</b>	<b>0.18</b>	<b>0.25</b>
<b>J-stat</b>	<b>1.18</b>	<b>3.2</b>	<b>3.13</b>	<b>2.23</b>
<b>Hausman (p value)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Note: Values in parentheses are underlying student-t values. The t statistics significant at 1%, 5% and 10% levels of significance are indicated by \*\*\*, \*\*and \*, respectively.

Model 1: stock returns = f (credit rating, firm specific variables)

Model 2: stock returns = f (credit rating, corporate governance variables)

Model 3: stock returns = f (credit rating, business conditions)

Model 4: stock return s= f (credit rating, firm specific variables, corporate governance variables, business conditions)

Corporate governance variables do not have a significant proportion while predicting the return on stocks in Pakistani firms.

Third model considers effect macroeconomic conditions on stock returns. Three macroeconomic variables such as exchange rate, GDP and inflation rate are used with credit rating as independent variables. Credit rating is also positively and significantly related with stock returns. The results indicate that exchange rate is positively and significantly related with stock return in Pakistan, this shows that when domestic currency depreciates, goods become cheaper for foreign markets which ultimately increases the exports and hence equity return of exporting firms. These results are consistent with Suleiman (2009), Sohail and Hussuain, (2012) and Abdul and Suleiman (2012). The negative and significant relationship between inflation (measured by CPI) and stock return indicates that high inflation leads rigid monetary and fiscal policies in Pakistan which causes decline in equity return. This result is confirmed by Chen, Roll and Ross (1986); Maysami and Koh (2000); Sulaiman *et al.* (2009) and Abdul and Suleiman (2012). GDP is positively significantly influence stock returns, since GDP improves stock market performance and business environment that increases the stock returns. The result is in line with Hassapis and Kalyvitis (2002), Abdul and Suleiman (2012) and Nicholas *et al.* (2012).

Model 4 considers all firm specific, corporate governance and macroeconomic variables with rating, to test the joint influence of these variables on stock return. The results remain the same

for all the variables in this model. The positive and significant relationship of credit rating with stock returns in all models shows that credit rating of firms is important factor in determining the stock returns in Pakistan. Firm specific variables have significant role in predicting the stock returns. The results indicate that in this model, macroeconomic variables are also highly significant with stock returns. In conclusion, the results indicate that macroeconomic conditions are considered to have significant proportion in determining stock returns in Pakistan.

## Chapter 7

### CONCLUSION AND POLICY IMPLICATIONS

#### 7.1 Conclusion

Credit rating agencies (CRAs) play significant role in evaluation of firm default risk. The CRAs evaluate firms on basis of publicly available information. Credit ratings transmit the view of the credit rating agency of the creditworthiness of an issuers' ability to payment of their financial obligations. A good credit rating of firm is considered as a symbol of good quality, financial strength and firm creditworthiness. The firm creditworthiness serves the interests of investors, issuers, intermediaries, borrowers and institutions alike.

The first objective of this study is to examine the determinant of credit rating in Pakistan, and second is to investigate the influence of credit rating on firm performance and stock returns. The prior researches indicated the evidence that financial data, financial ratios and corporate governance attributes are strong enough to determine the firms' credit ratings. Thus, the current study used both firm specific attribute and corporate governance attributes to predict the credit rating of firm in Pakistan. Secondly, vast literature showed the impact of credit rating on firm performance and stock return. In order to achieve the objectives of this study, the sample of 63 financial and non-financial firms listed at Karachi Stock Exchange (KSE) are taken to assess the financial characteristics and governance attributes with respect to credit rating assigned by Pakistan Credit Rating Agency (PACRA). The Ordered Probit technique is used to test the determinants of credit rating. The panel data estimate technique is employed in this study to

examine the relationship between credit rating and firm performance and also for credit rating and stock returns.

