ACCOUNTING DISCLOSURE, FINANCIAL TRANSPARENCY, OWNERSHIP STRUCTURE AND CORPORATE GOVERNANCE: IMPLICATIONS FOR INTERNAL AND EXTERNAL WVB JORDANIAN CREDIT RISK ASSESSMENTS

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Dedication

To Allah Most High, that after the gift and joy of successfully completing my viva, this thesis He sent me the unrivalled gift of a new son, Mu'aaweyah, who I hope shall raise high the banner of our pious predecessors.

To my mother, who taught me the value of being rational and consistent even whilst I was still very young; for her constant love, patience, and for supporting me.

To my father, who was always good to me, had confidence in me and brought me up to appreciate the truth.

To my loving wife, Um Mish'al, for her devoted and continual help throughout this time, as a source of encouragement right by my side at all times sharing with me the enjoyment of the successes and being so patient during the in-between times, and always revealing to me and our children her tender and loving care. I praise her for her marvellous support.

To my lovely children; my sweet daughters: Haajar and Maariyah, and lovely my sons: Mish'al, Ahmad, Muslim and lovely little boys Adam and Mu'aaweyah for being a constant source of joy and happiness and for their moral support and their prayers, by which Allah provided me with the resolve and fortitude to finish this thesis..

Al-Ikhlâs – Sincerity of belief in the Oneness of God

Chapter 112 of the Noble Quran

بسم الله الرحمن الرحيم

In the name of Allah, Most Gracious, Most Merciful

قل هو الله أحد

Say, "He is Allah (God), The Singular, The Alone (in His Names and Attributes),

الله الّصمد

Allah! The free of need, upon Who all are in need, the Self-Subsisting.

لم يلد و لم يولد

He neither begets nor is He begotten,

و لم يكن له كفواً أحد

Nor is there any equivalent unto Him

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ABSTRACT

Doctor of Philosophy

Accounting disclosure, financial transparency, ownership structure and corporate governance: implications for internal and external WVB Jordanian credit risk assessments

By Abdullah A.K. Al-Khawaaldah Bani Hasan (Ash-Shu'ayree As-Salafi)

Creditworthiness is a quality that is important to all stakeholders of an organisation, especially bondholders. It is posited that good corporate governance practices assist the confidence that stakeholders have in an organization's ability to generate the strong cash flows that are needed to meet financial obligations, which in turn should enhance credit risk assessments. Much research has been conducted into rating assessments, but these have largely been directed at developed markets and they have not generally been focused on the impact of good corporate governance practices and procedures. The primary focus of this research is to address this issue through an investigation into the impact of key factors upon the credit risk assessments of listed companies on the Amman Stock Exchange (ASE) in Jordan, as assessed by World'vest Base Inc. (WVB) credit risk assessment scores for Jordanian companies between 2005 and 2007 inclusively.

Drawing upon insights from agency (including management disciplining and wealth redistribution hypotheses), stewardship, stakeholder, signalling, legitimacy and the diffusion of innovation theories, this thesis investigates the determinants of WVB credit risk assessments of Jordanian firms under five headings: accounting and financial aspects, market and regulatory perspectives, influence of ownership structure, financial transparency/disclosure and corporate governance factors. To achieve this, an array of modelling techniques is used in order to provide a more comprehensive picture. They include bivariate analysis, one-way analysis of variance, ordinary least square regressions for numerical scores, binary logistic regressions, and ordinal logistic regression.

The results demonstrate that accounting and financial factors have a significant impact on credit risk assessments but not capital intensity. Profitability is positively associated with credit risk assessments, while leverage and loss propensity have a negative association. With respect to market and regulatory factors, size and Tobin's Q are positively associated with credit risk assessments. By contrast type of sector and audit are not related to credit risk assessments. Foreign ownership enhances ratings, whilst institutional ownership has a negative impact. Also, insider ownership and family ownership have some importance. It was surprising to find that whilst financial transparency and disclosure variables are significantly associated positively with credit risk assessments in some models, they were generally not significant across other models. Nevertheless, the study finds empirical evidence to support a degree of association between credit risk assessments and corporate governance factors. There is also a positive association between board size and credit risk assessments, but the most important aspect of corporate governance for Jordanian firms is board expertise.

The originality of this thesis also embraces the inclusion not only of externally published WVB risk assessments in the Jordanian context, but also internal numerical ratings that were made available with kind permission from the WVB agency for the purposes of this research. The question is whether there are insights that can be gained from such internal ratings that have not hitherto been made available to other researchers. The answer is in the affirmative, for role duality on the board of directors is evidently more important to WVB's own internal numerical rating assessments than is evidenced by the WVB externally published credit risk assessments. Specifically, the significance of corporate governance (role duality) is missed by multivariate models that are based solely on externally published data. Furthermore, financial transparency and disclosure variables reveal more (albeit moderate) support for the more refined internal scores of WVB than for the external assessment ratings. Finally, family ownership is also important to WVB's internal scores. Thus, this research has enabled deeper insights to be gained into credit risk assessment determinants within the Jordanian context.

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List of Abbreviations

Abbreviations	Full word
ACT	Association of Corporate Treasurers
AFM	Amman Financial Market
AFP	Association of Financial Professionals
ANOVA	Analysis of variance
ASB	Accounting Standards Board
ASC	Accounting Standards Committee
ASE	Amman Stock Exchange
BFSR	Bank Financial Strength Ratings
BOD	Board of directors
BV	Book value
CBJ	Central Bank of Jordan
CEO	Chief Executive officer
CESR	Committee of European Securities Regulators
CG	Corporate governance
CMA	Capital market Amman
CR	Credit rating
CRA	Credit ratings agencies
CRISK	Country risk
DoS	Department of Statistics
ETS	Electronic Trade System
EU	European Union
FX	Foreign Exchange
GAAP	Generally Accepted Accounting Principles
GDP	Gross Domestic Product
IAS	International Accounting Standards
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
IMF	International Monetary Fund
IOSCO	International Organisation of Securities Commissions
ISIN	International Security Identification number
JAA	Jordanian Auditors Association

JACPA	Jordanian Association of Certified Public Accountants
JCM	Jordanian Capital Market
JD	Jordanian Dinar
JIC	Jordan Investment Corporation
JSC	Jordan Securities Commission
JSCG	Jordanian Shareholding Companies Guides
LR	Logistic Regression
LTDR	Moody's long term debt rating
MANOVA	Multivariate analysis of variance
MDA	Multiple Discriminant Analysis
MDS	Multidimensional Scaling
MIS	Moody's Investors Services
MLR	Multinomial Logistic Regression
MV	Market value
NRSRO	Nationally Recognised Statistical Ratings Organisation
OECD	Organization for Economic Co-operation and Development
OLR	Ordered Logit Regression
OLS	Ordinary Least Squares
S&P	Standard &Poor's
SDC	Securities Depository Centre
SEC	Securities and Exchange Commission
STDR	Moody's Short term debt rating
UK	United Kingdom
US	United States
WB	World Bank
WTO	World Trade Organization
WVB	World'Vest Base
WVB_CR	World'Vest Base Credit Rating

Acknowledgment

I begin in the name of **Allah**, the Most Gracious, The Most Merciful. I praise Him for His favour upon me, that He has allowed me to complete this work. To Allah alone are my prayers; that He accepts my research as a sincere service for His Religion, and as a benefit for mankind. My sincere appreciation is to Almighty **Allah** for His blessings and guidance throughout my life, and in particular for helping me to research and complete my PhD. I hope in Allah that I find the reward of this research awaiting me on the **Day of Judgment**.

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To my beloved **parents** for their seemingly never ending patience, I thank them for their support, tender loving care, encouragement and faith in me. I will always be grateful for their love, interest and support. May they find the fruits and rewards of their goodness with their Lord on the Day when neither children nor wealth will avail mankind in anything except he who returned to his Lord with a pure heart.

Allah Alone knows how much self sacrifice **my wife**, may Allah preserve her, has had to make for me. Whenever I needed her, she was always there for me, never failing to assume responsibility for our children and nurture and care for them. As for all my amazing children – I pray that they continue to be a source of our pride and happiness in this world and the next.

Finally, I ask **Allah** to accept this work of mine as sincerely for His Pleasure.

Author's Declaration

Abdullah Al-khaawaldah makes the following declaration regarding this thesis, entitled:
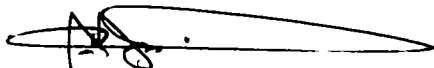
Accounting disclosure, financial transparency, ownership structure and corporate governance: implications for internal and external WVB Jordanian credit risk assessments

I declare that this thesis has not been previously submitted either in this university or any other university for a degree or any other qualification. In addition, I declare that all of the work done in this thesis is my own work. This study was fully supported by the Jordanian Government.

The following activities, pertaining to the programme of related study, have been undertaken:

1. Attendance at research training courses in:

    i.   Quantitative analysis (Part 1): descriptive analysis.
    ii. Qualitative analysis (Part 1).
    iii. Quantitative analysis (Part 2): bivariate, univariate analysis.
    iv. Quantitative analysis (Part 3): multivariate analysis.

2. Attendance at the PhD symposium during the research period:

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CHAPTER ONE: INTRODUCTION

1.1 General Introduction

The credit risk assessment of a firm plays an important role not only in evaluating accounting and financial information in order to provide a rating, but also through the rating itself in adding to the information set available to bondholders and other stakeholders of the firm. It is purported that investors need this credit rating (CR) to increase their ability to make useful decisions.

So, the importance of a firm's CR is recognized through the provision of useful information for all stakeholders. The disclosure of ratings is particularly pertinent in an emerging capital market where information is at a premium and represents an under-researched area. Additionally, research into ratings, whilst although extensive in general, is less common with respect to world'vest base (WVB) ratings, for indeed WVB whilst being a prominent agency in some regions, makes valuable credit assessments of companies particularly in the Middle East which has not been researched extensively in this regard. Thus, to examine CRs of listed Jordanian companies is an important reason for the choice of topic for research. Great concern has been directed to the scandals that happened recently either in the Asian or Western markets. One of the major reasons for these scandals is the lack of good financial transparency and disclosure which can be enhanced by a good corporate governance system.

In the same vein, emerging markets direct their attention to these changes and begin to perform some reforms to implement good corporate governance (CG) system. Many changes have happened in the Jordanian environment in the last few years, among them: extensive economic reforms by adopting a privatisation policy of its public sector companies, the issuing of a package of laws and regulations required for more stability in the Jordanian

economy, and assistance in applying corporate governance rules in most listed corporations by issuing its code of ethics. These changes have led to consequential changes in the Amman Stock Exchange (ASE) which has witnessed a massive increase in the volume of traded shares. But the impact of corporate governance on credit risk assessments has been under-researched.

The corporate governance mechanism effect on credit ratings of the controlling performance of management leads to agency costs because of the conflict between the two parties, namely, managers and shareholders, and also between bondholders and shareholders. In order to reduce the agency conflict between those parties, recommended practices have been required by Standards and Poor's (2002), dealing with (1) ownership structure and influence, (2) financial stakeholder rights and relations, (3) financial transparency and information disclosure, and (4) board structure and processes. The importance of the these recommendations has been recognized in the US-based research by Ashbough-Skaife *et al.*, (2006), and in this thesis their work is being extended. There are two defining aspects to the originality in this thesis. Firstly, new variables are added that relate both to company ownership structure, namely, governmental ownership, family ownership and foreign ownership and to corporate governance variables, through the inclusion of role duality and board size. Governmental ownership is potentially important for Jordan since it is an integral part of the Middle East and it is close to the focus of attention in world politics and economics. Family ownership is added to the analysis to reflect an important aspect of ownership structure which reflects the cultural environment of Jordan. Foreign ownership is an additional dimension because of its importance to an emerging market, namely that of Jordan. Secondly, it is not just the inclusion of new variables that makes this work distinctive, but through the high quality of data this thesis explores both internal WVB sources as well as external ratings. The access to numerical data scores generously allowed by the WVB

agency, which are not otherwise available to the public nor historically to other researchers, has enabled this research to make fine distinctions between CR categories than would otherwise not be possible.

In the last decade of the previous century most Jordanian firms began to benefit from the widespread work of credit rating agencies (CRAs), with recent developments in the Jordanian capital market, such as the privatisation policy of public sector companies, the application of corporate governance, economic reforms, and the issuance of many laws and regulations that aim to increase stability in the Jordanian economy, such as the companies law (no.22/1997) and securities law (no. 76/2002). All these economic reforms enjoyed by Jordan in securing political and economic stability have led to a massive increase in local and foreign investments, with implications for information disclosure to meet investor needs.

Fast changes in global businesses affect most countries and Jordan is no exception. These developments impact upon the needs of Jordanian users of CRs' information given to different stakeholders including, for example, bondholders, investors and shareholders. Due to the nature of the provision of that information they may look forward to receiving high quality information about the financial and accounting position which may help them in their decisions. Consequently, CR assessments have expanded in Jordanian corporations as an effective tool for supporting required new information in assisting investors.

Accordingly, stakeholders in Jordan have arguably depended more on rating agencies to satisfy their needs by providing the required information through CRAs. Many studies have discussed credit rating in many countries, for example US (Blume *et al.*, 1998), UK (Abams, M and Hardwick, P, 2003) and Australia (Gray *et al.*, 2006), but regarding Jordanian firms this research did not find any such study, although only two studies (to be discussed later) investigated the role of corporate governance and the CR. So, this study, which is applied to

Jordanian firms, fills a research gap, additional to the many objectives, which will be mentioned in the next section.

1.2 Research Objectives

The focal point of the current study is an examination of the impact of ownership structure, financial transparency and disclosure and corporate governance on the CRs of all the Jordanian listed companies from 2005-2007 which have CRs from WVB. Particularly, the objectives of this research are as follows:

- The first objective is to evaluate the impact of market and regulatory factors upon the CR of Jordanian firms, after allowing for firm specific factors.

- The second objective is to examine the extent to which the varied dimensions pertaining to ownership structure (including under-researched aspects, such as family and foreign ownership) impact on the CRs of Jordanian firms.

- The third objective: is to evaluate the role of financial transparency and disclosure for the CRs of the Jordanian listed companies.

- The fourth objective is to investigate the effects of good corporate governance practices and procedures which other researchers have demonstrated to impact upon firm performance and firm value (but not necessarily investigated the impact on CR), in order to determine whether they also have a strong influence on CR. And

- The fifth and final objective is to explore the determinants of both internal (unpublished) and external (published) WVB scores in the Jordanian context.

To achieve these objectives, many questions will be raised. These questions will be discussed in the next section.

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1.3 Research Questions

The main research question is: what factors determine the internal and external WVB credit ratings in Jordan?

The subsidiary research questions flow from this main question:

1) What are the general features of WVB CRs? How prevalent are they in Jordan? Which sector has a higher propensity of WVB ratings?

2) Which accounting and financial variables are important to CRs? Is financial leverage a key factor?

3) Is there a strong link between CRs and market and regulatory variables?

4) What are the effects of ownership structure? Are there specific factors, such as family ownership, which influence CRs?

5) What is the association between financial transparency and disclusre and CR? Is the attribute of better timeliness of reporting linked to higher CRs?

6) How do corporate governance factors impinge upon credit ratings? Does good corporate governance practice improve ratings?

7) Finally, do the internal WVB scores, vis-à-vis their externally published ratings, provide deeper insights into the determinants of CR through the identification of differences in variable impact that are otherwise hidden beneath the external CRs? To answer these questions, five main hypotheses will be formulated.

1.4 Research Hypotheses

In reflection of the study problem, the independent variables should be identified and theorised in order to formulate testable hypotheses. This study have five sets of basic hypotheses are developed in the current study to examine the relationship between (i) accounting and financial aspects, (ii) market and regulatory perspectives (iii) influence of ownership structure, (iv) financial transparency and information disclosure, and (v) corporate governance factors and their impact upon WVB_credit risk assessments internal and external assessments. These hypotheses will now be presented.

1.4.1 Accounting and Financial Category

The main hypothesis related to the accounting and financial variables are:

> *H1: There is a significant relationship between CRs and firm accounting and financial variables of the Jordanian listed companies.*

This hypothesis classified into four sub hypothesis:

1.4.1.1 Leverage

> *H1-1: There is a negative relationship between leverage and CR.*

1.4.1.2 Profitability

> *H1-2: There is a positive relationship between profitability and CR.*

1.4.1.3 Capital Intensity

> *H1-3: There is a positive relationship between capital intensity and CR.*

1.4.1.4 Loss Propensity

> *H1-4: There is a negative relationship between loss propensity and CR.*

1.4.2 Market and Regulatory Category

The main hypotheses related to the market and regulatory variables are:

> *H2: There is a significant relationship between CRs and firm market and regulatory variables in the Jordanian listed companies.*

This hypothesis classified into four sub hypothesis:

1.4.2.1 Firm Size

> *H2-1: There is a positive relationship between a firm's size and its CR.*

1.4.2.2 Growth Opportunities

> *H2-2: There is a positive relationship between growth opportunities and CR.*

1.4.2.3 Sector Type

> *H2-3: There is a positive relationship between type of sector and CR.*

1.4.2.4 Audit Type

> *H2-4: There is a significant relationship between the type of audit and CR.*

1.4.3 Ownership Structure Category

The main hypothesis related to the ownership structure variables is:

> *H3: There is a significant relationship between CRs and firm ownership structure variables in the Jordanian listed companies.*

This hypothesis classified into six sub hypothesis:

1.4.3.1 Blockholder Ownership

> *H3-1: There is a significant relationship between blockkholder's ownership and CR.*

1.4.3.2 Institutional Ownership

> *H3-2: There is a significant relationship between institutional ownership and CR.*

1.4.3.3 Insider's Ownership

> *H3-3: There is a significant relationship between insider ownership and CR.*

1.4.3.4 Governmental Ownership

> *H3-4: There is a significant relationship between governmental ownership and CR.*

1.4.3.5 Family Ownership

> *H3-5: There is a significant relationship between family ownership and CR.*

1.4.3.6 Foreign Ownership

> *H3-6: There is a significant relationship between foreign ownership and CR.*

1.4.4 Financial Transparency and Disclosure Category

The main hypothesis related to the financial transparency and disclosure variables is stated as follows:

> *H4: There is a significant relationship between financial transparency and disclosure and CR.*

This hypothesis classified into two sub hypothesis:

1.4.4.1 Working Capital Accruals

> *H4-1: There is a significant relationship between working capital accruals and CR.*

1.4.4.2 Timeliness of Earnings

> *H4-2: There is a significant relationship between timeliness of earnings and CR.*

1.4.5 Corporate Governance Category

Most of the corporate governance variables can be explained by the agency theory, especially, from the bond holder perspective.

The main hypothesis related to the corporate governance variables is:

> *H5: There is a significant relationship between CR and firm corporate governance variables in the Jordanian listed companies.*

This hypothesis classified into five sub hypothesis:

1.4.5.1 Independent of Directors

> *H5-1: There is a significant relationship between board independence and CR.*

1.4.5.2 Role Duality

H5-2: There is a significant relationship between role duality and CR.

1.4.5.3 Board Competency (Expertise)

H4-3: There is a significant relationship between board expertise and CR.

1.4.5.4 Board Stock

H5-4: There is a significant relationship between board stock and CR.

1.4.5.5 The Size of the Board of Directors

H5-5: There is a significant relationship between size of board and CR.

1.5 Summary of Methodology

According to this current study, the author will depend on secondary data collection, as it is suitable to both the research question and its purpose (descriptive and explanatory). The sources of this data are threefold:

Firstly, the researcher utilized the Amman Stock Exchange (ASE) database. The set of financial information included in the study is taken from firms' financial statements during the period 2005-2007.

Secondly, the Jordan Securities Commission (JSC) database for Jordanian firms was used in order to extract data for their corporate governance arrangements.

Thirdly: the sources of the data will be either internal numerical data, or external credit risk assessment data from the World'Vest Base (WVB). Fortunately, for each firm a separate

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numerical score was also supplied by the rating agency and so instead of using only an ordered logistic regression model for four categories, I will also able to apply ordinary least squares, which was able to capture finer distinctions in the assessments. This is a substantial advantage over many of the previous studies that have been reviewed earlier, for instead of just a couple or several categories, I utilised hundreds of distinctly separate (numerical) ratings.

Many techniques will be used in the current study. Bivariate analysis is used for each independent variable's association with CR, by using parametric and non parametric tests. The parametric tests will include: the Pearson product moment correlation coefficient (r), to measure the association between the dependent variable and each continuous independent variables; the t-test and Levene's test, which determines the association between the dependent variable and dichotomous independent variables; and one-way analysis of variance (ANOVA), which tests differences in mean values between groups.