The first part of the study deals with determinants of credit ratings in Pakistan. The study suggests that firm specific factors and corporate governance attributes predict the credit ratings of financial and non financial firms in Pakistan. The firm specific factors such as leverage, return on asset (profitability measure), firm size, Tobin's Q (growth opportunities measure), capital intensity and loss propensity is used, while corporate governance variables included; board size, block holder, shareholder rights, CEO duality and audit quality. The main findings of this study indicate that the firm specific variables such as firm size, return on asset and Tobin's Q are positively and significantly related with credit ratings of firm and whereas, leverage has negative and significant effect on credit rating. Turning to governance variables, the results shows that Board Size and CEO duality is positive and statistically significant with credit rating of firm while, block holders is negative but significantly associated with the firms' credit ratings. Thus the firms credit ratings in Pakistan are appear to be mainly predicted by size, profitability, growth opportunities, leverage, CEO duality, board size and number of block holders. This apparently suggests that publicly available information in financial statement and corporate governance variables play a role in the evaluation of firms by the credit rating agencies. The governance mechanisms can mitigate probability of default by reducing the agency risk cost through better controlling the management activities and by extenuating the information asymmetry between the firm and creditors. Nevertheless, these are not the only elements on which the credit ratings of firms are assigned. The factors such as industry risk, risk management, market risk, operational risk, reputational risk, financing structure and capital structure of firm, diversification of business and franchise and operational environment also play

an important role in the firm's credit ratings process in Pakistan. However, financial ratios and financial data are widely used in the credit rating process for evaluating the financial health of different firms.

Firm performance is greatly affected by the credit rating of firm. In order to serve this objective, this study takes credit rating as independent variable. Performance is measured by return on assets (ROA) and Tobin's Q. To examine the impact of credit rating, two empirical models for performance are established. The other independent variables include firm specific variables, corporate governance variables and business conditions (measured by GDP). The main finding shows that credit rating of firm has significant impact on firm performance in both models. Firm with higher credit rating are signal to financial markets and facilitates investors to take their financial decisions. Moreover, higher credit ratings indicate the management efficiencies and good quality of firm. The results further explain that size is positively related with ROA but in the line with Fama and French (1992) it has negative significant impact on Tobin's Q. Dividend per share (DPS) and share price is positively and significantly associated with firm performance in all models. Leverage is negatively related with ROA whereas positively related with Tobin's Q. Loss propensity is negatively related with performance in both models. All governance variables significantly related with firm performance. Moreover, to test the impact of business conditions GDP (gross domestic product) is included in both models. The results show that GDP is positive but insignificant with firm value. This shows that GDP do not play an important role in predicting the firm performance in case of Pakistan.

In third part of the study investigates the impact of credit rating on stock return in Pakistan. The information content of credit ratings is study by investigating the reaction of market to credit rating changes in Pakistani firms. This shows that the credit rating has informational contents to

all markets, especially if the credit ratings are on the firm's own request. That is why, information content hypothesis are apparently authenticated, and the CRAs appears to reveal new information. Various theories postulate that stock prices are greatly effect by credit rating assigned by rating agencies along, that is; higher credit rating reduces the default risk and cost of debt, hence; firm achieves higher return on their stock, moreover higher credit rating firm have good reputation in market. Few studies also suggest that credit ratings and stock returns are simultaneously influence each other (Poon & Chan, 2008 ) The study developed four empirical models to test the impact of credit rating on stock return. Credit rating is taken as independent variable with other firm specific, governance, and macroeconomic variables. The results of all models shows that credit rating is positively and significantly affect the stock return in Pakistan, this indicates firms with higher credit ratings tends to have higher return on their stock. Furthermore, firm specific factors such as firm size, profitability, growth opportunities has positive and significant effect on stock return, while leverage and liquidity is negatively related with stock return. However, dividend per share is positive but insignificant, this shows that most of the firms in sample do pay dividend. In second model, the corporate governance variables (board size, block holders, CEO duality, audit quality, shareholder's right) show insignificant relationship with stock return, this reveals that governance mechanisms is not substantial in predicting the stock returns in Pakistan. The third model of the study consists of ratings and macroeconomic variables, the empirical findings suggest that all macroeconomic variables (exchange rate, inflation, GDP) are highly significant with stock returns in Pakistan. This indicates that business conditions greatly affect the stock market performance in Pakistan.