A non-parametric test will include: the Spearman's rank correlation which will be performed for the same purpose of Pearson correlation; the Mann-Whitney U-test, which is the non-parametric equivalent of the t-test; for a parametric test, the Pearson product-moment correlation is used when the normality assumption is satisfied, whereas Spearman rank correlation (for non-parametric tests) is performed for continuous independent variables, if the assumption of normality is violated.; the t-test (parametric) and Mann Whitney (non-parametric) test are used to examine the impact of dummy variables on the CRs.

The availability of continuous numerical credit risk assessment scores obtained directly from WVB enables more rigorous statistical testing to be undertaken. The ordinary least square (OLS) technique has been applied to develop the firm rating model, which suffers as explained before from some problems in its assumptions. The structure of CRs, however,

presents several econometric issues. **First**, the external (but not internal) WVB ratings are discrete rather than continuous. **Second**, there is a natural ordering to the ratings—AA is a higher rating than A, which is a higher rating than BBB. **Third**, the ratings' categories are not necessarily evenly spaced—the BBB rating category, for example, is broad. Logistic regression is (LR) used for model formulation and is specific to a binary classification problem (high/ low rate); it is known to exhibit better generalization behaviour than least squares regression. According to the logistic regression, we use an alternative classification scheme that partitions CRs into two categories—BB categories, as the indicator of higher credit risk, and the remaining lower categories. According to the LR, the study will summarize the relationship between the dependent and independent variables using the natural logarithm of the ratings' odds-ratio.

We use the marginal effects model by calculating the marginal changes in the probability of a firm receiving a BB category of CR as a result of a one standardized unit change in each of our independent variables.

Finally, the ordinal logistic regression (OLR) model is used as an extension to the binary logistic regression model (LR) for ordinal multi-class categorization problems, such as, category 4 (BB3-BB), category 3 (B3-B), category 2 (C3-C) and category 1 (D). Hence, it is obvious that ordinal logistic regression is an interesting and pertinent technique to model credit risk assessments in the Jordanian environment given multiple categories of credit risk assessments. As to ordinal logistic regression, a similar methodology applies except that an order ranked list (1, 2, 3, and 4) of categories operates and parameter coefficients (β_s) are determined for paired orderings down the risk categories.

1.6 Research Motivation and Importance

During the last decade, the Jordanian capital market began to undertake various measures to influence the Jordanian economy. These included new laws, to attract more foreign investments to the Jordanian capital market, but investors need to be reassured of the credit worthiness of companies. Thus CRs play an important role in emerging capital markets. But the main reasons for the motivation and importance of this study are, firstly, that there has been no extensive research into the effect of corporate governance on credit risk assessments, and, secondly, that has not been such a study on CR applied to Jordan. It is expected that this study will complement the previous studies in this new area of CR which has largely been overlooked. Consequently, this study adds a new value to both researchers and practitioners in Jordan and may open up a new direction for future research into other dimensions. In addition, the results of this research study will be disseminated to stakeholders, managers and other interested parties.

1.7 Thesis Structure

The organisation of the current study is as follows: Chapter One provides the introduction to this research study; Chapter Two discusses the theoretical background to the study, drawing upon a review of the relevant literature. Chapter Three discusses in detail the limitations of CRs in order to show their history and their contemporary importance, characteristics, regulations, and impact on capital markets. In addition, the aims, meaning and nature of corporate governance are illustrated to show not only its importance to the study, but also to identify potentially important corporate governance variables that can be expected to have an impact on CR. Chapter Four presents prior empirical studies on CR, including those focussing on the effect of corporate governance on CR. Chapter Five presents an overview of regulatory aspects within the Jordanian environment and its stock market, the Amman Stock

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Exchange (ASE). In addition, the study highlights the current application of corporate governance systems in Jordan to highlight the importance of studying the impact of corporate governance systems on CR. Chapter Six discusses different research philosophies, methods and approaches to illuminate the appropriate methodology for the current study, and proceeds to discuss the research design, including methods and models for subsequent analysis. Chapter Seven contains five sections that explore different categories of the research hypotheses drawing upon prior theoretical and empirical research. Chapter Eight presents an array of univariate and multivariate models to establish the determinants of CRs of Jordanian listed companies. Finally, Chapter Nine summarizes all the study and presents the main findings and conclusions, as well as limitations and recommendations for future research.

CHAPTER TWO: LITERATURE REVIEW ON THEORETICAL BACKGROUND AND PERSPECTIVES

2.1 Introduction

Theory is ".... a system of logically coherent, explicitly not conflicting, statements, interpretations and concepts concerning a selected aspect of reality, that are formulated so that it is possible to derive testable hypotheses from them" (Metez, 2000). The objective of this chapter is to present credit ratings theories to discuss their important role in determining optimal CR characteristics, and to explore the background of the relationship between CRs and ownership structure, corporate governance and financial transparency and a firm's financial performance, according to the relevant theories.

Many research studies have addressed the subject of CRs, drawing upon various financial theories with many different variables (Ashbough-Skaife *et al.*, 2006). To address this issue various theories could be considered, including those pertaining to agency, stakeholders, stewardship, signalling, innovation and legitimacy. It may be instructive to begin with agency theory and problems of information asymmetry, which needs to be minimized.

This chapter is organised as follows: section 2.2 deals with agency theory including management disciplining, and the wealth transfer hypothesis; section 2.3 pertains to signalling theory; whilst section 2.4 focuses on stakeholder theory; section 2.5 is devoted to stewardship theories; in section 2.6 there is a review of innovation theory, whilst legitimacy theory is addressed in section 2.7; and, finally, section 2.7 summarises the chapter.

2.2 Agency Theory

Jensen and Meckling (1976, p.5) define the agency relationship inside the firm as: "A contract under which one or more person (the principal) engages another person (the agent)

to perform some service on their behalf which involves delegating some decision making authority to the agent". The agency problem exists here because the agent does not behave perfectly in the interest of the principal. They describe the agency costs as the sum of monitoring costs by the principal, bonding costs by the agent, and the residual loss which is the reduction in the principal welfare as a result of the differences between the agent's and the principal's decisions. Jensen and Meckling (1976) discuss agency costs as the key tool in evaluating alternative designs of principal-agent relations.

Given the existence of the agency problem (Jensen and Meckling 1976), agency theory is used widely in the credit ratings' literature because of information asymmetry between principal (owners) and (agent) managers. This information asymmetry arises between ownership and management because ownership is distanced from a company's operations, yet at the same time they need managers for the company's business according to the management disciplining hypothesis.

Another important issue related to the agency problem is the existence of information asymmetry between a firm's outsiders and insiders. Internal managers know better than outside investors about their firm's prospects, risks and values. This difference in information between these two groups will affect the cover of servicing debt interest and principal repayment through future cash flows based on the continuation of the firm. This leads to the wealth transfer hypothesis, which suggests that firms that have a lower CR are more likely to have a stronger conflict between bondholders and shareholders because of transfer of wealth to shareholders.

Thus bondholders do not prefer lower credit ratings (with implications for lower earnings and future cash flows) to higher credit ratings (stronger income or future cash flows). This is for the reason that all bondholders will be looking to CR's reports that will provide them with

more information about the firm's future cash flows. Therefore, credit ratings can reduce the perceived conflict between stakeholders, including bondholders, and shareholders, who will hope for a higher CR, which would make it less costly for the conflict between them.

But there are two pertinent hypotheses which we will explore below, namely, the management disciplining hypothesis, which deals with relationships with management, as well the wealth redistribution hypothesis, which focuses upon conflict between shareholders and bondholders.

2.2.1 Management disciplining hypothesis

The separation between the two parties (owners and managers) creates an agency problem. The managers seem nearly always to be trying to obtain more benefits from the company. Managers make decisions that increase their self-wealth at the owners' account. This conflict between owners and managers gives rise to agency costs, which are the costs of monitoring the management's behaviour in relation to firm output, arising from contracting between these two parties (Watts, 1977).

CR is regarded as an effective tool for monitoring the control of the company using reports issued by the CRA, which impartially assesses the level of the company's CR. By providing an improved rating is one of the various monitoring devices used to reduce agency costs (Gonzalez, 2004). Consequently, the CR mechanism works to mitigate the severity of the problem of information asymmetry between agents and principals, because the managers then have an incentive to try and show the company's best profile, indicating that they are acting in the interests of owners.

On the other hand, owners would want to encourage and stimulate managers to earn a better score from the CRA, which should help mitigate conflict between all stakeholders. In

particular, CRs should allay the conflict between shareholders and bondholders, because of fears of wealth transfers between them (Ashbough-Skaife *et al.*, 2006).

Many researchers apply agency theory to credit rating because of information asymmetry problems between agents and principals, reflected in many hypotheses being developed in the CR literature using agency theory. Examples include studies by White (2001), Steeman (2002), and Gonzalez (2004). The results tend to suggest an association between the size of the firm and an increase in agency costs. Therefore, agency theory predicts a positive relationship between CR and firm size.

However, there are criticisms directed at agency theory perspectives by some researchers, and among these are criticisms that the directors are acting according to their selfish interests, and some individuals are risk self-serving. Some authors, replying to this assertion, indicate that there is an over-emphasis on the motivation of managers to act in the owners' interests, because of external (e.g. takeovers) and internal pressures (e.g. employment issues). Similarly, bad publicity can affect a manager's reputation. All the above should reduce agency costs (Jensen and Meckling, 1976; Pratt and Zeckhauser, 1985; Arrow, 1985; Barney and Hesterly, 1996).

Moreover, agency theory ignores the role of managers of a firm, who try and have strong motives to conceal some information, especially concerning matters of competitiveness (Hirsch *et al.* 1990; and White, 2001). In the same way, managers have incentives to achieve high CRs so as to differentiate themselves from managers of other companies. Consequently, agency theory ignores the managers' incentives to withhold positive information (Steeman, 2002). Furthermore, agency theory cannot provide non-financial solutions to managers, even if they may try to obtain high CRs (Gonzalez, 2004).

A higher CR reduces information asymmetry and improves the financial outcome arising from a reduced agency theoretical effect. So, agency costs are reduced via the CR impact. Consequently, organizations have widely accepted compliance work with the mandatory agency credit ratings' requirements, and voluntarily have attempted to improve the grade of their CR. As a result, this has led managers to reduce agency costs by achieving the aim of the organisation to obtain a higher CR from an agency.

This aim of a high CR should motivate managers to apply standard mandatory CR requirements. Consequently, it can be expected that credit rating practice will be associated with some variables, such as firm characteristics, ownership structure and matters related to the board of directors through the impact of agency theory and corporate governance (Ashbough-Skaife *et al.*, 2006).

The entry into financial markets needs to be competitive with preference to high CRs, which should reflect a reduce agency conflict between principal and agent, with the CR being used as a monitor to constrain the actions of agents. As a result CRs can solve and reduce costs of this agency problem through monitoring the agents via the level of CRs, a tool of pressure on the agent to improve firm performance and attaining better of CRs (Steeman, 2002, Gonzalez, 2004).

2.2.2 Wealth redistribution hypothesis

Another important principal-agent conflict is that between managers and shareholders. Managers may avoid investing in profitable projects when their ownership inside the firm decreases. Also they may reduce their efforts in searching for these profitable projects, and this will decrease the firm's performance and encourage managers to concentrate on their benefits rather than the shareholders' benefits. Therefore, management may try to extract pecuniary and non-pecuniary benefits from the firm, while transferring some or all of the

costs incurred to the outside shareholders. An important source of such benefits to them may be managerial empire building and entrenchment (Murphy, 1985; Jensen, 1986).

Empire building is closely tied to the argument that managers prefer building less risky, diversified firms with lower leverage, so they can reduce the uncertainty of their human capital investment (Amihud and Lev, 1981), and lessen the probability of bankruptcy and employment risk (Jensen and Meckling, 1976; Ramakrishnan and Thakor, 1984). To that end, managerial interests are naturally aligned with those of creditors. Yet, the natural aim of managers and creditors to reduce firm riskiness may sometimes be in direct conflict with shareholder interests. This relationship was first formalized by Black and Scholes (1973) who regard leveraged equity as a European call option on firm's assets.

In this classic view, the realignment of managerial and shareholder interests inevitably damages creditor interests. In market-oriented governance regimes, this realignment is largely done by making management a residual claimant in the firm through equity-based compensation plans. This behaviour can be eliminated by spending some of the firm's resources in different ways. This may include auditing, formal control systems, budget restrictions and incentive compensation systems. The main goal of these methods is to align the interests of managers and shareholders.

Managerial discretion is also controlled by a variety of disciplinary mechanisms, such as independent boards and external pressures from competitive markets, including capital and product markets (Köke and Renneboog, 2005), and the markets for corporate control (Manne, 1965) and managerial labour (Fama, 1980). In stakeholder-oriented systems, where ownership and credit supply is more concentrated, the active involvement of risk-averse stakeholders in the monitoring of management has historically provided a substitute for these devices.

The firm may restructure its assets to optimise both their use and value, thereby creating added value, as classic mechanisms to improve firm operating and financial performance through increases in future cash flows simultaneously leading to a decrease in the conflict between bondholders and shareholders. But the wealth transfer hypothesis proposes that shareholders of credit rated firms may expropriate the value of bondholders through a disproportionate distribution of debts across future cash flows firms. In the USA some researchers have presented documentary evidence of wealth transferred from bondholders involving substantial many millions losses to shareholders, because the firms' operations had utilised large debts to acquire 'weak' assets. However, firms should also consider gains to shareholders through assets well utilised for income generation (Parrino, 1997).

Maxwell and Rao (2003) also present evidence consistent with the wealth transfer hypothesis associated with losses to bondholders, and measured by the negative abnormal monthly bond return. There are two potential sources of wealth transfer from bondholders to shareholders. Firstly, a lower CR may result from a loss of collateral and liquidity of the firm, as assets are reallocated to the cover firm's liabilities. Also, firms may differ widely in their and interest coverage ratios. Secondly, the lower CR eliminates benefits of prior diversification when cash flows were imperfectly correlated, and reflects a reduced future dissimilarity of cash flows between different operations of the firm, and is therefore likely to be positively associated with value losses to bondholders.

Shifts may also occur to the benefit of shareholder, pressure groups on management. On other hand, there may be an induced seniority effect, in which owner's long term debt is more likely to be exposed to the transfer of wealth to the owner's short term debt, whereby shorter maturity debt becomes effectively senior to longer maturity debt (Shastri, 1990). The classic motivation for corporate value creation by assigned high credit ratings is to redeploy the firm's assets to achieve a higher valuation. As long as it can improve the firms' performance

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and increases the cash flow and debt servicing ability, it can create value for both shareholders and creditors.

If firms are assigned a better rating, it is likely to be correlated with their ability to generate more healthy future cash flow streams, a lower cash flow volatility, a reduced default risk and an increased capacity to meet due payments in a timely manner. The CR's effect is likely to be stronger where there is a clear relationship between the future cash flows and these ratings. Thus, it is customarily conjectured that bondholders gain more from high assessment ratings than from lower ratings assessments. However, these high ratings' deals tend to create new injections of cash flow and wealth via cash flow operating efficiencies leading to new loans from bondholders. Then, bondholder reassurance of making gains must come from mere redistributions of shareholder wealth, whereby an increase in bond prices coincides with an offsetting reduction in share prices, thus guaranteeing the right to wealth redistribution (Levy and Sarnat, 1970; Higgins and Schall, 1975; Galai and Masulis, 1976; Berger and Ofek, 1995).

Liquidity as well as cash flow is very important to the operations of a firm, for if some event has a negative effect on the cash flows, this leads to reduced liquidity which in turn may hamper its financial manoeverability and hence its future cash flow. The firm may seek to reverse these effects by wealth redistributions through new financing expressions, but it may require more debt financing. Thus, this behaviour tends to increase default risk, as well as reduce the collateral available to bondholders. Furthermore, if the company is exposed to distress or a depression in the future, it can realise assets, and financial distress costs may be reduced. Consequently, this suggests that bondholders receive greater benefit from a new higher CR assessment, because these firms are perceived to provide large future cash flows.

Therefore, bondholders can derive benefit by financing from equity, a perspective which is supported by agency and signalling theories (Dennis and McConnell 1986; Faccio and Masulis, 2005). If a firm attracts a lower CR this result can have an adverse effect on equity, due to bad news on the firm's future expected cash flows made known to the market. This may also deteriorate bondholder sentiment (Myers and Majluf 1984; DeAngelo, DeAngelo and Rice 1984; Mitchell and Stafford 2000; Skaife *at al.*, 2006). Should the bondholders distinguish between the weak and strong firms, and how important is it to distinguish between the business risk and the asset risk effects, associated with business operations, and financial risk effects associated with financing operations? This distinction from the perspective of bondholders is formalized by Shastri (1990).

The interest coverage as a measure for financial risk is extensively applied by Standards and Poor's and Moody's as a determinant for CRs. The financial operations of the firm provide some evidence as to the default risk through the implications of any reduction in the future cash flows to the firm, and also provide an indication of the extent to which the firm will pay its debts in the future. However, this measure is used by many financial market participants and credit rating agencies for financial and default risks, for clearly lower CRs arise from greater financial risks the firm and higher CRs from lower financial risks.

As result a firm, with a higher CR, which achieves a lower financial risk, consequently serves to reassure bondholders, because a decrease in financial risk increases bondholder wealth. The overall change in financial risk will be affected by the level of confidence in the firm by all stakeholders, including bondholders (Shastri, 1990).

A credit ratings' agency is there to give its professional evaluation of the firm's ability to cover service costs, including its regular debt obligations and principal repayments. Yet, the firm's individual financial characteristics and its financial default risk are not accurately

known. But the financial obligations can indirectly have an effect on the credit risk through their impact on the future cash flows, which benefit from efficiency gains associated with the ability of the firm to perform well to attract a high credit rating especially when the firm has applied good corporate governance procedures and practices (Bhagat *et al.*, 2005).

Jensen (1986) and Wulf (2004) present an agency theoretic framework of the conflict between management and all external stakeholders, in which the managers can drive the firm towards an expansion of the business without a scenario analysis of positive net benefits, but instead characterized by different forms through empire building or other arrogant managerial behaviour, consequently driving the firm to an increased default risk and a lower CR. Yet, the larger firms are better placed than the smaller firms in that the managers of their firms work to improve the performance through a proper planned expansion of the businesses with beneficial ramifications on their CRs (Billett, King and Mauer, 2004).

Firms should create profits and secure the stability of future cash flows to the firm, whose higher future cash flows should lead to a reduction in the conflict between bondholders and shareholders by limited competition between them through achieving good CRs by means of an decrease in the likelihood of underpayments by such firms and by collecting more loans from bondholders at low interest (Chang, 1998). But the asymmetric information and strong votes by shareholders may lead to conflict between all stakeholders and managers and between bondholders and shareholders; in addition information leakages; uncertainty in the timing of the payments to lenders, and greater industry focus, all of these make it more difficult for it the bondholder and increase the likelihood of conflict between the interest groups (Faccio *et al.*, 2006).

The risk of takeover by shareholders of other firms have an effect on the management decisions of the disciplining target management, and shareholders can use their voting power

to drive managers to undertake possibly riskier investments or other financial reconfigurations which may harm bondholders' interests. In addition, the management behaviour may be characterised towards empire building, and their desire to achieve greater wealth at the expense of other parties. Consequently, the managers are influenced by shareholders as they pressurize management to be more confident in lending support to strategic investment with implications for risk, which might very well lead to more hostility between all stakeholders, especially between bondholders and shareholders, because of the likely wealth transfer from bondholders to shareholders, and these can lead to lower credit ratings through lower perceived future cash flows (Loughran and Vijh, 1997;Schwert, 2000; Bhagat et al., 2005).

Improved cash flows by changes in debt to equity reconfigurations can provide great economic rewards to the firm through the benefit of tax allowances by the government on the current and future debt payments to the bondholders. Consequently, such firm benefits have implications for gains in financial markets (Fama and Miller, 1972). But many researchers have debated how such capital restructurings benefit the firm, and instead these tax benefits may very well have no influence on debt to equity reconfigurations, especially for firms that consistently alternate between new debt and equity issues (Bartholdy and Mateus, 2003).

These tax allowances can be more valuable through better corporate governance, and minimised agency costs through a reduction in the conflict between all stakeholders. However benefit from tax deductions can be achieved through improved cash flows to the extent that they improve profits also and thereby through reduced risks of tax losses which may otherwise delay tax deductibility of interest, and increase the future after tax cash flows to all stakeholders (Modigliani and Miller, 1963; Miller, 1977; DeAngelo and Masulis, 1980).