In summary it is say that financial attributes and governance attributes can be used to predict the credit rating and firm performance, because these attributes are inter related in firms; whereas,



economic conditions are important in determining the stock return in Pakistan. Moreover, the financial, economic reforms and corporate reforms of 2002 are responsible for increases in firm performance and stock prices in Pakistan

## **7.2 Policy Implications**

This study increases to understand the importance of credit ratings and the firms which are listed in Karachi Stock Exchange rate their credibility on regular basis from PACRA and other rating agencies like JCR-VIS, as it improves the reputation, status and creditworthiness which eventually attract the potential investors. In case of Pakistan the regulatory authorities such as SECP (Securities and Exchange Commission of Pakistan) can consider to ask firms to give priority to credit rating. The State Bank of Pakistan has already made credit ratings mandatory for all banks and other financial institutions. The analysis of this study might facilitate debt holders, investors, shareholders and other stake holders rated by PACRA to understand the significance of credit ratings and its influence on performance and stock return of firms and also on financial decision of firms in Pakistan.

## **7.3 Limitations and Future Research**

Due to non-availability of data this study uses only 63 firms. More variables should be added to the study. In the future with more variables are added. The effect of credit rating on other financial decisions like leverage and dividend can be done.

In future, research can be done on the gap between perceived importance of credit ratings and its implementation to encourage the corporate entities to gain the cost benefits. There is an immense need of such researches to be conducted in Pakistan to examine the relationship between the credit ratings and the interest rate on which the debt is issued.

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## APPENDICES

### Appendix A

**Table 2: Descriptive statistics**

<b>variables</b>	<b>Mean</b>	<b>S.D</b>	<b>Median</b>
<b>Firm characteristics</b>			
<b>Leverage</b>	3.1758	0.429	2.5806
<b>Profitability</b>	9.7276	10.7621	7.7823
<b>Size</b>	4.5577	0.6878	4.5400
<b>Capital intensity</b>	0.3117	0.2745	0.2966
<b>Tobin's Q</b>	0.3191	0.2714	0.2377
<b>Liquidity</b>	3.9147	5.3710	1.2823
<b>Dividend per Share</b>	0.0051	0.0064	0.0013
<b>Corporate Governance</b>			
<b>Board size</b>	2.1011.	0.023	2.00
<b>Business conditions</b>			
<b>Inflation(CPI)</b>	13.36	4.094	13.40
<b>GDP</b>	3.9	1.152	4.3

**Table 3: Correlations Matrix**

**A: Firm specific factors:**

	CR	LEV	ROA	SIZE	TQ	C_I	T_S	LOSS	DPS	SP
CR	1									
LEV	-0.14	1								
ROA	0.15	-0.10	1							
SIZE	0.07	-0.07	0.02	1						
TQ	0.00	0.20	0.00	-0.40	1					
CAP_INT	-0.09	0.19	-0.05	0.18	0.09	1				
TYP_SEC	0.14	-0.17	-0.09	-0.16	-0.08	-0.55	1			
LOSS	-0.01*	0.00*	-0.09	-0.05	0.04*	-0.05	0.23	1		
DPS	0.10	0.02*	0.00*	0.03*	0.09	0.04*	-0.07	-0.04	1	
SP	0.12	-0.01*	0.20	0.03*	0.02*	0.27	-0.43	-0.17	0.02*	1

**B: Corporate Governance Variables**

	CR	DUAL	SHT	BS	BH	AQ
CR	1					
CEO duality	0.23	1				
Shareholder's right	0.07	0.15	1			
Board Size	0.16	0.01*	-0.16	1		
Block holders	-0.15	-0.21	-0.04*	-0.03	1	
Audit quality	0.06	0.04*	0.36	0.22	0.09	1