2.3 Signalling Theory

Another theory that may provide an explanatory framework for credit rating is based on information asymmetries in the market. Managers generally have better information about their firms than do outside investors, i.e. there is asymmetric information. Companies that have performed better than others may have more incentives to achieve a higher CR to signal their good performance and screen themselves from companies performing less well (Akeelof, 1970). A signal is defined by Megginson (1997) as "an action that imposes deadweight costs on the signaller in order to convey value to the poorly informed outsiders (investors)". This signal is credible if it is prohibitively costly for a weaker firm to attempt to mimic. However, managers cannot simply announce that they have good news because every other manager has the same incentives to do so. Many large successful firms use far less debt than financial theory suggests; and this point has led to the development of signalling theory (Brigham and Houston, 2004).

Also shareholders will be doubtful about any self-serving statement which can be proven as time passes. One solution to this problem is for managers who have good news, typically those of high-value firms, to signal it to the investors by providing them through credit agencies with information pertaining to the ability of the firm to create higher future cash flows through a "higher credit rating", or a "lower credit rating", in the case of low value and low performance firms.

The signalling model developed by Ross (1977) provides a theory for the determination of the financial structure of the firm based on the asymmetric information problem between well-informed managers and poorly informed outsider shareholders. This model is based on the idea that managers have clear incentives to use signals to differentiate their firm from

weaker competitors. One of these signals may to be to achieve a good level of CR as evidence of the firm's ability to create strong future cash flows to the firm.

Well-informed insiders, according to this theory, tend to convey the firm's positive information to the poorly informed outsiders in order to enhance the financial market's response to their performance. Therefore, the managers and directors will be able to attract investments and to reassure bondholders through higher credit ratings, which will have significant impacts on the firm value (Ashbough-Skaife et al., 2006).

Megginson (1997) states that the signalling model explains market responses to the different types of security issues. Debt issues signal good news and mean that managers are confident about the future, which is to be followed by the firm's good performance. However, equity issues signal bad news and could mean that earnings will fall in the future and this is to be followed by the firm's poor performance. The CR gives a signal about the firm's ability to cover debt servicing and principal repayments in the future to the bondholders through the future cash flows to the firm. The point about CRs is that they aid the managers in important distinguishing themselves from others on dimensions, such as quality and performance (Fight, 2001).

Gonzalez (2004) emphasizes that for companies, which previously have had lower CRs, failure to improve later will be regarded by the market, including bondholders, as a signal that the delay to improve exposes financial solvency issues (bad loans) which are harmful. Similar arguments can be found regarding profitability and signalling effects may be different across industries (see Boot et al., 2006). Regarding credit rating, firms may improve performance in the CR to provide more reassurance to all bondholders (Skaife et al., 2006), and other parties, to distinguish themselves from the others. High CRs give a sign of the ability of the firm to create strong future cash flows and provide financial stability, and so

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they can use this signal in order to differentiate themselves from those with lower CRs (Steeman, 2002).

A credit rating can help reduce the asymmetric risk, through a reduction in the asymmetry of information through assigning new information to investors about a firms' creditworthiness through strong anticipated future cash flows to cover the debt interest and repayments, since the CRs is essentially a certifier (Steeman, 2002).

Reduced information asymmetries between investors and issuers of debt demonstrate a basic role for CRs in presenting this information to institutional investors, banks, or other firms. The issuance of bonds in any market is now heavily dependent on the degree of evaluation by widening the investors' pool and reducing adverse selection problems by access of firms to debt markets (see Steeman, 2002; White, 2001; Gonzalez, 2004).

2.4 Stakeholder Theory

Basically, stakeholder theory is used to help understand the groups and individuals influenced by the achievement of an organisation's purpose and those impacts may be economic, regulatory, technological, social, political and also managerial. The principle of this theory is that: "...businesses should be run not for the financial benefit of their owners, but for the benefit of all their stakeholders...it is an essential tenet that organisations are accountable to all their stakeholders, and that the proper objective of management is to balance stakeholders' competing interests" (Sternberg, 1997; p: 4). Consequently, stakeholder theory draws together all stakeholders with an organisation through the help or understanding of a group of individuals that can influenced by the activities of an organisation (Skaife et al. 2006).

As Freeman's definition is broader, Clarkson (1994) alternatively defines stakeholders as "person or groups who either voluntary or involuntary become exposed to risk from the

activities of a firm". Consequently, under stakeholder theory, companies need the support from all their stakeholders to be able to survive and continue in the long run (Smith *et al.*, 2005). Skaife *et al*, (2006) indicate that there is a variety of motivations for management to improve credit ratings to a high level, and one of these motivations is to manage particular, arguably powerful, stakeholder groups.

Sternberg (1997) rejects the use of stakeholder theory on the basis of four objections. Firstly, her argument is that the theory rules out the objective of the business, which is regarded as the maximization of long-term owner value. In addition, it makes trusteeship impossible because the obligation to balance stakeholder benefits overrides the specific obligations of trustees to their designated beneficiaries, and it also restricts the variety of organisations and organisational purposes as it recognises only one type of legitimate organisation i.e. one that balances stakeholder benefits. Secondly, the theory is incompatible with corporate governance for the theory explicitly denies that corporations should be accountable to their owners but instead should be accountable equally to all their stakeholders. As such, it licenses resistance to takeover bids that would benefit shareholders and permits the pursuit of empire-building acquisitions. In addition, it impairs corporate governance because it requires managers to balance stakeholder interests thus violating the prior obligations of managers to owners. Thirdly, stakeholder theory undermines private property as it denies owners the right to determine how their property will be used and denies the duty that agents owe to principals. Fourthly, and finally, balancing stakeholder benefits is an unworkable objective. She provided various reasons to support her fourth contention: the number of people whose benefits need to be taken into account is infinite because by definition, stakeholders include all those who can affect or are affected by the organisation; even if stakeholder groups could be identified and restricted to a manageable number, it does not explain what should count as

a benefit for the purposes of balancing benefits and, finally, it does not provide guidance as to how the balance of benefits could be struck.

However, Turnbull (1997) criticised Sternberg's first and second arguments because much of the empirical evidence does not seem to support this view. With regard to the third notion, Turnbull argued that stakeholder relationships can legitimate and protect the concept of private property, agency and wealth creation rather than undermine them. Despite the contradicting views on this theory, it is still recognised as an important key to social reporting.

Thus, stakeholder theory concentrates on the relationship between managers and all stakeholders, including shareholders, while agency theory concentrates only on the relationship between managers and shareholders. It can be seen from the previous context that stakeholder theory is more general than agency theory, because stakeholder theory includes not only shareholders, but others, such as: bondholders, lenders, borrowers, customers, employees, and suppliers. Consequently, and within their set priorities, managers try to satisfy every group according to their relative importance, whether shareholders, employees or bondholders. As to CR, managers try to acquire support from the stakeholders, according to their importance, through attracting higher CRs from agencies, to achieve the greatest benefits to them as a group.

However, three aspects of stakeholder theory which may apply to credit rating can be identified as being either descriptive, instrumental or normative (Donaldson and Preston, 1995). The first, descriptive, is used to describe and explain specific firm characteristics and behaviors such as how board members consider the interests of corporate constituencies, i.e. stakeholders. The second, instrumental, is concerned with the connections between stakeholder management and the achievement of corporate objectives, such as profitability.

The third one, normative, is used to interpret the function of the corporation and is related to moral and ethical guidelines.

2.5 The Stewardship Theory

Issues of CRs of firms are extended to include the accountability and responsibility of corporations to their stakeholders. The stewardship function and its related interests between shareholders and bondholders can affect credit ratings. Yet the intention should be to reduce information asymmetry, which is hampered by the separation between ownership and control.

One of the main criticisms that is directed to the agency theory is its assumption that the interests of managers are various from those of principals (Lan *et al.*, 998) and (Daily *et al.*, 2003). As a result a need has emerged for a theoretical framework that determines and explains those cases in which the interests of the agent are aligned with those of the principal. Davis *et al.* (1997; pp25-26) state that "the essential assumption underlying the prescriptions of stewardship theory is that the behaviours of the executive are aligned with the interests of the principals".

Even in the case of competing objectives among different stakeholders, stewards who are motivated to make decisions in the best interest of the organizational wealth and performance are often meeting those conflicting interests which– by all means- linked to organizational wealth and performance.

According to stewardship theory, managers they are useless, since managers are considered trustworthy and take decisions in line with the organizational best interest by collecting the best ratings. It is so important to clarify that stewardship theory does not imply that managers do not have survival or income needs, but rather, managers as stewards realize the "collective ends" at which their own interests are best achieved by firstly achieving the goals

of the organization and its owners. In other words, the benefits that managers can achieve through individualistic and self-serving behaviors are lower than the benefits gained from pro-organizational behaviour. Stewardship theory therefore supports governance mechanisms that underpin and empower the firm's management and avoid mechanisms that monitor and control it.

2.6 Diffusion of Innovation Theory

Credit rating widens the gateway to the financial market attracting *inter alia* international investors, who have been informed accordingly through internet technology. Nowadays, competition between business organisations are changing at an accelerating pace, leading to a high level of uncertainty. This growing uncertainty is the result of greater customer expectations, the dilution of borders between competitive environments, and the move towards global competition. Innovation or creativity in the work place is often what keeps an organisation competitive (Katz and Kahn, 1978). Surviving in today's fast changing environment is not easy. By this I mean that innovation theory is able to cope with unstable and continuously changing demands and markets.

Diffusion of innovation is "a process of spreading information amongst consumers, producers and countries, and consequent adoption of changed techniques of consumption, production and trade" (Ironmonger, 1983, p 53). Organisations operate in a continuously changing world due to rapid environmental change, including a high level of technological change, changes in local and international markets, increasing competition, governmental legislation and changes in relationships with customers, suppliers, unions and business partners. These changes, in a highly dynamic and complex environment, are forcing organisations to adopt new technologies and new ways of doing business in order to operate effectively. This represents a challenge for the managers of these organisations (Beckhard and Harris, 1987;

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Paton and McCalman, 2000). Innovation represents a vital tool for organisations operating in a changing and competitive environment such that some authors even proclaim "innovate or die" (Storey, 2000, p 347).

Rogers (2003) defines innovation as the characteristics of a new idea and its affects the evaluation of it, and the decision to adopt it on the part of an organisation. Innovation is one of the most important competitive weapons that a modern organisation can hold in today's global competitive market.

The inference of innovation theory is that certain investors /auditors are more likely to apply internet and other technology in collecting information on firm CRs. But it is this group of investors and advisors, namely, large international audit firms, institutional and foreign investors, and their demand for timeliness of earnings which is more likely to pressurize firms to obtain higher CRs. It could also be suggested that rating agencies may look to the big audit firms to be assured more confidently of a firm's creditworthiness. Only innovative firms are able to cope with unstable and continuously changing demands and markets. To be audited by big audit firms adds authenticity to their innovative activities. According to innovation theory, entrepreneurial seek firms credibility to attain higher CRs through signals of audit quality and a big four audit can help support firms attaining higher CRs, because the CRAs depend on the audit report.

A company may face pressure, to adopt an innovation, not only from customers, but also from other parties, such as institutional investors (Abrahamson, 1991; O'Neill et al., 1998; Guler *et al.*, 2002). Institutional investors are more sophisticated and generally own enough technical expertise to monitor the mangers. Institutional investors have greater resources to access information including full reports by agencies on individual companies.

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The timely diffusion of information on a firm's innovation is supportive of its CR which enables it more easily to the international financial markets (see Katz and Kahn, 1978). Foreign ownership pressure should play an important role in urging a company to adopt innovations. Innovation theory is also supportive of timeliness of earnings, and assists wealth creation (Katz and Kahn, 1978).

Innovative companies are likely to be innovative in various ways, such as in their logistical operations as well as in brands, and gain a competitive advantage in a global market. These successful firms are more likely to attract a big audit firm. But innovative companies are also more likely to use computer technologies creatively, and efficiently diffuse financial information through the internet to attract foreign investors and institutional investors. The importance of information diffusion of a higher CR, which is a part of that information flow, is also likely to be reflected in the value to the firm.

2.7 Legitimacy Theory

The word legitimate (Latin: lex, legis; law) refers to a matter legally acceptable to the authorities, but the notion of acceptance can be extended in meaning. Thus, legitimacy theory in thos contenxt stresses the importance of societal acceptance in ensuring a company's survival. Underlying this theory is the notion that a company's actions can have an impact on the environment in which it operates. If a company's activities are seen or perceived to have detrimental effects on the community, the public may react by boycotting the company's product or pressuring for government intervention. CR in this instance is provided to justify a company's continued existence. Legitimacy theory argues that an organization can only continue to exist if the society recognizes it as acting within acceptable value systems (Rizk, 2006). Based on this theory, organizations aim to get social approval, in other words to legitimize their actions (Patten, 1991; Mathews, 1993; Reich, 1998, Deegan, 2002).

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Gray et al. (1995) argued that the manner in which a company operates and reports its performance is influenced by the social values in which it exists. That suggests the possibility of legitimacy being interpreted differently in different environments of which Jordan is but one, characterized by its culture, political system and government ideology.

Apart from legitimising corporate activities, legitimacy theory can also be extended to legitimising managerial position. It may be assumed that management desires to signal that the company is being very well managed by a good team of management thereby supporting their continuance of employments, atatus and compensation, which may lead them to be focused on some key drivers, such as profitability. Legitimacy can be seen as a motivation for financial strength, which in turn should lead to a higher CR. That indirectly suggests legitimacy theory as an explanation for the level of CR. Thus, companies through a higher CR may attempt to legitimate themselves within their culture, society and political system.

2.8 Summary

Chapter four discusses the theoretical literature of CRs with respect to accounting and finance. The issue of CRs is concerned with the optimal assigned level of CR to represent a firm's ability to cover its debt servicing and principal repayments and its consequential indirect role affecting the firm's value.

CRA's assessments cover the real world; and financial distress costs in the real world play an important role in determining the optimal CR. Agency problems arise since the agent will not typically behave perfectly in the interest of the principal, and may have a consequential impact upon the agency costs of debt and equity. Also, the existence of information asymmetry between insiders and outsiders has a key role in determining the optimal CRs. The management disciplining hypothesis recognises this information asymmetry arising between ownership and management because ownership is distanced from a company's

operations, and yet at the same time they need managers for the company's business. So, agency theory is used widely in the CRs literature because of information asymmetry between principal (owners) and agent (managers).

The ability of the firm to create future cash flows and reduce the conflict between bondholders and shareholders through wealth redistribution assumes importance through many studies evidenced by literature reviews in the recent years. Higher CRs have been shown to provide better results for shareholders and bondholders, yet previous studies have been unable to explain fully the conflict between bondholders and shareholders. The relationships between bondholders and shareholders have a strong impact on the equity and bond markets through the transfer of wealth between them. The wealth transfer hypothesis proposes that shareholders of credit rated firms may expropriate the value of bonds through a disproportionate distribution of debts across future cash flows of firms.

The classic motivation for corporate value creation by attracting a high CR is to redeploy new sources of finance to higher valued firms. As long as this incentive improves firms' performance and increases cash flow and debt servicing ability, it creates value for both shareholders and creditors.

Stakeholder theory focuses on the relationship between managers and all stakeholders. It can be seen from the previous context that stakeholder theory is more general than agency theory, because stakeholder theory includes not only shareholders, but others, such as: bondholders, lenders, borrowers, customers, employees, and suppliers. Consequently, managers try, within their set priorities, to satisfy every group according to their relative importance. As to CR, managers try to acquire support from their stakeholders, according to their importance, through attracting higher CRs from agencies, to achieve the greatest benefits.

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The firm depends on its future cash flows, and if information through CRs impacts expectations of the future cash flows and their ability to cover the servicing of the interest debt and principal repayments, these emit a positive signal, which should lead to more trust in the firm from stakeholders, especially bondholders and shareholders, and reduce the conflict between them. If the future cash flows are less than those that would enable firm to cover its interest and principal repayments, these a emit negative signal, which would indicate default risk or bankruptcy, and a deeper conflict between bondholders and shareholders. Signalling theory can support this argument.

One of the main criticisms that is directed to agency theory is its assumption that the interests of the manager is not aligned with those of the principal. As a result a need for a theoretical framework that determines and explains those cases in which the interests of the agents are aligned with those of the principals has emerged. Stewardship theory therefore supports governance mechanisms that underpin and empower the firm's management and avoid mechanisms that monitor and control it. The stewardship function and its related interests between shareholders and bondholders can affect credit ratings through reduced information asymmetry, which is hampered by the separation between ownership and control.

Innovative companies are likely to be innovative in projects and brands and gain a competitive advantage in a global market. These successful firms are more likely to attract a big audit firm. But innovative companies are also more likely to use computer technologies creatively and efficiently to diffuse financial information through the internet to attract foreign investors and institutional investors. The importance of information diffusion is also likely to reflect in the value and CR of the firm.

Legitimacy theory stresses the importance of societal acceptance in ensuring a company's survival. Underlying this theory is the notion that a company's actions can have an impact on

the environment in which it operates. CR in this instance is provided to justify a company's continued existence. Thus, companies with a higher CR may attempt to legitimate themselves within their culture, society and political system.

The next chapter presents a brief review of the definition and concepts of credit rating and corporate governance.

CHAPTER THREE: CREDIT RISK ASSESSMENTS AND CORPORATE GOVERNANCE: DEFINITIONS AND CONCEPTS

3.1 Introduction

Currently, CR represents one of the most important financial issues due to the recent economic crises. Evaluating the financial trustworthiness for companies is a major concern for CRAs which represent one of the key communication vehicles in providing an independent evaluation of the probability of default on bond issues, as such providing information to debt-market participants additional to publicly available sources (e. g., Reiter and Zlebart, 1991).

Many advantages can be obtained from CR information and can be passed on to different stakeholders including, bondholders, investors and shareholders. Meanwhile, various stakeholders need adequate information about the companies' financial abilities. This in turn pushes these companies to provide the required information about the ability of firms to cover debt and about the strength of their future cash flows available to those stakeholders.

CRAs play an important role in the functioning of credit markets for a wide range of stakeholder groups, namely, investors, regulators and a range of other parties who make use of CR. There is clear evidence of the increasing importance of CRs through the CRAs as they play an important role in capital markets through the identification of the debt of a company and its ability to satisfy the credit financiers and other investors alike, which can send either a positive or negative signal to them about the quality of the firm's credit situation.

Structured finance ratings represented 43% of Moody's global ratings income in 2009 (Moody's, 2009a). There is a trace of average margins was 38.3% for the full-year 2009, and the two big players in the CR market show that plenty of companies take their ratings

seriously and are willing to pay substantial sums for the agency ratings of their debt, and so the industry is assuredly a lucrative business. For example, it can be noted that Moody and Fitch were investigating in recent years an annual growth rate up to 17%, while standards and poor (S&P) alone achieved 14.5%, and thus the success of these agencies through their classifications is closely linked to the organization of the financial markets.

The income of the rating agencies continues to increase. This indicates a great success significant in the development of their business, and CR has become very important in the globalization of financial markets, and in debt management of corporations. On a worldwide basis, issuance of rated public securities has risen at a compound annual rate of 27% over the period 2050 to 2009 (Moody's, 2009). The importance of CRs and the success of the agencies have also been closely linked to the role that they play in regulation. Ever since the 1930s, the distinction between investment grade and sub-investment grade debt has been very important and the rating decisions made by the agencies have had a direct influence on the value of debt instruments available to certain banks and insurance companies (Sylla 2001).

In addition, the credit crunches that have been happening in the developed markets increase the searching rate for a system that monitors the different parties of the companies. Therefore, many companies apply good corporate governance systems to fulfil this role through their ability to achieve the balance between the different powers inside and outside the companies. Applying a good corporate governance system may represent a signal for good financial positions for the company which leads the various CRAs gives these companies a high rating (Skaife et al., 2006). Thus, the application of corporate governance rules may have an impact on the adoption of higher credit ratings, a proposition that is of key interest in this thesis.

Therefore, this chapter shows the basic concepts of credit ratings in order to demonstrate its contemporary importance. Further, the nature of corporate governance will be discussed not

only to show its importance to the study but also to identify potentially important corporate governance variables that can purportedly be expected to have an impact on credit rating. Section 3.2 discuses the nature of credit rating, its main advantages and disadvantages and the impact of credit rating on capital market. Corporate governance systems are presented in section 3.3. Finally, section 3.4 provides the summary of the chapter.

3.2 The Nature of Credit Ratings:

3.2.1 The concept of credit rating

A number of studies have provided definitions of credit ratings of various CRAs, such as Standard and Poor's, Moody's and Fitch, as well as definitions by the agencies themselves (For example, Belkaoui, 1980; Cantor, 1994; Steeman, 2002; Fight, 2001; Gonzalez, 2004). These will be discussed shortly. It is important to appreciate that CRAs provide views to help investors identify risks, particularly on the most serious default, indicate the quality of long-term debt through the agency's unpublished forecast, and estimates through the characteristics of future cash flows relevant to the type of funding (Belkaoui, 1980).

Cantor (1994) has succinctly regarded CRA as reflecting their opinions about the firm's ability to cover service interest and repayment through the likelihood of default risk or late repayments. In the words of Steeman (2002, pp. 22-23.): "Credit ratings are the very structure of the marketplace. They are the risk language that we all speak and rely on." The grades are pertinent, for it can be said that CRAs give their opinion about long-term debt as a score to both high investment grade or low speculative grades and can assess the likelihood of default risk leading to bankruptcy (Steeman, 2002). A credit risk rating, from CRAs, provides an opinion of the future ability, legal obligation, and willingness of the obligor to satisfy timely payment of debt serving to investors, and reflect on the possibility that they might lose money

according to whether there are likely to be strong future cash flows (Fight, 2001). CRs aim to measure the creditworthiness particularly pertaining to the expected future cash flows' ability to service interest and capital repayments, and the focus of a firm's creditworthiness is primarily upon the implications of the ratings for default risk (Gonzalez, 2004).

As seen earlier, there are several definitions of CRs from CRAs, and as has been noted many of these agencies are primarily concerned with the likelihood of default as a basis for their opinions. There are thus no large differences between the agency-specific definitions, and as a result researchers tend to depend on the big three agencies' definitions (see Steeman, 2002, pp 22-23):

"A credit rating is Standard and Poor's opinion of the general creditworthiness of an obligor" (Standard and Poor's)

"Issuer ratings are opinions of the ability of entities to honour their financial obligations" (Moody's).

"Ratings are an assessment of the issuer's ability to service debt timely" (Fitch)

In other words, a rating informs the investor of the degree of risk or safety of an investment in a specific security. The definitions for credit rating can be extended further. For example

" credit rating is Standard and Poor's opinion of the general credit worthiness of an obligor, or the creditworthiness of an obligor with respect to a particular debt security or other financial obligation, based on relevant risk factors" (Standard and Poor's, 2002).

"... an opinion on the credit rating industry of the future ability and legal obligation of an issuer to make timely payments of principal and interest on a specific fixed income security" (Moody's, 2006).

Steeman (2002) shows that all the CRAs use a categorical factor to explain the firm's ability to service debt and capital repayments as they fall due. The rating agencies begin with number or a key to indicate the relative standing within the major categories for the likelihood of the firm's ability to make relevant payments. For example, Standards and Poor's (S&P) use a key + / - and Moody's use a number (1, 2, 3 …) to indicate the relative standing within the major categories. Some systems are modified through letter grades, and there are some differences between agencies in their uses of these letters. For example Standard and Poor's uses letters that locate the firm on a spectrum of credit quality from the very highest (AAA) to (AA) to (A) and to the very lowest (D). Moody's, however, distinguish capital from small letters. For example, they use letters that locate the firm on a spectrum of credit quality from the very highest (Aaa) to (Aa) to (A) and to the very lowest (D). World 'vest base (WVB) CR uses a letter system with numbers also: for example, a very high CR, AAA, to AA to AA1, to AA2 to D the lowest credit rating.

Consistent with the above, when the estimate is more likely to reflect default risk (lower CR) the imply evidence that interest on debt is very unlikely to be covered and thus principal payments may not be met. A WVB_CR in the AAA rating category indicates an extremely strong capacity to pay interest and repay principal, and is of the highest quality. Ratings AAA, AA1, and AA2, reveal a very strong capacity to pay interest and repay principal and differ only by a small degree from the higher rated companies. A, A1, and A2 show a strong capacity to pay interest and repay principal, although it is somewhat more susceptible to adverse effects of changes in circumstances and economic conditions than debt of higher rated categories. (BBB) including BBB1, BBB2, and BBB3, reveal an adequate and medium grade capacity to pay interest and repay principal, although normally they suggest that adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than debt in higher rated categories.

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(BB category) including BB1, BB2, and BB3, indicate a reduced near-term vulnerability to default than other speculative issues, however, a firm is regarded as facing ongoing uncertainties or exposure to adverse business, financial or economic conditions, which could lead to an inadequate capacity to meet timely interest and/or principal payments. (B category) including B1, B2 and B3 reveal a greater vulnerability to default, but suggest that the firm currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the capacity or willingness to pay interest and repay principal. Specifically B1= "Speculative"; B2= "Speculative at best"; B3= "very speculative". (C category) including C1, C2 and C3, express a current identifiable vulnerability to default and identify that the firm is dependent upon favourable business, financial and economic conditions to meet timely payments of interest and a repayment, of principal. Highly speculative in the event of adverse business, financial or economic conditions, "it is not likely to have the capacity to pay interest and repay principal"=C1; "it is probable the company will not likely have the capacity to pay interest and/or repay principal" =C2; "it is very likely that the company will not have the capacity to pay interest and repay principal" =C3. As to the D rating, payment is in default, and the firm is technically, or actually, in bankruptcy[1] .

CRAs have two categorical factors, comprising an investment grade and a speculative grade, each of these categories includ many sub-categories to clarify the firm's ability to meet commitments from their creation of future cash flows. Categories are differentiated yet can be grouped AAA to BB3 as investment grade, and from B1 to C3 as speculative grade. Investors in firms are always looking to the investment grade, where the internal regulation and policies support this grade. As a result when the firm is downgraded to a speculative grade,

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[1] see http://www.wvb.com

this may very well lead many investors to change their investment policies and possibly sell their assets directly; given this change in credit risk and lower perceived future cash flows to the firm indicate its default risk or bankruptcy potential (Steeman, 2002) (full details of the rating scales used by the main agencies are included in Appendix 2-1).

On the one hand, the CRAs purport to provide superior information about the ability of corporations (or even governments) to make timely repayment of principal and of interest on borrowings from the generation of future cash flows; on the other, there are some problems regarding the accuracy of the estimates for CRs from these agencies. Yet, Strauss (2002) has stated that "Credit ratings are the very structure of the market-place. They are the risk language that we all speak and rely on".

Many investors have lost money from acting on implied agency recommendations on CRs, which later found not to be accurate and so there can be lawsuits against the CRAs on account of their lack of precision in their estimates of CRs (Partnoy 2001). In the Maurice Quinn v. McGraw-Hill case in 1998, Circuit Judge Diane P. Wood commented on her decision to dismiss the case, as follows: "While it is unfortunate that Quinn lost money, and we take him at his word that he would not have bought the bonds without the Standard and Poor's "A" rating, any reliance he may have placed on that rating to reassure himself about the underlying soundness of the bonds was not reasonable."

According to Partnoy (2001), credit rating agencies exercise their free speech and considered opinions, disclaiming responsibility to recommendations to buying or selling. Consequently, the CRAs are protected from any kind of prosecution because they only provide their views and opinions. However, the CR processed has experienced many historical steps, which will be discussed in the next section.

3.2.2 History of credit ratings

Although it was as early as the 16th century, when the Dutch created their first government bonds, and the 17th century when the Bank of England was founded, it was not until the 18th and 19th centuries that the UK became the central economy of the world (Sylla 2001). But the early years were without the benefit of agency ratings.

During the nineteenth century when the USA experienced noticeable economic growth, the US issued sovereign bonded debt to build canals and other infrastructure projects, but largely withdrew from this activity after nine states defaulted in the early 1840s (Sylla, R. 2001). As the country grew local governments replaced states as bond issuers but they were dwarfed by the private sector through the corporate bond market. A separate branch of the development of the credit rating industry started by Louis Tappan who established the first mercantile credit agency in New York in 1841, when he founded the Mercantile Agency from his own extensive records of credit-worthiness of his dry goods and silk customers. In the wake of the banking crisis of 1837, this was subsequently purchased from Robert Dun in 1859 (Sylla 2001; Cantor and Packer 1995a). By 1900 its reports covered more than a million businesses (Norris 1978).

A similar mercantile rating agency was formed in 1849 by John Bradstreet, who published the world's first ratings book in 1857. In 1933, the two agencies were consolidated into Dun and Bradstreet and merged with RG Dun and Company in 1933 to form Dun and Bradstreet. But although these credit-reporting agencies provided commercial information to subscribers, they did not rate bonds; they became the owner of Moody's Investors Service in 1962 (Sylla 2001).

The first CRA in the world was established in the 1909 in US by John Moody for the American railway companies bond rating (Partnoy, 1999; Sylla 2001). John Moody issued

the first CR to cover the creditworthiness of bonds Railway Company to help bondholders in their investment decision (Fight, 2000). CRs used to cover only estimate ratings in the United States because it had the largest bond market than anywhere else in the world, and there were rising levels of income in the US which by 1909 broadened the investor base through the US corporate bond market, essentially US railroad bond market (Sylla 2001). This remained so for 50 years, and during this time the ratings industry was smaller than today, being confined to the railway sector (Sylla, 2001). Moody's did not rate US state and government bonds until 1919 but earlier in 1910 they extended their coverage to utility and industrial bonds. In the 1920s, Moody's alone rated more than 3,000 issuers in the US (Moody's, 1997). At that time the number of competitors was very small. Moody's and Poor's were publishing standard statistics, and in 1924 Fitch Publishing Company joined the market (Sylla, 2001).

When Henry Poor became editor in 1849 of the Journal of the American Railway his publication, which was called the Deployment of Information to Investors, helped with financial information disseminated by the financial press and specialist journals and contained information on property assets, liabilities and revenues of railway companies (Fight 2000). Henry and his son, John, specialized in the deployment guide (for manual railway) in 1868. The company continued and through business combinations formed with S & P in 1941. This company was controlled by McGraw Hill in the 1960s which still copyrights material from the publishing company today. S & P remains one of the largest agencies in the world to assess the eligibility for credit.

After the First World War, USA became the world's first financial centre; large US market attracted many investors from different countries, who needed ratings for their investment decisions. Thus, CRAs emerged to help investors through the provision of investment

information, and consequently CRAs supplanted the functions previously performed by investment bankers (Moody's 1997).

In 1962 Dun and Bradstreet took over Moody's and disposed of them in September 2000 when they became freestanding with a market capitalisation of $5 billion (Sylla, 2001). Duff and Phelps entered the bond rating market much later in 1982 and McCarthy, Crisanti and Maffer had been founded in 1975 and acquired by Xerox Financial Services before it was merged into Duff and Phelps in 1991 (see Cantor and Packer, 1995), then merged with IBCA, the only UK credit rating agency in 1997. The combined entity was subsequently bought by a French company FIMLAC. In June 2000, Fitch IBCA bought Duff and Phelps. In December 2000 Fitch absorbed Thomson Bank Watch (White, 2000).

The 1920s and 1930s witnessed prosperous period for the CRAs. There was much activity in the bond markets in this period, and high volatility; public information and disclosure were scarce; and investors depended on the opinion of CRs regarding the strength of firm's financing arrangements. Investors supported CRAs through subscribed services until the 1970s (Partnoy 2001).

In the early 1970s the US capital markets were opened up to financial globalisation after a breakdown of the Bretton Woods System and the introduction of a floating exchange rate. Linked to this expansion of the CRAs was the essential role which they played owing to an increasing number of international companies which had started issuing bonds in the US market, and more foreign capital being used to invest in economic development projects (Sylla 2001). CRAs collectively changed their model of funding: they began to charge issuers for rating their debt securities. The rationale behind this move was: (1) they needed more resources for their international expansion which could no longer be covered by subscriber

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fees; and (2) it solved the 'free rider' problem, i.e. ratings information was leaked to non-subscribing investors and thus reduced the CRAs' income (Sylla, 2001; Coffee, 2006).

The rapid development of the Asian capital markets, and the development of the EU single market created the need for CRs to be provided to assist new investors funding long term debt, which would help firms grow their business and increase their competitiveness as well as raise their contribution to global economic growth, which in turn led to the expansion of NRSRO through standards and poor's, the first rating agency to open an office outside the US (Fight, 2000). This was a successful time due to improvements in key economic indicators which helped the Internationally Recognised Statistical Ratings Organisation (NRSRO) to flourish again and achieve an excellent performance. NRSRO covered the global markets with around 130 agencies world-wide, but this number may have been closer to 150 (Estrella *et al.*, 2000).

World'vest Base Inc CRA, with its office in the US, had and still has a strong focus on the Asian and Middle East market, providing ratings and services, having been founded in 1985 with subsequent offices in Hong Kong, Vietnam, Egypt, Mexico, Thailand and China. In 1998, WVB established its first data collection centre outside the USA, in the Prague-Czech Republic, which was followed by the opening of another international office in Malaysia. The company was reorganized under the Financial Intelligence Service Ltd, and since 2001 WVB has started to expand its data coverage to include the USA, and indeed is still headquartered there in Chicago[2].

Initially WVB only rated commercial paper, but soon it started rating debt as well. It now provides many ratings worldwide and employs a strong work force. It expanded rapidly in all

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[2] http://www.wvb.com

product lines (corporate, structured, and financial ratings), and it not only sell ratings and ratings' information, but also has an investment evaluation and consultancy service. WVB's data are originally offered through an exclusive marketing agreement with Telekurs NA and then with Standard and Poor's.

Since 1997, WVB has provided data directly to customers and through other distributors, such as Bureau van Dijk Publishing. In that period, through the quality of its data provision and customer service, WVB now supplies data to some of the world's leading investment banks, consulting firms, exchanges, government agencies and specialized information re-distributors. Since the beginning of 1999, WVB has also made significant in-roads into the financial portals' market. Since 2003, the company has expanded its database services to include specialized databases on private companies for Thailand, Vietnam, Malaysia, Laos and Cambodia. During that same period the company has also created value-added products in the fields of credit and business risk rating, and analysis[3].

3.2.3 Importance of credit rating

"There are two superpowers in the world today in my opinion. There's the United States and there's Moody's Bond Rating Service. The United States can destroy you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me, it's not clear sometimes who's more powerful" (Friedman, 1996).

The importance of CR has increased in the recent years for many reasons. This is attributed to the increasing pressures on companies and managers of firms to reach higher levels of accountability resulting from an increase in the level of competition between companies, and an increased desire of various stakeholders to obtain a justifiably high credit rating from one

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[3] http://www.wvb.com

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or more agencies approved by Nationally Recognised Statistical Rating Organisation (NRSRO). Therefore, companies compete with each other to get higher scores. The first goal of a firm's financing strategy is to achieve the desired rating from one of NRSROs, indicating financial soundness, efficiency of internal control systems and more general managerial competence, providing a good signal to the external environment (e. g. investors) through the level of CR (Cantor, 1994; Gonzalez, 2004). A number of researchers have illustrated the importance of CR in finance (for example, Sherwood, 1976; Kaplan and Urwitz, 1979; Belkaoui, 1983; Ederington *et al.*, 1987; Pottier, 1998; Pottier and Sommer, 1999; Gabbi and Sironi, 2002; Gonzalez, 2004).

Hsueh and Liu (1993) and Gabbi and Sironi (2002) argue that CR is very important as a determinant of bond spread and bond yield; so the firms hope to be assigned high bond ratings for the best price and to earn lower yields. On the other hand, firms with lower CRs, namely for speculative grade bonds from below BBB or unrated bonds, will be obliged to cover debt service and repayment at higher interest. As a result, the CRAs are the 'gateway to the financial market' through which CRs reflecting the firm's ability to create the required future cash flows (Cantor et al, 2007). Investment guidelines typically require a high CR of target firms, and consider investment in firms of lower CRs, or non-rated, would represent a substantial investment risk, (Cantor *et al.*, 2007).

CR can give a significant signal to all stakeholders, including bondholders, because CRs reflect the opinion of financial analysts and experts, and can be a significant determinant of the risk premium (Kaplan and Urwitz, 1979). In recent years, CRs have become increasingly important and have attracted the attention of public capital markets and stakeholders many of which require a rating. Stakeholders, including bondholders need more complete information

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about the firm's ability to cover debt interest, and consequently when this is not supplied the funding of unrated bonds can cause more difficulty (Kerwer, 2005).

White (2001) has argued that the importance of CRs is related to the problem of how lenders determine a firm's creditworthiness; in particular how they assess the future cash flows' ability to cover debt interest in a timely manner and repayments at maturity. Steeman (2002) argues that because CR is an independent assessment of firms' quality, CRs have become a cost efficient and trusted way to convey information to investors. Boot *et al.*, (2006) suggest that CR is a tool of coordinating mechanisms in the financial market through monitoring the role of CRAs. Moreover, CR plays a role of an information equalizer about the investment decisions of institutional investors. Generally, CRs are "focal points" through an increase in the size of the firm's stakeholder base, resulting from greater reliability of pertinent firm's information. Based on the above, the significance of credit rating will be discussed in the next section.

3.2.4 The significance of credit ratings

Credit rating represents the link between those who need the credit rating information, namely, stakeholders, and those who provide a credit rating assessment for the firms, i.e. a credit rating agency. This link is important to firm users especially investors who demand from these external parties that they provide ratings' information on the financial status of the firms, including their ability to meet their financial obligation and generate future cash flows. This in turn may influence on the accounting and financial management functions in these firms through the policies which they should follow to achieve this goal and in addition to help the firms tap the financial markets.

Different levels of credit ratings differentiate firms as set out in the reports by a particular credit rating agency. So, not surprisingly, the use and the impact of credit rating on firms have grown significantly and increasingly in line with creditworthiness (Gonzalez, 2004).

3.2.5 The characteristics of credit ratings

A credit rating can be used as a means of providing stakeholders - investors and issuers- with an assessment which shows the firm's financial creditworthiness at a particular point within a credit rating range, but it also offers new opportunities to present information by providing insights into expected future cash flows and other quality information related to the firm (Gonazalez, 2004; Champsaur, 2005; Skaife *et al.*, 2006). Jacobson *et al.*, (2000), Frost (2006), and Skaife *et al.*, (2006) have illustrated that, it is most important to present information to stakeholders about a firm's operations, highlighting the role of the credit rating agency, since:

• The credit rating provides an assessment about the ability of the firm to meet its financial obligations, which is not found in any financial statement;

• The credit rating agency uses a methodology to help establish a credit rating through its market reputation as a guide to differentiating good from poor investments;

• The credit rating agency directly draws on an array of financial and non-financial information;

• The credit rating agency updates assessments on credit ratings for firms, which helps investors in making financial decisions concerning those firms.

Many advantages can be gained by both the firm and its investors, from using its credit rating. These advantages will be shown in the next section.

3.2.6 Advantages of using credit ratings

A credit rating is important both for internal and external use. The credit rating increases the possibilities in managing business businesses through quality information. Regarding internal use by managers, a credit rating assessment provides objective business information on the firm and the firm's ability to cover service interests and capital repayment through the current and expected future cash flows, and may reflect, for example, the nature of the business activities from a local to global orientation induced by competitive pressures and the needs of the stakeholders especially issuers of finance. As to external use by different stakeholders, especially investors, a credit rating assessment helps meet the needs of those who require assessments on the future cash flows to assess the firm's financial strength, its performance, including the quality of its future cash flows. It reflects a rating agency's opinion of an entity's overall creditworthiness and its capacity to satisfy its financial obligations and needs of the stakeholders (Skaife *et al.*, 2006).

A credit rating assessment has a clear role for both firms and stakeholders. It enables the credit rating agency to provide useful financial information to a large number of stakeholders of the firm, and thus should lead to an increase in share price liquidity (Skaife *et al.*, 2006) and should lower the cost of capital through a reduction in uncertainty deriving from better information (Graham and Harvey, 2001; and Kisgen, 2006). Additionally, a credit rating can enhance the reliability of particular financial information pertaining to the firm's ability to cover debt obligations and provide reassurance for investors in the process, who might therefore become more confident of their securing the firm's financial needs through loans to the firm, especially when it attracts the best grade from the credit rating agency (Skaife *et al.*, 2006).