**C: Macroeconomic variables**

	CR	CPI	EXRATE	GDP
CR	1			
Inflation(CPI)	-0.02*	1		
Exchange Rate	0.06	0.18	1	
GDP	-0.01*	-0.60	-0.35	1

## Appendix B

### List of Variables

<b>Variables</b>	<b>Symbol</b>	<b>Description</b>
<b><i>Firm Specific variables</i></b>		
<i>Firm Size</i>	<b><i>Size</i></b>	<i>Logarithm of total assets</i>
<i>Leverage</i>	<b><i>LEV</i></b>	<i>Long term debt divided by total assets (ratio)</i>
<i>Capital intensity</i>	<b><i>CAP_INT</i></b>	<i>Gross fixed assets divided by total assets.</i>
<i>Return on asset</i>	<b><i>ROA</i></b>	<i>Net income divided by Total Assets (ratio)</i>
<i>Liquidity</i>	<b><i>LIQ</i></b>	<i>Cash ratio =Cash and cash equivalents / Current Liabilities</i>
<i>Loss Propensity</i>	<b><i>LOSS</i></b>	<i>1 if ROA is negative in the current and prior fiscal year, 0 otherwise.</i>
<i>Industry type</i>	<b><i>TYP_SEC</i></b>	<i>1 if firm is a financial sector, 0 otherwise</i>
<i>Share price</i>	<b><i>SP</i></b>	<i>Market value of per share price (Rs.)</i>
<i>Dividend</i>	<b><i>DPS</i></b>	<i>Dividend per share</i>
<i>Share issued</i>		<i>Outstanding number of share (No.)</i>
<i>Tobin's Q</i>	<b><i>TQ</i></b>	<i>(Long term debt plus Market Capitalization) divided by Total Assets (ratio)</i>
<i>Stock return</i>	<b><i>SR</i></b>	<i>Current sock return of firm divided by previous stock return minus one</i>
<b><i>Macroeconomic Variables</i></b>		
<i>Consumer price index (inflation)</i>	<b><i>CPI</i></b>	<i>Measure of estimating average price of goods and services</i>
<i>Exchange Rate</i>	<b><i>ExR</i></b>	<i>The price of one country's currency expressed in another country's currency</i>
<i>Gross domestic Product</i>	<b><i>GDP</i></b>	<i>Total domestic production in country</i>

<i>Corporate governance Variables</i>	<i>symbol</i>	<i>Retailed measure</i>
<i>Board size</i>	<b><i>BS</i></b>	<i>Number of board of directors</i>
<i>Block holders</i>	<b><i>BH</i></b>	<i>Number of block holder holding 10% or more shares.</i>
<i>Shareholder right</i>	<b><i>SHT</i></b>	<i>1 if firm shareholder has right to vote, 0 otherwise</i>
<i>CEO duality</i>	<b><i>DUAL</i></b>	<i>1 if CEO is also chairman of company, 0 otherwise</i>
<i>Audit Quality</i>	<b><i>AQ</i></b>	<i>1 if the company is audited by a top four companies, 0 otherwise.</i>

## List of Firms

<b>Sr. No.</b>	<b>Name</b>	<b>Symbol</b>	<b>Sector</b>
1.	NATIONAL BANK OF PAKISTAN	NBP	Banking
2.	UNITED BANK LIMITED	UBL	Banking
3.	MEEZAN BANK	MEBL	Banking
4.	ALLIED BANK LIMITED	ABL	Banking
5.	BANK OF KHAYBER	BOK	Banking
6.	ALBARAKA ISLAMIC BANK B.S.C.	ABPL	Banking
7.	ASKARI BANK LIMITED	AKBL	Banking
8.	ATLAS BANK LIMITED	ATBL	Banking
9.	BANK AL HABIB LIMITED	BAHL	Banking
10.	BANK ALFALAH LIMITED	BAFL	Banking
11.	The BANK OF PUNJAB	BOP	Banking
12.	FAYSAL BANK LIMITED	FBL	Banking
13.	FIRST WOMEN'S BANK LIMITED	FWBL	Banking
14.	HABIB METROPOLITAN BANK	HMB	Banking
15.	JS BANK LIMITED	JSBL	Banking
16.	KASB BANK LIMITED	KBL	Banking
17.	MCB BANK LIMITED	MCB	Banking
18.	MYBANK LIMITED	MYBL	Banking