According to this view, most firms should compete with each other to earn a better score from the credit rating agency to the benefit of its various stakeholders. These advantages can be viewed from the stakeholders' point of view. A number of researchers have illustrated these advantages (Sherwood, 1976; Belkaoui, 1983; Ederngton *et al*. 1987; Nayar and Rozeff, 1994; Pottier and Sommer, 1999; White, 2001; Steeman, 2002; Gonzaliz, 2004; Boot *et al*. 2006; Skaife *et al*. 2006) which include:

- An increase in the size of the firm's stakeholder base, resulting from greater reliability of the firm ability to create current and future cash flows;

- An increased peace of mind for bondholders from threats of wealth-transfers from themselves to shareholders; for when a firm earns the best grade it most fully assures investors of the strongest anticipated future cash flows to the firm;

- A rating guarantees future loan flow to the firm from bondholders; for a firm which earns a better rating from various agencies is more likely to be supported by its bondholders;

- It enhances the reputation of a firm in the financial markets, Therefore, when an agency announces a good rate it enables a firm to keep its current investors and also attract new investors to the firm;

- It can motivate a firm to increase its effectiveness through competition between firms to earn a higher grade. In turn, it may lead to the credit rating being raised and if correctly assessed to an improved firm performance;

- The provision of ratings' information to bondholders, helps them make the right decisions about debt servicing;

- A better and objective gauge of the ability of the firm to meet financial commitments through future cash flows to all stakeholders, especially bondholders;

- The use of credit ratings in this real-time environment enables the investor and analyst to access rapidly the information provided by the credit rating agencies, instead of waiting several months to get some of this information from the traditional routine corporate financial reporting procedures;

- An ease in the search for required information about the ability of the firm to create the necessary future cash flows. The credit rating agencies provide clear and timely assessments, which allow users to search easily for specific data of the ability of the firm to cover debt interest and capital repayments. As a result of these advantages arising from a credit rating, many researchers typically go on to discuss the effect of the credit rating on the organisation and its stakeholders through the financial market. This impact of credit rating on financial markets is discussed in the next section.

3.2.7 Impact of credit ratings on the capital markets

Many changes in the business environment have caused pressures on changing CRs. Examples of these changes are: the increase rate of complexity in operating businesses, the growth and globalization of capital markets and the rapid growth of knowledge-based industries. Accuracy in CRs is very important for it is reflected on financial markets through CRAs that act as a gateway to the financial markets in a similar way to securities' analysts, although not auditors.

Therefore, the reputation of the agency is established through accurate CRs. An objective evaluation of CRs can assist financial markets so there is a need to provide adequate and useful information on CRs to investors, because the investors do not have the fundamental knowledge of CRAs to penetrate the information complexity of firms (Coffee, 2006).

Evaluations assist all stakeholders and users. Financial statements and other statements are no longer enough to meet the needs of all users, and so a CRA will supply a report providing

valid and pertinent additional information on the organisation (Sherwood, 1976; Belkaoui, 1983; Ederington *et al.*, 1987; Pottier, 1998; Pottier and Sommer, 1999). Therefore, it can be said that credit rating will help in improving the efficiency of financial statements in specific and accounting in general terms.

Kliger and Sarig (2000) focus on the effect of capital market reactions of stock and bond prices through changes in CRs, including interactions between the external value of outstanding debt and any inverse impact on the value of outstanding equity. They call for greater of use of CRs capital market, more frequent credit ratings and less aggregated announcements of rating change.

A credit rating effect on stock return, from a change in the level of CR, on the day of the announcement of a change in bond rating can be either positive or negatively; indeed, downgrades of CR are bad news for all stakeholders, including bondholders and shareholders (Holthausen and Leftwich, 1992; Matolcsy and Lianto, 1995; Barron *et al.*, 1997). On the other hand, some authors have argued that bond downgrades have a negative effect on excess stock returns, but not for all bond downgrades; consequently, these effects depend on the degree of downgrade (see Goh and Edderington, 1993). These impacts are useful in raising awareness of the potential impact of these CRs on capital markets. For example, Estrella (2000) and Van Duyn (2002) expect useful expansion in firm coverage by CRAs in the near future as useful information to all stakeholders, not just investors. He also shows that the formation of CRs has spread widely in the financial markets and will increase in the future. But consequent upon the rapid widespread use of the CRs as a medium of information for financial markets, stakeholders are beginning to question high CRs and thus the suitability and quality of CRs score.

The issues of relevance and usefulness of CR assessments have become very vital in today's corporate environment as well for the regulatory bodies, especially due to crises and failure of some major corporations. Therefore, Securities and Exchange Commission (SEC) believes that their bilateral monopoly of the financial markets by Standard and Poor and Moody's is a real threat through their negligence in determining the degree of real financial stability, as in the case of Enron and WorldCom, for their evaluations could have previously been more accurate (SEC, 2003b).

CRs have been described as "information equalizers" in their very important roles that are crucial to understanding companies' risks and potentials, especially concerning future cash flows; and are important for new bond issues, because all investors should be looking to the CRs as a criterion for investment decisions and reviews on pricing, thus demonstrating the key role of CRs in presenting such information to investors (see Nayar and Rozeff, 1994; Gonzalez, 2004; Boot et al., 2006).

Furthermore, there is a relationship between CRs and yield spreads, as realized yields on new debt issues reflect the quality of credit ratings via the cost of debt and price adjustments on the financial markets. So CRs are important determinants of the differences in yield spreads, for credit spreads rise as ratings deteriorate, and capital markets seem to validate the agencies' decisions by pricing lower rated bonds at higher average yields, and for new debt issues higher rated bonds at lower bond yields (see Altman, 1989; Cantor, 1994; Cantor and Packer, 1995; Sengupta, 1998; Bhojraj and Sengupta, 2003).

Credit ratings play a strong pivotal role in the financial capital market since they are important to all stakeholders, including investors who are looking to the CRs as guides to the credit risk of an issuer. As such they also demonstrate their key role in presenting this information to institutional investors, banks, and firms. Consequently, credit risk

management of an organisation is founded upon CRs, and the issuance of bonds in any market is now heavily dependent on the outcome of this evaluation.

The credit quality of an issuer is perceived from the CR; more specifically, CRs play a verification function in the fixed income markets by providing a clear assessment of credit through an alphabetical rating of debt, which indicates the degree of investment or speculative grade within a narrow sub-category (Steeman, 2002). The regulation of CR will be discussed in the next section.

3.2.8 Regulation of credit rating

There has been much debate about whether the rating industry is organized or not, and their relevance to the financial markets; indeed some authors have argued that the rating industry should not be organized in the USA, and should be out of the financial system fully. This is because the regulation of the rating industry affects the whole global economy, prevents competition by its market monopoly through its regulations, and arguably increases the risk of conflicts of interest. Yet, firms depend on CRs to indicate their creditworthiness in their ability to service debt interest and repayments (Partnoy, 1999; White, 2001; Steeman, 2002). The agencies themselves argue that they serve an important function in capital markets a view reiterated by others, for example:

"Credit ratings are the very structure of the marketplace. They are the risk language that we all speak and rely on." (Strauss, 2002)

In addition, they argue that taking CRs out of regulation would be extremely disruptive and unnecessary as "replicating the expertise, experience, commitment and objectivity of the large agencies would be difficult if not impossible to achieve" (Dominion Bond Rating Service, 2003).

CRs have an effect on the information to debt-market participants beyond publicly-available sources through its measurement of the firm's ability to repay and meet contracted debt obligations. Today, amidst immense economic progress, and a complexity of corporate groups in existence, the financing strategy of the firm has, as the first goal in its aim, to achieve a desired rating from the rating agencies in order to give a signal to all the stakeholders, e.g., issuers, investors, regulators and different parties with in the firm's environment (see Reiter and Zlebart, 1991; Cantor, 1994; Gonzalez, 2004).

In recent years, after many financial crises in the world, for example, the Asian financial crisis in 1997, the collapse of giant firms, such as Qualcomm, Parmalat and the US energy corporation Enron, and especially the last subprime mortgage crisis in the US (Shipman, 2007), it has been revealed that CRAs have demonstrably been unable to issue an early warning about such firms. This major criticism of these agencies is especially reinforced in that in most cases there have been many downgrades after the reflection of these events on the financial markets, which have increased significantly in spite of the success of the CRAs. These events have led to a backlash of criticism from various quarters on the performance of these agencies, because of large losses in the case of bonds, especially to investors. For example, four days before the Enron collapse the three big agencies had provided an investment grade for the US energy corporation, Enron. After the recent global financial crisis, SEC in the US and IOSCO started investigations into the role of CRAs to reconsider this issue.

Most CRAs strive to acquire NRSRO recognition as this is a crucial prerequisite to grow their market share, because NRSRO has become global and a requirement to enter the markets by firms and attracting investors. From 1975 to 2003, only three CRAs had been granted NRSRO status: Standard and Poor, Moody's, and Fitch Ratings. After these, the SEC was

allowed to give NRSRO to some other agencies, such as AM Best and Dominion Bond Ratings Services, and two Japanese agencies (Japan Credit Rating Agency Ltd and Rating & Investment Information Inc). In 2007 two small US based agencies (Egan-Jones Ratings Company and LACE Financial) joined NRSRO ranks.

From 1997-2005, SEC undertook several attempts to define the criteria, and in 1997 published proposed guidelines for NRSRO recognition that have not been formally adopted, after which came substantial criticism about the procedures and conditions for granting designation based on recognition and status of the agency Within the US unspecified criteria this had produced an artificial barrier to entry for new rating agencies, which has determined the impact on competition in the financial markets (SEC, 2005).

In March 2005, the SEC issued a proposed definition of NRSRO, and this put up for public discussion. On July 12 2006, SEC developed recognition criteria through NRSRO on the passing of the 'Rating Agency Duopoly Relief Act of 2006'. Barton (2006, p18), commenting on this, said "Despite this, given the position of the large credit rating agencies within US regulation it seems very unlikely that any significant changes will be made to the industry".

However, given a wide range of issues under review, the SEC has argued whether or not CRAs should exist at all. The SEC has new authority to impose disclosure and filing requirements on CRAs seeking registration, prevents an increased ratings based on the requirement of the buyer to purchase another service from the CRA, and it also prevents any government of a similar organization from following its own NRSRO methodology and bring different information to the market. (SEC, 2003) notes that the NRSRO are under review.

In 2007, after the subprime crisis, Christopher Cox, the Chairman of the SEC, testified at the US Senate Banking Committee in September 2007 that the SEC is examining whether the NRSROs were "unduly influenced by issuers and underwriters of structured products to

diverge from their stated methodologies and procedures for determining CRs in order to publish a higher rating" (Cox 2007).

Later in 2008, and again following the subprime crisis it reviewed its code of conduct and published a consultation report on the role of CRAs in structured finance markets through IOSCO (2008) including specific recommendations to ensure the quality and integrity of structured finance ratings, such as prohibiting analysts from making proposals or recommendations regarding the design of structured finance products that the CRA rates, and requiring additional disclosures regarding the methodology and assumptions used to rate structured finance products.

In February 2008, the Committee of European Securities Regulators (CESR, 2009) published a Consultation Report on the role of CRAs in the structured finance market to establish whether formal regulation of CRAs within the European Union should be introduced by the European Commission. A central repository for information is to be established to enable ratings to be assessed from raw data and for summary information in to be published.

The CRs issued by all main regulatory agencies, such as Standard and Poor's and Moody's, are widely accepted by the financial markets because of their expertise in CR and the perception by market of their being unbiased evaluators. Arguably, there are only three rating agencies that can be considered true global players; they are Standard and Poor's, Moody's, and Fitch (Steeman, 2002)

Moody's ratings industry focuses on the default risk, and thus reflects on the probability of an expected loss arising from inadequate future cash flows to the firm which is greater for assessments in the speculative grades. Investors look at the investment-grade bonds through reference to the higher ratings of credit agencies to determine the allocation of their savings and to be reassured of the ability of firms to cover repayments through future cash flows; and

firms prefer an investment grade being assigned following the application of the regulations, because this leads to a reassurance for investors regarding future loan provision (Croyhy *et al.*, 2006).

3.2.9 Determinants of the credit rating process

There are two types of rating "issue-specific credit ratings", and "issuer credit ratings". In the "issuer credit rating" category, there are counterparty ratings, corporate CRs, and sovereign CRs. The second class of rating is an "issue-specific credit rating". The rating agency looks to the creditworthiness of the guarantors, and the quality of the collateral provided by the firm to cover contractual interests and capital repayments according to the maturity structure of payments.

In general, CRAs process quantitative and qualitative information when formulating their rating of a firm's financial condition and legal analysis. However, the quantitative information used to perform the rating of financial strength is normally obtained from a combination of both public financial sources and the firm's financial reports. The qualitative information analysis and private information are concerned with the quality of management and include a thorough review of the firm's competitiveness within its industry as well as the expected growth of the industry and its vulnerability to technological changes, regulatory changes and labour relations (Cantor and Packer, 1995).

The rating process of the assessment of management includes meetings with the management of the issuer to review the firms review operating and financial plans, policies and strategies, to investigate how likely it is that it will achieve its operational success, and its risk tolerance. All the information is reviewed and discussed by a rating committee with appropriate expertise in the relevant industry, which then votes on the recommendation. The issuer can appeal against the rating before it is made public by supplying new information. The rating

decision is usually issued four to six weeks after the agency is asked to rate a debt issue. Usually the ratings are reviewed once a year based on new financial reports, new business information and review meetings with management. A "credit watch" or "rating review" notice is issued if there is reason to believe that the review may lead to a credit rating change. A change of rating has to be approved by the rating committee.

While the rating agencies use similar methods and approaches to rate debt, they sometimes come up with different ratings of the same debt investment. Solicited or unsolicited CRs use same methodology and procedures (Fight, 2001), but it is different for solicited ratings which are made in co-operation with the firm and depend on the interviews and contracts with the issuer, while unsolicited ratings depend on information that the credit agency collects, mainly from the public domain (Steeman, 2002; Fight, 2001).

The rationale for obtaining CRs has traditionally been viewed in the finance literature to be classified as economies of scale in information collection and the reduction of agency cost in the issuance of debt (Ramakrishnan and Thakor, 1984; Millon and Thakor, 1985). The investors look to the CRs as the level of safety to guarantee for payment of its loans in the future, consequently, the CRA's reputation in the bond market plays a role of checks on the underwriter's reputation (Beatty and Ritter, 1986; Carter and Manaster, 1990).

Cantor (1995) argues that in addition to putting an agency's reputation at risk, inaccurate ratings might expose the credit agency to costly legal damages. However, the threat of legal liability for rating agencies has not yet materialized. Informal regulation is ever present. Specifically, market forces, confidence and judgement are by far the most significant regulatory influences affecting the ratings industry. No rating agency can afford to lose its market credibility, since ultimately it is merely a formal mechanism for expressing credit opinions (Fitch 2006).

Cantor (2001), now employed by Moody's, confirms that the CRA industry is subject to moral hazard. Every rating agency has a business incentive to assign high ratings to issuers, who are free to choose among the agencies. This incentive is offset by a rating agency's need to maintain its reputation in the market with investors, who drive the issuers' demand for CRs. Pressure on issuers to "shop" for the highest rating is increased by their use in regulation. Such practices could undermine the reliability of ratings over time.

3.3 The Nature of Corporate Governance

3.3.1 Introduction

A credit assessment of improved financial strength is enhanced by corporate governance (CG) systems that aim to protect the various interests of stakeholders by balancing between these interests and those of owners and management. This issue of corporate governance is now discussed. Of course, management should maintain the assurance of their shareholders, but there is especially during times of rapid growth and also during downturns a more challenging role of management in running the corporations. They, in turn may try to find the best possible ways to maximize the wealth of the shareholders subject to meeting the basic needs of other stakeholders. But after many crises, which has led to businesses downfalls, (such as Bank of Credit and Commerce, Maxwell, WorldCom and Enron) the trust between the shareholders and their management is being questioned. Therefore, companies try to find a system which would guarantee the non-repetition of such crises again. As a result of this, corporate governance will be the suitable solution to this problem expressing the organized relationship between managers and shareholders of the corporation.

3.3.2 The nature and meaning of corporate governance

Many studies have expounded the concept of corporate governance. The role of corporate governance inside firms follows the UK report from the Cadbury Committee (1992 and

2004), whose authors define corporate governance as "the system by which companies are directed and controlled" (Cadbury, 2000). This is confirmed by others, such as Stapledon (1996) and Werder and Grundei (2001). These authors perceive corporate governance as "the framework to monitor the performance of these objectives and strategies" (Stephanie, 2005), and their definition means that the principles of best practice of corporate governance are congregating worldwide and each country only differentiates itself in applying corporate governance. Blair (1995) defines corporate governance by "the whole set of legal, cultural and institutional arrangements that determine what publicly traded companies can do, who controls them, how the control is exercised and how the risk and returns from the activities they undertake are allocated".

In addition, the relationships between firms and their associated parties, particularly shareholders, are represented by many authors. For example, Parkinson (1994) defines corporate governance by "the process of supervision and control intended to ensure that the company's management acts in accordance with the interests of shareholders". Similar views pertaining to shareholders are expressed by Shleifer and Vishny (1997), who have identified "the relationship among various participants in determining the direction and performance of the corporation. Those parties include: the shareholders, the management and the board of directors."

Further, some authors focus on the firms' stakeholders. Dahya *et al.* (1996, p71) define corporate governance as "the manner in which companies are controlled, and in which those responsible for the direction of companies are accountable to the stakeholders of these companies". A further definition identifies "the system of checks and balance, both internal and external to companies, which ensure that companies discharge their accountability to all

their stakeholders and act in a socially responsible way in all areas of their business activities" (Solomon and Solomon, 2007, p.14).

Good corporate governance systems have paradoxically been derived from the adverse impact that has happened from the financial crises on various companies. The loss of confidence of most investors towards the companies due to their inability to pay their debts has affected their credit ratings negatively. Consequently, most of these companies have begun to search for a system that enables them to monitor their activities effectively. Corporate governance has increased in importance in the last few years through the need to improve the rules of managing a corporation, and to increase the quality of the corporate operations and functions through effective board performance. According to Mallin and Hussain (2003) corporate governance provides the board of directors with better rules and procedures. Furthermore, the importance of corporate governance is reflected in increased creditworthiness made more apparent in the financial statements of the corporation. Several authors, namely, Macdonald and Beattie (1993), Sheikh and Rees (1995), and Demirag and Solomon (2003) have highlighted the importance of corporate governance and the need for its application, due to these factors:

- the separation of ownership and control, which is even more pronounced due to the geographical dispersion of shareholders, and the role of institutional investors in the generation of sometimes excessive short-term interests to the detriment of the longer-term economic and performance of the corporation;

- collusion by some managers in expropriating other stakeholders' funds and their exertion of excessive power on the corporation;

- the lack of clarity in a framework for defining the role of the directors and the mechanism for controlling their behaviour;

- weaknesses in the role of internal and external auditors, such as lack of independence from the external auditors;

- inadequacy in financial reporting standards such as a carelessness in interpretation, in meeting the needs of the organisation; and

- a lack of flexibility in addressing new problems that a corporation may unexpectedly face.

After this summary of the importance of corporate governance, it is instructive to consider the views of authors, who identify problem areas in corporate governance. According to Whittington (1993) there are three problems related to corporate governance and the demand for information. Firstlly, shareholdings can be dispersed. Consequently, there can be high monitoring costs, especially with the existence of institutional investors. There is a need for control mechanisms to be extended upon directors, especially to protect smaller shareholders. Secondly, there can be a lack of auditors' independence, and also the external auditing process may not be performing its function properly which may lead to more creative accounting so that the financial reporting process may not be fulfilling its role. Thirdly, too many small shareholders, in comparison to professional investors, would allow reporting be evaluated by the latter group and may indicate a tendency for the former not to monitor the information. Consequently, the demand for corporate information is related to the type of investors (see Whittington, 1993).

It can be noticed that there is no agreed definition of corporate governance. However, all these definitions shed light on relationships between the firm's management, its board of directors, shareholders and stakeholders as mentioned by OECD (2004). All these parties will be discussed in the next section.

3.3.3 The different corporate governance parties

First of all, according to (Tricker, 1984) it is important to determine the parties who may impact on corporate governance. Basically, there are four main parties in the context of corporate governance:

Firstly, the ownership structure: this embraces a combination of rights and responsibilities regarding a specific property into which money is invested through a separate corporation. Often the ownership is distanced from the management of the business. Furthermore, the growth of the corporation and its ownership will normally lead to more complexities which require a separation between who owns the money invested and who runs the business. This separation between ownership and managers, who make the key decisions, necessitates a transfer of power from owners to managers (Monks and Minow, 2003). This separation highlights differences in personal interests, goals and strategies, and can impact on shareholder wealth which can create conflict in the relationship between shareholders and management.

Secondly, the corporate directors can yield much power in making and taking decisions, which should enable the business to be run more effectively. But this power sometimes suffers from conflicts of interests, especially for family companies on account of certain family members being on the board of directors, and of course there can be non-family directors too, whose decisions taken and recommendations made can be compatible with their own interests, but perhaps contrary to the interests of the owners.

Thirdly, managerial conflicts within a corporation can be more prevalent as a result of the diversification of a corporation's activities, and especially where there are many subsidiaries to the corporation. According to White (2004), strong conflicts can then arise between managers of corporations and associated interest groups.

Fourthly, institutional shareholders can have conflicting interests to other shareholders, with ramifications for the performance of the corporation. The latter arises because of conflicts between owners and managers arising as a result of separation between them. Institutional shareholders tend to concentrate ownership in the hands of a few shareholders. Consequently, firms may instead try to disperse the ownership between many types of shareholders. Corporate governance may help reduce conflict of interest between owners and managers (Muth and Donaldson, 1998; Donaldson and Davis, 1994), since:

- corporate governance regulates the relationship between parties to the organisation;

- it regulates the manager's behaviour in the corporation;

- it provides instruments for effective monitoring and rewarding executive performance and actions; and

- it allows selection of a superintending committee to protect the interests of shareholders.

In 1999, the OECD issued the principles of corporate governance, which represent a guide by which each company should follow. These principles are:

- the corporate governance framework should protect the rights of shareholders and their ownership interests;

- the corporate governance framework should ensure equitable treatments of shareholders, including equal rights to those of minority parties or foreigners;

- the framework of corporate governance should help develop efficiency and performance of corporations in the market and new laws should ensure strong bases for corporate governance;

- the corporate governance framework should determine the function and responsibilities of the board of directors, ensuring the board of directors' accountability to shareholders, and assist in the monitoring role of managing corporate performance on behalf of shareholders through effective corporate governance;

- the corporate governance framework should promote good accounting practice in relation to the reporting of financial statements and internal performance, measurement and control; and finally,

- the corporate governance framework should ensure cooperation between the corporation and its stakeholders through a clear definition of the legal rights of stakeholders and effective and well defined contractual laws between agent (directors/managers) and principals (shareholders).

3.4 Summary

Credit rating is an evaluation process that enables investors to share financial and non-financial information regarding the ability of firms to cover debt interest and capital repayments in a timely manner. Regulation has played an important part in establishing the success of the credit rating industry through NRSOR as one of the major sources of information for investors. Corporate governance increases this regulatory importance but at the same time competition is restricted by the difficultly of obtaining NRSRO status.

This chapter has reviewed the credit rating industry, including its history, and some key current issues that face the industry. Many steps and procedures have been taken by the credit rating agencies during the last ten years to improve the performance of credit ratings as measures of relative risk for the protection of the investors, but are they not intended to provide a measure of the absolute level of risk of an organisation or track all points through

the business cycle. The credit rating market is dominated by three major companies through NRSOR, although more credit rating information is required about the financial markets, for both domestic and foreign investors. Credit ratings appear to be relatively stable because credit ratings attempt to rate "through the cycle", but there is evidence that when ratings do change they are downgraded more frequently than upgraded; whilst changes and ratings of new issues tend to be procyclical, which have an enhancing effect on trading volume and value.

Standard and Poor's (2002), the international credit rating agency and financial services company, has undertaken systematic and comprehensive research into disclosure and international corporate governance patterns of major public companies around the world. They recommend that the use of sound principles of corporate governance will improve credit rating information which is timely, cost efficient and relevant to investors. This underlines again the importance of corporate governance and the informational content of credit ratings (Standard and Poor's, 2002).

Consequently, this chapter has provided an introduction to the nature of both credit rating and corporate governance to underpin the main objective of the study. Recognising both concepts will aid this investigation into the influence of applying recommended corporate governance codes of practise in the Jordanian environment on the credit rating of the Jordanian listed companies. Many corporate governance variables will be chosen from previous literature as being potentially important for use in explaining credit ratings. This relationship between CR and corporate governance will be discussed in detail in Chapters Four.

After discussing the nature of credit rating and corporate governance, the next chapter will present the empirical studies related credit rating and corporate governance.

CHAPTER FOUR: EMPIRICAL EVIDENCE ON CREDIT RATING AND CORPORATE GOVERNANCE

4.1 Introduction

In the last decade especially, many firms have grown to be more strongly interested in obtaining a higher CR, and compete with one another to that aim. In attempting to fulfill the wishes of all stakeholder companies, in response pressure from them, aspire to a higher CR in order to expand their investor base and to generate an increase in the share price.

The main aim of a corporate CR is an independent assessment of a firm's ability to generate future net cash inflows. These future cash flows affect the creditworthiness of the firm to the extent that they can cover debt service costs and principal repayments to bondholders in a timely fashion. So, the anticipated future cash flows to the firm are very important in measuring CR as they indicate the ability of the firm to meet its financial obligations. But it is not just about future cash flows, for a CRA depends on a variety of different information from public and private sources through both quantitative and qualitative corporate information. The CRA analyses those information using different methods to obtain final results on the CR, which represent to a large extent the opinion of the agency's rating about future cash flows to the firm and reflects the agency's opinion regarding the entity's creditworthiness pertaining to its financial obligations (Standard and Poor's, 2002; Gray *et al.*, 2006; Skaife *et al.*, 2006).

Many studies will be discussed in the remainder of this chapter. Summary tables of all studies discussed in this chapter are presented at the end of each section. These tables provide further details of samples and methodologies used and a short overview of research results. This

chapter is organised as follows: Section 4.2 reviews the determinants of credit ratings studies including prediction of credit ratings and bankruptcy. In section 4.3 corporate governance aspects are reviewed. Section 4.4 is devoted to the corporate governance effect on credit ratings. Finally section 4.5 covers the summary of the chapter.

4.2 Studies which Examine the Determinants of Credit Rating

This section considers studies that examine the determinants of CRs, and how they relate to both rating systems and rating agencies. As has been mentioned briefly, many discuss the process of CR applying financial accounting information to both quantitative and qualitative methods, which depend on the availability of the firm's information. These studies discuss and try to create an acceptable model of approach. They assume that the grades assigned by financial analysts of CRAs can be used to investigate the determinants of CR. Some of these studies try to compare products of CRAs, firm's CRs, different models, capital market conditions, accounting information and financial information. Many studies use different measures for credit rating, such as sovereign credit rating, and model long-term credit rating and short-term credit rating and so on (Poon, and Chan, 2008).

Most of the literature review discusses the determinants of CRs from the perspective of an entity rating for firms as well as a component CR (bond rating) through the use of different statistical models to differentiate between various grades of CR from different CRAs. Consequently, many studies have used different financial ratios to distinguish between low and high risk corporations through the use of Multiple Discriminate Analysis (MDA).

Indeed, some studies have used MDA models to explain firm bankruptcy, such as the classic one by Horrigan (1966) in the United States. Although most studies use MDA, other models have been developed, such as, ordered probit models, logistic models, a multidimensional

scaling approach (MDS) and factor analysis. For example, a multidimensional scaling (MDS) technique has been used for predicting firms' default, such as in studies by Mar-Molinero *et al.*, (1996), and Mar-Molinero (2001). Also Cheung (1996) has used an ordered probit model to explain CR by assessing various microeconomic factors.

Most studies have either made a comparison between different techniques or assessed the determinants of CRs, but few studies have used prediction models to test how effectively credit ratings of the major CRAs actually are in predicting the probability of default. These studies have shed light on determining whether or not bond ratings can predict financial distress, that is, whether low-rated firms are more likely to default than high rated bonds.

Research prediction accuracy regarding the correct model continues. Some models can be particularly complex but, of course, perfect prediction accuracy of credit is not possible. Yet, tendency towards sophistication is arguably preferred to a more conventional methodology, although the role of the analyst in making judgmental decisions as part of the ratings' input; is still needed.

Fons and Kimball (1991) present a model for predictive accuracy of lower CRs of defaulted issuers. They investigated the predictive accuracy of different classifications using Moody's CR application data during the period from 1970 to 1990. They found that on average, when default occurs, over the last twenty-one years, 4.2% of speculative-grade issuers defaulted within one year, which is compared with a rate between 4.2% and 0.07% of investment-grade issuers. On average, about 0.12% of issuers rated Aaa defaulted to 19.71 % of issuers rated B. The default rates for five year holding periods climbed uniformly, and for the average default rates for ten-year holding periods and fifteen-year holding periods the same pattern held confirming the intended objective of their study which showed that ratings do have predictive power for financial distress.

The CRs should reflect future cash flows to the firm, and gives the likely result of exposed corporate bankruptcies, although CR agencies argue that ratings do not infer corporate bankruptcy risk. A higher CR is a result of perceived strong future cash flows to the firm, and favourable financial accounting assessments. At the same time, a lower rating is more closely related to default, through poorer anticipated future cash flows than a higher rating (Gray *et al.*, 2006).

Prediction of bankruptcy should clearly have a crucial impact on a firm's CR. So, bankruptcy models play an important role in measuring and monitoring credit risk (Stein, 2002). Many previous studies contain a number of different measures and different models, which use financial accounting ratios and different information dependent on the available information on companies to predict a firm's credit rating and possible bankruptcy. Altman (1968) who is the pioneer for this branch of research explained corporate bankruptcy status in the US based on a set of accounting and financial variables and thereby improved the accuracy of traditional ratio analysis.

Given small differences in categorization classes, prediction of CRs is more complex than the prediction of bankruptcy, and tries to quantify the relationship between financial and industry data and CRs. Studies of bond rating prediction models for at least 40 years have been published, attempting to model agency credit ratings using financial ratios, non financial data, and qualitative information. A wide range of different methodologies has been used, which have evolved and become more sophisticated over time. Like the bankruptcy prediction models presented in the last review, CRs predictor models are vital for assessing and monitoring risk, A number of early studies have developed a statistical model based on historic and publicly available information, which helps in predicting the credit rating and chose either a regression-based approach (Pogue and Soldofsky 1969; West 1970) or

multivariate analysis (Horrigan, 1966). These studies assess credit rating applying available financial accounting information to both qualitative and quantitative methods, for example, through the use of a number of financial ratios such as net working capital, long-term debt/assets, and net income/total assets to replicate CRs. The relationship between CR and financial and industry data is widely reported in literature studies, and analysed through categorical dependent variables through appropriate econometric techniques.

Accordingly, Horrigan's (1966) two-step analytical approach was the first and main early study in this area to estimate and determine the characteristics of the bond issuing firms in order to predict their bond rating based on their financial ratios and characteristics of the bond rating. He used ordinary least-squares (OLS) regression on 9 grades of bond ratings with various combinations of variables, from selected accounting data, to predict the ratings of newly issued bonds as well as any changes in bond rating from 1961-1964. He could explain 65% of variation in the dependent variable and found that total assets had the most significant impact on bond ratings. The result of these predictions was correct for 58% of the Moody's rating and for 52% of Standards and Poor's rating. However, since Horrigan's study there are scores of studies that have extended his initial research using more sophisticated statistical techniques, such as logistic regression and probit models as discussed later, and a wider range of accounting and non-accounting variables.

In a classic paper, Pogue and Soldofsky (1969) used logistic regression analysis for the top four bond ratings as the dependent variable and selected accounting variables as the independent variables. They used only two of four rating categories at a time and assigned numerical values (1, 0) for the dummy dependent variable to two of the CR categories for bonds. This was in order to predict the probability of the odds ratio through the independent variables, namely, profitability, size, risk and leverage, and to differentiate between the two.

So, the model was based on the difference between an upper (Aaa and A) rating and a lower (Caa, and C bond) rating for which they coded the ordinal bond ratings onto an even interval scale, despite the fact that different rating grades do not fall at equal intervals on a scale from a low to high probability of default. Their study was based on small sample sizes of 10 bonds in each rating category. This study reports on more highly significant effects of leverage and profitability on bond ratings.

Discriminant analysis was first proposed by Fisher (1936) as a discrimination and classification technique. This was applied to credit rating by Horrigan (1966), but was later criticised by West (1970) as it mainly used only accounting variables as the independent variables, and there was a lack of reference to previous research in this area. Fisher (1959) went on to look at the determinants of the risk premium on corporate bonds. West (1970) developed a statistical model based on historic and publicly available information, which helped in predicting the CR using a regression-based approach, based on financial accounting information, namely, financial ratios representing four independent variables. These independent variables are of particular interest and represent reliability, capital structure and marketability. He applied a logarithmic estimation using bond ratings as in the dependent variable as Fisher's study. This study's R-square result was higher than Horrigan's results, with R-squares ranging 0.7 to 0.8. Furthermore, the simpler zero-one classification of Pogue and Soldofsky (1969) was not a criticism of the West and Horrigan models. Horrigan used accounting-based measures; indeed, Philips (1975) and Ross (1976) observed that bond rating processes rely on the firm's accounts. By contract West largely used market-based measures for the selection of the independent variables.

West's (1970) four ratios for the prediction of CRs correctly predicted 63% of Moody's ratings for a 1961 cross-section. Ang and Patel (1975) provided predictive evidence about the

bond rating method, the result of these predicting approximately 60-80% of their classified sample of 30 bond ratings correctly. The result of these studies succeeded in correctly predicting credit rating in the holdout sample for 55% of cases for Horrigan (1966) and 62% for West (1970).

Throughout the late 1970's and 1980's a variety of studies used MDA to predict bond ratings. The first was Pinches and Mingo (1973, 1975) and Altman and Katz (1976) followed a two-step approach for the allocation of rating to particular bond issues. In the first study, they used six variables after screening a set of potentially important independent variables such as size, leverage, long-term and short-term capital intensity, return on investment, earnings' stability, and debt coverage. They developed a bond rating model using factor analysis to determine the most appropriate financial and accounting variables to use for the subsequent multiple discriminant analysis. They found six factors encapsulating various measures, namely, issue size, long-term debt to total assets, net income to total assets, years of consecutive dividends, net income plus interest to interest, and subordination status taking a zero-one dummy variable. Subsequent research also used multiple discriminant analysis (MDA) to classify bonds into rating classes.

The second study [see Pinches and Mingo (1973); 1975] used multiple discriminant analysis (MDA) to analyse five Moody bond rating categories (i.e. Aa to B bond ratings) using financial ratios as input factors by constructing linear functions for categorizing bonds within rating categories, and differentiating between them via the 'between categories group variance'. Their model performed very poorly for Baa rated bonds, for which their model accurately predicted only 69% of the sample. Although using MDA gives different results for rating categories, the ordinal nature of CRs from higher ratings to lower ratings does not necessarily capture distinctions, such as AAA ratings reflecting more creditworthiness for the

firm than AA. But their new approach allowed them to slightly increase their prediction rate. As a result Pinches and Mingo (1973) succeeded in predicting approximately 69% of their sample correctly (compared to West's (1970) 63%).

Accordingly, Blume, Lim and Mackinlay (1998) also used an ordered probit methodology to categorize rated bonds according to Standard and Poor's rating categories. They investigated the accepted view of the hazard problem of default based on panel data for studying grades issued by rating agencies; they also used their model for studying changes in rating standards over time, using explanatory variables, such as interest coverage. For some the US credit rating assessments downgraded for both rating agencies, by persistently lowering perceived CR quality on by raising standards. Their findings supported the latter explanation.

Jackson and Boyd (1988) modelled bond rating behaviour using probit analysis. Gentry et al., (1988) also used probit analysis to estimate a model with a high classification accuracy using ratios and cash flow components. These models generally classify 55% to 65% of the hold-out sample correctly. Blume et al., (1998) findings disappeared, and in some cases, have been reversed. However, Reiter and Ziebart, (1991) concluded that poor performance of the models may be due to a prediction problem rather than an inaccurate agency estimated credit ratings. Of course, there are homogeneity issues, since these different findings were caused by different samples, it is impossible to determine which theory is correct; furthermore findings from investigations into Standard and Poor's ratings cannot be generalised for other CRAs, apart from the use of non-investment grade bonds and different methodologies (Amato and Furfine, 2004).

Ederington (1985) used an unordered multinomial logit model in his comparison of bond rating models comparing this to each of the statistical methods discussed so far. An unordered model allows the relative importance of different independent variables to vary

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across rating classifications but does not make use of the a priori knowledge that bond ratings are ordered. Ederington found that the ordered probit and unordered logit outperformed the models estimated using ordinary least square (OLS) and multiple discriminant analysis (MDA). The logit model performed best in the estimation sample where 70% of ratings were correctly classified, and on average probit and logit analysis correctly classified and about 14% more of the ratings than OLS or MDA. Gentry, Newbold and Whitford (1988) also compared these three methods in the analysis of bankrupt firms using cash flow data and confirmed the superiority of probit.

According to Matolcy and Lianto (1995), Blume et al (1998), and Gray et al., (2006) in the recent years credit rating assessments have increasingly downgraded rather that upgraded for both major rating agencies, by raising standards applied and by persistently lowering perceived CR quality. Matocly and Lianto (1995) used a cross-sectional regression approach to examine credit rating on a sample of non-financial Australian firms, by assessing how CR revisions were important to the stock prices through the incremental information content associated with the ratings. The main result of their study was a significant effect for incremental information content on the abnormal performance of a downgrade, but not for upgrades.

Cheung (1996) studied the relationship between the Canadian provincial debt ratings and several economic variables. She used an ordered probit model to explain the CR levels by analysing the relationship between economic variables and credit ratings by Standard and Poor's, and that the level of the CR depends significantly on the debt-to-GDP ratio.

Poon et al., (1999) analysed the determinants of Moody's bank ratings in June 1997 through a sample of 130 different Bank Financial Strength Ratings (BFSRs). This was timely due to Moody's Investors Services (MIS) offering a new rating service for BFSRs in 1995. This

study developed a suitable methodology by developing logistic regression models that help to explain and predict BFSRs through many accounting and financial variables. The main result of this study was to establish a relationship between bank's financial strength rating and selected variables, such as profitability, loan provision ratios, dimensions of risk, short term debt rating (STDR), and long term debt rating (LTDR).

Neural networks have also been used in CR studies. They are quantitative techniques motivated by the operations of the human brain as being influential in problem solving. Gately (1996, p. 147) defined neural networks as "an artificial intelligence problem solving computer program that learns through a training process of trial and error". Therefore, neural networks' building requires a training process, and the linear or non-linear variables in the training procedure help distinguish variables for a better decision-making outcome. In the credit ratings area, neural networks can be distinguished from other statistical techniques. A few credit rating models using probabilistic neural nets have been investigated (Dutta and Shekhar, 1988; Singleton and Surkan, 1990; Kim and Lee, 1995; Moody and Utans, 1995; Tu 1996; Chaveesuk et al., 1997; Shin and Han, 1999; Daniels and Kamp, 1999; Piramuthu 1999; Maher and Sen, 1997; Griffiths and Beynon, 2005; Kim, 2005). Dutta and Shekhar's (1988) study differed from earlier research as other studies usually predicted a wide range of rating categories. They used financial ratios and a qualitative measure to model bond ratings and compared results using classification techniques, such as linear regression model and a neural network. They distinguished between two groups of bonds: AA and non-AA. The neural network classified more correctly bond ratings than the linear regression model. In addition, whenever the neural network model misclassified a bond, it was off the mark by at most one rating class whereas the regression model was often off by several rating classes.

Singleton and Surkan (1990) used seven different financial ratios to compare the performance of a neural network with an MDA model. The neural network model had the highest correct classification rate when compared with the MDA model. Moody and Utans (1995) and Daniels and Kamp (1999), showed that neural networks can classify 60% - 70% of the observations correctly. By comparison, where the same data have also been used to estimate models using logistic regression, the results ranged from 60%-62%.

Chaveesuk et al., (1997) argue that, of the available statistical approaches, logistic regression is very well suited to modelling bond ratings. They compared results using a neural network with logistic regression and found that there is not much difference between the best neural network design and the best logistic regression model.

Kwon et al., (1997) developed the use of neural networks as a prediction modelling technique for credit rating by using an ordinal pairwise partitioning approach to improve the predictive performance of their neural network, which gave better results than conventional multivariate disciriminant analysis.

As with Dutta and Shekhar (1988) they showed that a neural network performs slightly better than the logistic regression in terms of correct classification. When the methods misclassified a bond, the logistic regression misses by more classes slightly more often than the network. Discriminant analysis has better classification ability but worse prediction ability, whereas logistic regression has a relatively better prediction capability.

Models for CR prediction have also been applied by Kim (2005). His study applied an advanced approach to predicting bond ratings based only on publicly available information that help to capture a dynamic relationship between input and output variables through many intervening variables. The main result of this study was that bond ratings could be predicted quite accurately, and critical variables were identified successfully.