19.	NIB BANK LIMITED	NIB	Banking
20.	ROYAL BANK OF SCOTLAND LIMITED	RBS	Banking
21.	SONERI BANK LIMITED	SBL	Banking
22.	STANDARD CHARTERED BANK (PAKISTAN) LIMITED	SCBP	Banking
23.	NETWORK MICROFINANCE BANK LIMITED	NMBL	Banking
24.	ARIF HABIB INVESTMENTS LIMITED	AHIL	Investment banks
25.	JS GLOBAL CAPITAL LIMITED	JSGC	Brokerage
26.	KASB SECURITIES LIMITED	KASBSL	Brokerage
27.	PAKISTAN KUWAIT INVESTMENT COMPANY	PKIC	Development finance institution
28.	PAK IRAN JOINT INVESTMENT COMPANY	PIJC	Development finance institution
29.	PAK-LIBYA HOLDING COMPANY (PVT.) LIMITED	PLHC	Development finance institution
30.	ASKARI LEASING LIMITED	ALL	leasing
31.	ORIX LEASING PAKISTAN LIMITED	OLPL	leasing
32.	FIRST FIDELITY LEASING MODARABA	FFLM	Modaraba
33.	FIRST HABIB MODARABA	FHM	Modaraba
34.	MODARABA AL-MALI	MODAM	Modaraba
35.	STANDARD CHARTERED MODARABA	SCM	Modaraba
36.	PACE (PAKISTAN) LIMITED	PACE	Real estate investment & services
37.	PAKISTAN TOBACCO COMPANY	PAKT	Tobacco
38.	AL- ABBAS SUGAR MILS	AABS	Sugar
39.	NATIONAL FOOD LIMITED	NATF	Food
40.	SHAKARGANJ MILLS LIMITED	SGML	Food
41.	INDUS DYING & MFG CO.	IDYM	Textile
42.	NISHAT MILLS LIMITED	NML	Textile
43.	ATTOCK REFINARY LIMITED	ATRL	Oil and Gas
44.	NATIONAL REFINERY LIMITED	NRL	Oil and Gas
45.	PAK-ARAB REFINERY LIMITED	PARCO	Oil and Gas

46.	PAKISTAN STATE OIL COMPANY LIMITED	PSO	Oil and Gas
47.	DEWAN CEMENT LIMITED	DCL	Cement
48.	MAPLE LEAF CEMENT FACTORY	MLCF	Cement
49.	POINEER CEMENT LIMITED	PIOC	Cement
50.	AGRITECH LIMITED	AGL	Chemicals
51.	ENGRO POLYMER & CHEMICAL PAKISTAN	EPCL	Chemicals
52.	EYE TELEVISION NETWORK LIMITED	ETNL	Electricity
53.	HUB POWER COMPANY LIMITED	HUBC	Electricity
54.	NISHAT CHUNIAN POWER LIMITED	NCL	Electricity
55.	NISHAT CHUN POWER LIMITED	NCPL	Electricity
56.	SUI NORTHERN GAS PIPELINES LIMITED	SNGP	Multiutilities (gas & water)
57.	SUI SOUTHERN GAS COMPANY LIMITED	SSGC	Multiutilities (gas & water)
58.	PAKISTAN TELECOMMUNICATION CORPORATION	PTC	Telecommunication
59.	WORLDCALL TELECOM LIMITED	WTL	Telecommunication
60.	PACKAGES LIMITED	PKGS	General Industries
61.	PAK ELEKTRON LIMITED	PAEL	Household Goods
62.	TPL TRAKKER (PVT) LIMITED	TPL	Technology Hardware & equipment
63.	TRI-PACK FILMS LIMITED	TRIPF	General Industries