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However, there are some studies which have used prediction models for non-corporate ratings. Similar methods have been applied to predict municipal bond ratings as a determinant for the credit rating. Accordingly, researchers have sought to investigate this relationship, one of the earliest studies having been conducted by Carleton and Lerner (1969) using multiple discriminant analysis. Loviscek and Crowley (1990) also used ordered probit models which were shown to be superior to discriminant analysis.

By looking at the use of the CR as a dependent variable and independent-related variables, Liu and Seyyed (1991) examined the impact of socioeconomic characteristics and bond ratings of a municipal bond issuer on its borrowing cost. Results of the study implied that borrowing costs are significantly affected by revenues, indebtedness and unemployment figures. In the Commonwealth of Virginia, Badu *et al.*, (2002) found a negative relationship between CR and net interest cost for municipal bonds.

Cantor and Packer (1996) examined the relationship between CR and determinants by analysing the rating assigned in the year 1995 through two rating agencies, namely, Standard and Poor's and Moody's. Testing various determinants for their influence on the actual rating, they used different economic factors, such as growth of GDP, income per capital, external debt, external balance, fiscal balance, inflation rate, indicators for economic development and default history on foreign currency debt. They examined the CRs of 49 sovereign bonds through the use of ordinary least squares regression analysis, and concluded that the different economic variables had a clear impact on sovereign CRs. They concluded that only per capital income, GDP growth, inflation, external debt, economic development, and default history play an important role in determining a country's rating. Bennell *et al.*, (2006) indicate that using neural networks for investigating sovereign CR are much better than ordered probit model, which considered the most successful econometric approach.

Adams *et al.*, (2003) used multinomial logit and probit model for examining the determinants of CRs in the UK insurance industry. They also investigated which insurance companies were more likely to seek a rating. For this purpose they used firm characteristics variables, such as leverage, profitability, liquidity, growth, company size and business activity. All these variables were significant in the determinants of the CR of the UK insurance firms; specifically they found that CRs were positively related to profitability, liquidity, growth and business type, and negatively related to leverage, company size and reinsurance.

In a recent study, Ashbaugh, Skaife *et al.*, (2006) used bond rating models as a basis for their selection of firm characteristic variables, and which focused on the impact of the strength of corporate governance characteristics on the CR of the firm. Their use of firm characteristic variables comprised leverage, return on assets, consecutive losses in the past two years, size, subordinated debt and capital intensity. All these variables along with selected governance variables were demonstrated to be significant in explaining CR differences. They found that credit ratings were negatively associated with the number of block holders and CEO power, and positively related to takeover defences, accrual quality, earnings' timeliness, board independence, board stock ownership, and board expertise.

Gray et al. (2006) used a similar approach to Blume *et al.* (1998). They used an ordered probit model to examine the relationship between CR and explanatory variables to categorize Standard and Poor's rated bonds for the period 1995-2002 on a sample Australian firms.. The main result of their study indicated that both leverage ratios and interest coverage had the most pronounced effect on credit ratings, whilst they also gave importance to the effect of profitability variables and industry concentration on credit rating, and the effect of financial variables on credit rating in discriminating between A- and BBB- ratings. Their results also confirmed Blume *et al.*, (1998) findings of increasing rating standards, which puts slightly

more weight on the theory that Standard and Poor's ratings' standards have indeed become more stringent over time. Appendix 4.1 contains a summary of previous studies.

The next section will briefly review of the literature according to the ownership structure, financial transparency and corporate governance and how they affect on credit ratings.

4.3 Review of Literature Considering Corporate Governance and its Relationship with Credit Ratings

4.3.1 Introduction

This section reviews several contributions from previous studies, joining together two subjects, namely CR and corporate governance. Many previous studies have investigated a corporation's CR by relating it to many variables, such as firm characteristics, and the cost of debt, (for example, see Horrigan, 1966 and Kaplan and Urwitz, 1979). These studies ignored the governance mechanism. Yet, corporate governance was introduced to safeguard the assets of the firm and the interests of stakeholders, such as shareholders and bondholders. Governance mechanisms are designed for regulating the relationship between managers and stakeholders, and controlling management behaviour in line with the interests of stakeholders. So, corporate governance attempts to address conflicts between managers and shareholders and between shareholders, and bondholders.

4.3.2 Why does corporate governance affect a firm's credit rating?

CRAs were established for the assessment of a firm's CR through standards and mechanisms based on a firm's ability to generate future net cash inflows to the firm. Consequently, the distribution of future cash flows between stakeholders, especially to bondholders is important. Rating agencies' assessments depend on the creditworthiness of the firm which in turn reflects its ability to cover debt service costs and principal payments to bondholders

through the probability of sufficient future cash flows. Consequently, a firm's rating depends on the strength of the future cash flows to the firm, and the likelihood of attaining future cash flows to the firm. A greater likelihood of default will lower its rating as a result (Ashbough-Skaife *et al.*, 2006).

Accordingly, it is pertinent to refer back to the seminal works of Jensen and Meckling (1967) and Watts (1977) regarding the separation between principal (owners) and agent (managers), because ownership may be distanced from control of a corporation's operations, yet at the same time there is a role for managers of a firm's business. This separation between two parties (stakeholders and managers) creates an agency problem.

This separation leads to information asymmetry problems between them and creates a moral hazard problem. Consequently, managers try to increase self-wealth by decreasing owners' wealth through consumption of perquisites, empire building, shirking, and overcompensation. Therefore, the conflict between both parties gives rise to agency costs, which are the costs of monitoring the management's behaviour in relation the firm's output, arising from contracting between these two parties.

According to the above, agency theory seeks to explain the separation of ownership and control in corporate organisations, and identify information asymmetry problems between managers and stakeholders and between bondholders and shareholders, leading to two types of agency conflict, which can lead to an increase in the risk of firm default with its effect on all stakeholders, especially bondholders, because of reduced future cash flows to the firm and its inability to service payments of debt which may in the end decrease in its value. Therefore, a higher default risk is a reflection of a lower CR triggered by CR assessments of lower future cash flows to the firm (Ashbough-Skaife *et al.*, 2006).

An agency theory framework posits a conflict between two types, firstly, between managers and shareholders, and secondly, between stakeholders, especially, between shareholders and bondholders (Jensen and Meckling, 1976; and Watts, 1977). This conflict between shareholders and bondholders is heightened by possible changes in future cash flows, arising because shareholders have incentives to undertake transfer of wealth to themselves by different methods at the expense of bondholders. However, the default probability associated with the variance of future cash flows can change as a result of wealth-transfer effects by shareholders to themselves that can take different forms. Bondholders would bear higher risk of default because of the change in future cash flows and suffer a worse situation compared with shareholders (Ashbough-Skaife *et al.*, 2006).

Accordingly, Ashbough-Skaife *et al.*, (2006) have argued that the corporate governance mechanism effect on CRs of the controlling performance of management leads to agency costs because of the conflict between the two parties, namely, managers and shareholders, and also because of the conflict between bondholders and shareholders. In order to reduce the agency conflict between those parties, recommended practices have been required by Standards and Poor's (2002), dealing with ownership structure and influence, financial stakeholder rights and relations, financial transparency, and board structure and processes.

Corporate governance arose to address the regulation of the relationships between all parties to an organisation, such as managers, shareholders and bondholders, through mechanisms and roles for independent monitoring of management to increase firm value by effective positive managerial decision-making and by a reduction in opportunistic management behaviour. Corporate governance directives should fetch benefits to all stakeholders by more effective managerial decision-making through limiting opportunistic management behaviour.

On the other hand, weak corporate governance mechanisms have an effect on the distribution of future cash flows to the firm through the default risk of payments to stakeholders that result from weaker governance. Weak governance leads to greater default resulting in a lower rating from agencies and so corporate governance plays a role in the application of better mechanisms to mitigate conflict between the interests of all parties, such as managers, shareholders and bondholders.

Thus, the corporate governance mechanism plays an important role in the regulation of the relationship between managers and all stakeholders. Additional importance is attached to the regulation of the relationship between bondholders and shareholders through better monitoring of management (Ashbough-Skaife *et al.*, 2006).

So, some authors have argued that some elements of governance mechanisms can have a negative impact on bondholders, such as when shareholders or subsets of shareholders are more likely to obtain more power in their hands (Fitch Ratings, 2004). Some parties to a firm can exercise power to influence the management of the firm by obtaining priority in distribution payouts and preferential treatment of other parties of the firm, such as shareholders, through dividend or share re-purchase or through greenmail to bring about a stock price increase to stave off an unwanted takeover (Dann and DeAngelo, 1983).

Consequently, some elements of corporate governance structure may give shareholders more power in influencing management decisions to invest in riskier projects, and engage in ownership structure changes leading to a negative effect on bondholders' interests. Use of this shareholder voting power can harm bondholders, by default of their expected future cash flows, and also the firm through an inferior risk profile, which can result in a lower CR. Shareholder rights, affecting wealth-transfers from bondholders to themselves because of shareholder practices, influence whether firms, for example, will approve a merger or

acquisition according to shareholder interests with potentially harmful effects on bondholders. Consequently, bondholders can be less secure and do not generally benefit from shareholders having greater power from governance mechanisms because of the implications of default risk for bondholders and credit rating (Asquith and Wizman, 1990; Warga and Welch, 1993; Ashbough-Skaife *et al.*, 2006). Many variables can be mentioned in terms of corporate governance. The next section discusses this issue.

4.3.3 Corporate covernance attributes

According to various authors, such as Shleifer and Vishny (1997), Gibson (2003), Singh and Vinnicombe (2004), and Al-Khouri (2005), many developing countries do not have much concern for the importance of corpoprate governance, yet there should be concern given the ways in which corpoprate governance is applied in the developed countries, especially the U.S.A and many of the European countries, and given the publications of empirical studies, which have highlighted the role of corpoprate governance in improving corporate behaviour. The more immediate challenge for the researcher is to determine the main variables, which pertain to corporate governance.

As the role of corpoprate governance because more prominent, many studies look for investigating empirically the relationship between corpoprate governance and many different aspects, such as: company performance (e.g., Kato and Long, 2005; Kula, 2005; Zheka, 2006; and Haniffa and Hudaib, 2006), company value (e.g., Al-Khouri, 2005; Shen *et al.*, 2006; and Huang *et al.*, 2007) and the effect on CRs (e.g., Sengupta, 1998; Bhojrajand Sengupta, 2003; Ashbough-Skaife., *et al*,. 2006). The previous studies on corpoprate governance tend to focus on one attribute, e.g., board independence, as opposed to studying a broad set of governance attributes intended to protect stakeholders' claims to firms' resources (Hermalin and Weisbach, 1991; Sengupta 1998; Bhagat and Black, 2000; Bhojraj and Sengupta, 2003). The

main objective of presenting these studies is to recognise the variables of corpoprate governance that have been examined.

Skaefe *et al.*, (2006) suggest that some variables may 'complement' each other in supporting stakeholders, whereas other governance factors may be regarded as 'substitutes'; yet their conclusions reveal that only governance variables may give rise to an 'omitted variables' problem.

In the light of such recommendations and of key corpoprate governance practices in Jordan it is important to select appropriate governance attributes that can be measured. It is essential therefore to focus on which variables represent the key features of good governance practices for Jordanian firms. Furthermore, Standard and Poor's international agency has under taken systematic and comprehensive research on corpoprate governance patterns, including 'ownership structure and influence', 'financial transparency and disclosure', and 'board structure and processes' (Standard and Poor's, 2002). They suggest that corpoprate governance attributes impact on firms' CRs.

4.3.3.1 Ownership structure and influence

Ownership refers to the combination of rights and responsibilities regarding a specific property. Yet, owners of companies typically do not manage the firm's assets especially in the case of large-public corporations. This leads to issues arising from a separation between those who own the businesses and those who run them. Professional managers (agents) are hired to operate the firm creating the potential for moral hazard problems between shareholders and their agents. This separation will transfer the power from shareholder to management who should be able to run the business more effectively (Monks and Minow, 2003). Agency-theoretic issues will be considered in more detail in the next chapter.

Institutional investors are considered as an important part of the corpoprate governance mechanisms, for institutional ownership is effectively a block-holder in the corporation with significant power to monitor the corporation executives (Lin *et al.*, 2007). Large institutional investors or block holders prefer to hold a more significant proportion of stock than individual investors, and will likely gain a strong equity or debt position in the business, which may to some extent constrain the freedom of companies in their decision-making. As such, they have an incentive to collect information and monitor managers which helps them in avoiding the free-rider problem. Institutional investors can monitor a firm's executives better than minority shareholders, to ensure that management practices lead to maximisation of firm value. They can be seen as the informed investors and they have ability to influence the firm's operations through pressure on management or in some cases even force out specific managers from the board using their special voting rights in the firm (Shleifer and Vishny, 1997). Ownership structure, according to Al-Ajlan (2005), represents an important factor in shaping the corpoprate governance systems in any country.

There are many factors, which have an effect on ownership structure in different countries, such as, culture, law, strategies, objectives and regulations (Stephanie, 2005). Consequently, there are some differences in the ownership structures between countries due to various factors, which shape ownership structure. Accordingly, Thomson and Pederson (1997; cited in Al-Ajlan 2005) argue that the differences in legislation from country to country affect companies' financial structure and consequently have an effect on the ownership structure. Additionally, there are differences in the capital market regulations in some developed countries. Also, there are many types of ownership structure, which include internal and external constituents, such as, ownership from outside (outside driven), ownership concentration (dominant or a large part of the ownership by the management), and ownership situation (inside driven). Thus, dispersion can generate conflict between different parties to

the corporation. Concentration of ownership refers to the group who has the most influence among the equity owners; consequently it reflects the power of shareholders to influence managers. Concentrations of ownership are likely to affect corporate control. Ang *et al.*, (2000) point out that as the ownership structure changes, the agency cost varies accordingly.

Demsetz and Lehn (1985) find no relationship between firm performance and concentration of shareholders. Morck, Shleifer and Vishny (1988a) find a non-linear relationship between the ownership of board members and firm performance. Pedersen and Thomsen (1998) examine the relationship between industry characteristics and ownership structure, their findings revealing a significant impact of industry characteristics on ownership structure. Thomsen and Pedersen (2000) proceed to investigate the link between the owner identity (including institutional investors, family, bank, corporations and government) and economic performance, their findings indicating strong evidence of a non-linear relationship between ownership concentration and firm performance, and evidence that identity of the owners can have an impact upon firm performance and strategy. Table 4-1 presents the main ownership variables.

Table 4- 1: Different categories of ownership structure

Definitions of ownership categories	
Dispersed (diffuse) ownership	No single owner owns more than 20% of the company's shares.
Dominant (concentrate) ownership	One owner (person, family, company) owns a sizable (voting) share (20% < share> 50%) of the company.
Personal/family ownership	One person or family owns a majority of the shares of the company.
Managerial ownership	Top management of the company owns the majority of the shares.
Government ownership	The local government owns a majority of the company.
Institutional ownership	The institution, such as a bank or insurance company, owns the majority of the shares of the company.
Foreign ownership	A foreign multinational owns a majority of the shares of the company.

(**Source**: Pederson and Thomson 1997, adapted)

4.3.3.2 The Board of directors' structure and presence

The role of the corpoprate governance inside firms generally follows the UK report from the Cadbury Committee (1992 and 2004). The effectiveness of a board is buttressed by its structure and procedures through the appointment of auditors, and the nomination and remuneration committees, and its regularity and frequency of board meetings. The board of directors is an important part of corpoprate governance. Fama (1980, p194), and Fama and Jensen (1983) defined the board "as a market-induced institution, whose most important role is to scrutinize the highest decision makers within the firm".

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Boards are accountable to shareholders, and are delegated by shareholders to monitor executives and to report on managerial activities to the shareholders (Aguilera, 2005). Due to the impossibility of calling widespread shareholders from different places to monitor managerial activities, so shareholders must rely on the board of directors to monitor executives to protect their interests by ensuring that companies are transparent and even to enable the shareholders to evaluate directors. A board of directors can influence firm governance, since its ability and position is related to the most important part of corpoprate governance through its link between shareholders and managers (Aguilera, 2005).

Previous research on board structure has focused on board size, board composition, board committee and leadership structure. Ashbaugh *et al.*, (2006) examined board composition and structure, and observed that the effectiveness of a board is buttressed by the role and independence of non-executive directors, director compensation and evaluation. However, their results suggest the need for more audit committees and independent directors, who should enable the firm to perform better and to provide greater credibility to earnings than firms with relatively more inside directors. There are empirical studies in several disciplines, which have investigated whether changes in board structure can influence outcomes that have significant implications for shareholders' interests of particular invests is a study by Young (2000), who examined the applicability of the Cadbury report on UK companies, which indicated that there had been changes in board composition through increased demand for non-executive directors, which have been more pronounced in firms classified as having excessively manager-dominated boards.

According to the above, superior firm performance is a result of the firm adopting better corporate governance than its rival in the market (Klapper *et al.*, 2004). In a nutshell good corpoprate governance generates better firm performance (Chen *et al.*, 2007), for firms that

have more independent directors will generally perform better than firms with more inside directors. On other hand, there are some researchers with adverse results, such as Baysinger and Butler (1985) and Hermalin and Weisbach (1991), who find no significant relationship between outsiders on the board, board composition and selected corporate performance measures.

Less conflict of interest among participants of a corporation leads to better performance of firm value. Baysinger and Butler (1985) argue that certain factors are important to increasing firm performance through good corpoprate governance, including agency control costs, such as, corporation law, product and capital market competition and the structure of the managerial labour market. Agarwal and Knoeber (1996) add a fourth reason, namely, the debt policy of the firm. They perceive that directors are worried about the market's perception of their abilities, but that greater transparency of the firm's specific situation is opened to the market so that shareholders will trust their judgement in maximising firm value.

The board, composed of a numbers of directors, provides a bridge between shareholders and managers, and thus can be defined as "the link between the shareholders of the firm and the management entrusted with undertaking the day-to-day operations of the organization" (Taylor, 2001, p.137). There are differences between inside directors and outside directors in the extent to which they can override management decisions that threaten shareholders' interests, for boards composed largely of inside directors are less able to override them. The board is held accountable to its shareholders, and are delegated by shareholders to monitor executives and report the managerial activities to the shareholders (Aguilera 2005). Yet, insider directors are work-related to the CEO, but board independence increases the board's overall power in its dealings with the CEO.

Board composition will influence the monitoring function of the board. Investors consider the monitoring role of the board which, if composed almost entirely of independent directors, is a sign of good corporate governance (Black *et al.*, 2001 and 2002). There are some studies which have equated structural board independence with board power, while others have discussed how CEOs exploit structural bases of power to maintain ultimate control over the board.

Independent directors or outside directors are important for no-one can effectively monitor the executives' self-dealing activities or replace the poor performing CEOs and top management, if necessary (Black *et al.*, 2001 and 2002). CEOs may use their leadership position on the board to dictate the agenda of board meetings and otherwise minimize dissent (Lorsch and MacIver, 1989). Independent directors are noted for their ability to bring greater transparency, accountability and efficiency to corpoprate governance (Aguilera, 2005; Lin *et al.*, 2007).

On the contrary, a board controlled by a greater proportion of independent directors has greater propensity to replace the CEO with poor performance than a board which is dominated by a greater number of insiders (Fich *et al.*, 2006). Furthermore, independent boards limit the concealment of negative outcomes in letters to shareholders (Abrahamson and Park, 1994). There is some evidence to support putting CEO pay more at risk through board independence and reducing the adoption of incentive plans that falsely appear to align management's and shareholders' interests (Westphal and Zajac, 1994).

The scandals and new legislation have had a significant effect on the board structure in the USA, which has led to a reduction in multiple directorships and fewer cases of interlocking directorships, and board size becoming smaller and more independent (Chhaochhari and

Grinstein's, 2004). Outside directors are helpful in determining the board's effectiveness in corporate governance (Pritchard, 2002; Ferris et al, 2002; Fich and Shivdasani, 2006).

Through using 969 firms obtained from Standard and Poor's database as at 1996, Griffith (1999) finds strong evidence of a non-linear relationship between insiders on the board and firm value. Yet, there are some studies which have found no significant relationships between board of directors and firm performance/value. Dulewicz and Herbert (2004) study the relationship between firm performance and independent governance variables, such as board size, number (and proportion) of the independent directors, board tenure, pay, leadership structure, board committee and find no significant relationship except for the proportion of inside directors. They proceed to suggest that "there may be some critical threshold for the appropriate number of executive directors; one that enables those who are not over-stretched with executive responsibilities better to fulfil their boardroom roles and, thereby, enhance the firm performance" (Dulewicz and Herbert, 2004 p. 270).

Klein (1998) examines the relationship between composition of the overall board and firm performance, and the result of this study is of no significant relationship between composition and firm performance. Table 4-2 presents key variables relating to the board of directors.

Table 4-2: Summarises the most important factors which are related to the board of directors

Definition of board of directors' variables	
Board size	The number of members who serve on the board as directors
Board composition	The number of outside (non-executive) directors or the number of inside (executive) directors to the total number of directors.
Board duality	The chairman of the board serve at the same time as CEO
Family representing in the board	The number of members who belong to the same family in the board
Foreign member in the board	The number of foreign members on the board to the total number of the directors.
Cross-holding of directorship	The director on the board of one company who sits on another board(s) of another company.

(Source: Pederson and Thomson 1997, adapted)

4.3.3.3 Financial transparency and information disclosure

Financial transparency should radically deal with asymmetric information arising from the role-separation of management from providers of long-term capital (Merton, 1987). This should have a beneficial effect for shareholders through a reduction in the cost of equity (Botosan, 1997) Furthermore, there may be additional beneficial effects through a reduction in perceived uncertainty by investors (Coles *et al.*, 1995).

Accordingly CR is regarded as an effective tool for monitoring the company using reports issued by the CRA, which impartially shows the level of the company's CR. In the context of CR, it can be noticed that credit rating is one of the various monitoring devices used to reduce agency costs (Gonzalez, 2004). Consequently, CR works to mitigate the severity of the problem of information asymmetry between agents and principals, because managers have an incentive to try and show the company's best profile, indicating that they are acting in the

interests of stakeholders, in particular owners. On the other hand, owners would want to encourage and stimulate managers to earn a better score from the CRA. As to owners and management, managers should work with owners to earn the best grade from the CRA, which should help mitigate conflict between all stakeholders (Jensen and Meckling 1976 cited by Skaife *et al.*, 2006). A higher CR reduces information asymmetry and improves the financial outcome arising from a reduced applied agency theoretical effect. So, that reduces agency costs via the credit rating impact. Consequently, organizations have widely accepted compliance work with the mandatory agency credit ratings' requirements, and voluntarily have improved the grade of their CR. As a result, this has led managers to reduce agency costs by achieving the aim of the organisation to obtain a higher CR from an agency.

This aim of a high CR motivates managers to apply standard mandatory CR requirements. Consequently, it can be expected that credit rating practice will be associated with some variables, such as firm characteristics and financial transparency disclosure effects via agency theory (Skaife *et al.*, 2006).

External monitoring is costly, and so clearer financial transparency can be beneficial in mitigating such monitoring costs with the consequential agency theoretical reduction in the cost of equity. Accordingly, a number of authors have stressed the importance of providing high quality information (Leuz and Verrecchia, 2000 and 2005). As to the cost of debt, Sengupta (1998) found that better disclosure reduced the cost of debt. But it is not just the provision of information that is important, for investors need to be assured that good governance practices are established within companies, so that they can rely on that intermediation. That assurance can be translated into a lower cost of equity (Barth and Landsman, 2003).

Clearly, good corpoprate governance practices should help prevent expenditures on excessive perquisites by insiders of a corporation, and hence should result in higher net cash flows being available for shareholders. Implications for the cost of equity and debt capital have already been addressed to some extent by other researchers, as indicated above, but a more comprehensive understanding is arguably needed. But if pre-suppositions are acceptable, then there should be strong link between corpoprate governance and CR, for the corpoprate governance related drivers of risk-reduction (of the cost of equity and debt) are similar to these of CR enhancement (Gomper *et al.*, 2003 and Durnev and Kim, 2005).

It has been posited that there is a direct link between the issuance of information, that is both pertinent and timely, and a higher CR being assessed. Indeed, Sengupta (1998) investigated this proposition by evaluating Association for Investment Management and Research (AIMR) disclosure ratings of firms, and found that firms with higher disclosure ratings were charged lower interest rates on their debt. He argued that the lower cost was due to a reduction in information risk which in turn reduced the credit risk perceived by their bondholders. Furthermore, the enhancement of information disclosure might be effected by the enlargement of institutional shareholders and account their own needs and preferences.

But there are mechanisms that can protect external stakeholders from the full extent of the consequences that would otherwise arise from financial expropriation. These have been identified, for example, by La Porta *et al.*, (2000) as good corpoprate governance practices, which should be able to keep the cost of capital relatively low and the credit rating relatively high. La Porta *et al.*, (2000) assert that good disclosure practices, of high financial transparency, reduce the risk of financial expropriation by insider-managers, and they make the point that it is the non-diversifiable element of that risk that is pertinent to widely diversified shareholders. But the temptations facing managers are greater when their own

investment opportunity set is restricted. So, in a recession managers have fewer good investment opportunities and are arguably more likely to be compensated through financial expropriation. The stronger the economy, and the stock market, the wider their own indulgence in such behaviour, (see Johnson *et al.*, 2000; Durnev and Kim, 2005). It follows that there is a negative association between managerial expropriation and overall stock market performance, which would suggest that investors would demand a higher rate of return by way of compensation. Yet, good corpoprate governance should mitigate such effects, and should beneficially impact upon CRs accordingly.

Good disclosure practices, with high financial transparency, should also lead to a reduced cost of equity through a reduction in stakeholder cost associated with monitory the behaviour of insider-managers. Lombardo and Pagano (2002) argue that such costs are necessary to safeguard the expectation of a sufficient return on investment emanating from the strategic and operational decision of the insider-managers. Once again, a higher return is demanded by stakeholder, as compensation. However, good financial transparency obviates the need for close monitoring of managers by stakeholders, and lessens costs associated with the time and effect of such monitoring. This should feed through into a lower cost of capital and a higher CR.

As many studies have shown, good corpoprate governance practices may reduce the information asymmetric induced agency costs particularly pertaining to the quality of financial information provided. A number of authors, namely, Diamond and Verrecchia (1991) and Leuz and Verrcchia (2000), posit a negative association between downside risks with beneficial repercussion for the raising of new capital on the stock markets.

Standard and Poor's (2002) suggest that attributes of corporate governance impact on firms' CRs, which incorporates research into corporate reporting under the two related themes of

transparency and disclosure. The key characteristics of Standard and Poor's transparency and disclosure measurements, rankings and methodology are based on an assessment of the qualitative aspects of corpoprate governance practices of a company. Transparency and disclosure rankings are developed from an analysis of company annual reports and their sample covers companies in emerging markets (Asia, Latin America, Central and Eastern Europe, and Africa) as well as developed markets (Europe, developed Asia, and the US).

According to the above, its own corporate financial transparency disclosure practice could help the firm attain a higher rating leading to a reduced cost of capital, yet many researchers find a negative relationship between the corpoprate governance level and the cost of capital. Reverte (2007) indicates that the better governed firms will generally enjoy a lower cost of equity capital in Spanish capital market. Chen *et al.*, (2009) find evidence that firm-level corpoprate governance has a significantly negative effect on the cost of equity capital. Regarding the cost of debt component, Ashbaugh-Skaife *et al.*, (2006) find that weak governance can result in firms incurring higher debt financing costs after controlling for firm-specific risk characteristics.

4.3.4 Corporate governance literature in Jordan

There is no evidence of empirical studies on CR related to institutional ownership, or ownership structure in Jordan. However, earlier studies examining the Jordanian market have considered the impact of ownership structure on firm valuation (Al-Khouri, 2006), default risk (Zeitun and Tian 2007), and the effects of ownership concentration and board characteristics on performance (Aziz and Mahmoud, 2009).

Zeitun and Tian (2007) investigated the effect of ownership structure on firms' financial performance and default risk. Their sample was composed of 59 Jordanian firms listed on the ASE for the period from 1989 to 2002. The study used two pooled regression models. The

first model uses firm's financial performance including return on assets, return on equity, market-to-book, and Tobin's q as dependent variables, while the second model is a logit model to capture the probability of default. The empirical results show that there is evidence of a positive relationship between ownership concentration and firms' financial performance, and there is a negative relationship between government ownership and firms return on equity. The second model shows a positive relationship between ownership concentration and the probability of default; on the contrary, government ownership has a negative effect on firms' probability of default. Finally, only growth and profitability have a significant impact on the probability of default. Zeitun and Tian (2007) conclude that reducing government ownership may increase firms' financial performance, but this may induce some firm to be bankrupted. Their study was extended by Zeitun (2009) to an analysis of the impact of ownership structure on the performance of Jordanian firms from 1989-2006 and he found a negative association between concentration and firm performance.

Al-Khouri (2006) explores the relationship between the identity and concentration of different blockholders and firm value for 89 industrial and service firms listed on the Amman Stock Exchange (ASE) over the period 1998-2001. The study examines the role of block holders (institutional investors who are not on the board of directors versus institutional investors who are on the board of directors), the ownership of the board of directors, and the financial policy (capital structure) of the firm, in controlling managerial actions which lead, on average, to better firm valuation in the emerging market of Jordan. The result of the simple regression showed a significant and positive relationship between the ownership of the board of directors and firm value. Also, the study found a positive and significant relationship between firm value and ownership by institutional investors whether or not they are on the board of directors. However, there was no significant relationship between ownership by management and firm value. The results of the piecewise regression analysis indicated a

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positive and significant relationship among the ownership of securities above 25% by the board of directors and firm value.

Aziz and Mahmoud (2009) examined the effects of ownership concentration and board characteristics on the performance of firms domiciled in Jordan through employing two OLS regressions on a sample of 103 firms listed on the ASE the for financial years 2002-2005. The results find that ownership concentration, multiple directorships and board size are each positive and significant in determining firm performance, by both accounting-based and market-based performance measures. Their results are in-line with earlier studies on Jordanian market (Al-Khouri, 2006; Zeitun and Tian, 2007; Aziz and Mahmoud 2009). Appendix 4-2 presents a summary of previous studies.

4.3.5 Studies that examine the impact of corporate governance on credit ratings

There are some studies, which investigate the effect of corpoprate governance on bond rating and the cost of debt financing, such as those by Sengupta (1998) and Bhojraj and Sengupta (2003); but according to these studies the set of variables excluded corpoprate governance factors. According to Sengupta (1998), who explored the impact of corporate disclosure quality on the cost of debt, there is a significant relationship between corporate disclosure quality and yields on new debt issues, and a significant negative relationship between corporate disclosure quality ratings and the cost of debt financing.

On the other hand, Bhojraj and Sengupta (2003) investigated the effect of corpoprate governance on bond ratings and yields. They demonstrated a positive relationship between credit ratings and two corpoprate governance variables, namely, the number of outside directors on the board and the proportion of institutional ownership, and a negative relationship between these variables and bond yields on new debt issues. They further found

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that the higher the institutional shareholdings, the higher are the ratings on their new bonds and the higher is the ownership of outside directors on the board.

However, there is a study by Ashbough-Skaife, et al., (2006), which is worthy of special consideration and which extends the two studies discussed above. They investigated the effect of many corpoprate governance variables on credit rating, and is broader in scope than any previous study, for they also investigate two areas of conflict, namely, between shareholders and managers and between shareholders and bondholders. They found that a firm's CR is positively associated with the degree of financial transparency, board independence, board ownership, board expertise and weaker shareholder rights, and negatively associated with the presence of block holders with more than 5% ownership, and CEO board power.

Corporate governance from the perspective of bondholders is very important, because the bondholders, who provide a major source of capital. Accordingly (Gompers et al., 2003; Fitch Ratings, 2004; and Ashbough-Skaife, et al., 2006) have conducted investigations into the relationship between stakeholders and managers, between shareholders and bondholders, and the impact of conflict between them on CR, the cost of equity capital, management, shareholders, bondholders and share value.

Fitch Ratings (2004) investigated credit policy, evaluating corpoprate governance from the bondholders' perspective, and investigated the relationship between shareholders and bondholders as a result of the conflict between them. But although good corporate governance can help provide higher CRs through mechanisms to monitor management who in turn to create strong future cash flows to firm, firms with governance factors that strengthen shareholder rights might find it difficult to attract bondholders. This is due to conflicts between them, including wealth transfers from bondholders to shareholders.

Generally, Klock *et al.*, (2004) and Ashbough-Skaife, *et al.*, (2006) found that corpoprate governance gives shareholders more benefits through wealth redistribution effects from bondholders to shareholders.

The past four decades have witnessed the increased importance of CR for many different parties who depend on reports from rating agencies. This importance of credit rating motivates many researchers to discover this area, and its potential usefulness for both corporations and stakeholders (Ashbough-Skaife *et al.*, 2006). Table 4-3 summarises to key previous corporate governance and credit rating studies.

Table 4- 3: Summary of two key previous studies of corporate governance and credit rating

Study	Independent variables corpoprate governance	Main results
Bhojraj and Sengupta (2003).	number of outside directors on the board and institution ownership;	positive relationship between credit ratings and the number of outside directors on the board and the proportion of institutional ownership;
Ashbough-Skaife *et al.*, (2006).	Four components of corporate governance as used by standard and poor's: ownership structure and influence, financial stakeholder rights and relations, financial transparency, and board structure and processes;	credit rating negatively associated with number of block holders and CEO power on the board, and positively related to weaker shareholders rights, degree of financial transparency, overall board independence, board stock ownership and board expertise;

4.4 Summary

This chapter reviews previous studies which discuss the subject of credit rating. These studies are classified into two parts. The first dealt with empirical studies which examine the determinants of CR either in one country or in more than one country and applying different models. The second expand the first group of studies in another direction by investigating the

key factors that impact on CR, namely, via the corporate governance mechanism. Many empirical studies have studied the relationship between corpoprate governance and different firm aspects but they tend to avoid CR and focus instead upon other factors, such as firm performance and stock price. The corporate governance literature pertaining to Jordan as an emerging market is also reviewed.

The results of these various studies are summarised and reveal the need for further examination of the effects on CR of potentially important factors, namely, ownership structure, financial transparency (including disclosure) and corporate governance. It is found that to the best of the author's knowledge there are no other studies on the impact on CR of this combination of factors within the Jordanian environment. Finally, regarding the impact of the corporate governance effect on CR outside of Jordan, only two studies investigate the relationship between corporate governance, ownership and/or financial transparency, and CR. Thus, in this chapter previous pertinent empirical literature has been reviewed which forms the backdrop to this study.

The next chapter presents a brief review of the Jordanian listed corporations and their environment, including the role of the Amman Stock Exchange (ASE).

CHAPTER FIVE: THE JORDANIAN ENVIRONMENT AND STOCK MARKET

5.1 Introduction

The purpose of this chapter is to present an overview of the Jordanian environment and to obtain a brief insight into some aspects of the environmental, cultural and economic factors of Jordan. Furtheremore, determining the characteristics of the selected county helps in recognising the importance of credit rating and corporate governance in the Jordanian environment.

Jordan is an interesting choice as a result of the changes in the Jordanian economic environment, the newly established Jordanian capital market, and the developments of technological communication investments, which provide a suitable environment for the current empirical investigation of this study. This chapter will discuss aspects of the general framework of the Jordanian environment, and an overview about the Amman Financial Market (AFM), which contains three different parts: Amman Stock Exchange (ASE), Jordan Securities Commission (JSC) and Securities Depository Centre (SDC), will be presented. Before discussing these issues, background about Jordan, its economy, the investment environment and the privatization programme will be described. The next sections will cover these aspects.

5.2 Geography and Location

Jordan has a strategic location; it is located in the middle of Arab Civilizations. It lies at the heart of the Middle East. Jordan is a part of the richly historical Fertile Crescent region.

Its borders are Syria in the north, Iraq in the north east, Saudi Arabia in the South East and the West Bank and Philistine in the West. Thus, Jordan, as an Arab country is considered to have a strategic location which shares the longest border with Philistine and the West Bank. Furthermore, Jordan is strategically positioned at the convergence of Asia, Africa and Europe. (See Appendix 5-1)

5.3 Socioeconomic Overview

According to the World Bank, Jordan is classified as a lower middle income country. The currency has been stable with an exchange rate fixed to the U.S. dollar since 1995, and the capita GDP was approximately 1,961 JD for 2007[4].

Jordan's highly literate, well-educated population combined with socio-economic reforms undertaken in the last 20 years have produced remarkable growth rates, with a 7 per cent increase in the GDP in 2005, and growth from 5.6 per cent in 2006 to 5.0 per cent in 2007. However, a study conducted by the Department of Statistics (DOS) in 2005 illustrated that the general unemployment rate stood at 14.8 per cent: 12.8 per cent for men and 25.9 per cent for women. The proportion of people unemployed for a year or more stands at 20.9 per cent while the proportion of unemployed persons between the age of 15 and 24 years of age stands at 53.8 per cent[5].

Private investment reached US$2.5 billion in 2006, compared to US$1.05 billion in 2005, and US$589 million in 2004, and 3 billion in 2007. The fastest growing sectors in 2006 were manufacturing (16.7%), construction (13.1%), telecommunications and transport (11.8%), electricity and water (10.7%), wholesale, retail, restaurants and hotels (9.9%), and the

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[4] http://www.imf.org/external/np/ms/2007/043007.htm

[5] Jordanian Department of Statistics: http://www.dos.gov.jo/dos_home_a/main/index.htm

financial and real estate sectors (9.4%)[6]. Jordan's Human Development Index ranked as ninth among nineteen countries in the Arab region, where seven of the eight higher-ranking countries were the beneficiaries of revenues from oil and gas exports. Latest figures of economic growth show the relatively high standard of sustainable development that the country has been able to attain and sustain in the past ten years despite the rapid economic growth[7]. In Jordan, there are three separate powers including: (1) legislative power: bicameral national assembly consists of: house of notables (the senate): 55 seats appointed by the monarch for a four-year term; and House of Representatives: 110 seats, six of which are for women, elected for four-year terms. The last election took place in June 2007 and the next is being held in 2011, (2) the Juridical Power: the legal system in Jordan is based on Islamic Law and French Codes, consists of the Court of Cassation and Supreme Court (Court of Final Appeal). In addition, religious and personal courts are available for Muslims and Christians in Jordan and (3) executive power: which is accountable to a legislative power, and which is vested in the Council of Ministers, which is appointed by the King.

The Jordanian economy combines both negative and positive aspects. Suwaidan (1997) argued that the limited natural resources, small size of domestic markets, political conflict in the region more than five decades, and the reliance on foreign aid are examples of negative aspects. Meanwhile, the positive aspects include the high level of human resources development, an efficient infrastructure, a free-market policy, several major tourism sights and an open-minded leadership.

Statistical data issued by the Jordanian Department of Statistics indicate Jordan's major exports commodities are clothing, phosphates, fertilizers and potash, while the major imports

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[6] http://www.dos.gov.jo/dos_home_a/main/index.htm

[7] http://www.iiz-dvv.de/index.php?article_id=208&clang=1

commodities are crude oil, textile, fabrics, machinery and transport equipment. The primary

export partners are USA (29.3%), Iraq (15.5%), India (8.5%) and Saudi Arabia (5.9%), while

the primary import partners are Saudi Arabia (21.1%), China (8.1%), Germany (7.2%), USA

(6.3%) and South Korea (4.1%). In 2008, the total exports were $ 4,226 billion, whereas the

total imports were $ 8,681 billion. The value of national exports was estimated by 37.7 % and

the re-exports was 29.4 % during 2008 compared to 2007. In contrast, the value of imports

has risen by 23.2 % during 2008[8].

The Jordanian economy has shifted in this period to the capitalisation which encourages

creativity and skills of its people; this led to strong stabilization, structural reform programme

and dramatic progress in boosting exports and reducing imports through increased GDP.

According to this policy, the economy is market-driven and aimed to attract both Arabic and

foreign capital to invest on the Jordanian projects. Therefore, it has shifted the structure of

Jordanian economic activity from depending heavily on external relationships and aids, into

concentrating more on the restructuring of internal affairs and the consolidation of Jordanian

external trade relations with regional and international countries.

The deficit in the trade balance has risen by 14 % during 2008 compared to 2007, therefore

the imports coverage by the exports stood at 46.1 % during 2008. Meanwhile, the imports

coverage by the exports was 45.3 % during the first eleven months which means an increase

by 0.8%. Furthermore, Jordan is dependent upon other countries for oil and gas supplies. Iraq

has been a key supplier, but during the last decade Jordan has benefitted from supplies of oil

from Saudi Arabia and other gulf countries. Nevertheless, Jordan has during the last five

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[8] Source: CIA- The World Factbook-Jordan: https://www.cia.gov/library/publications/the-world-factbook/geos/jo.html

years revitalised its agreement with Iraq concerning oil imports. As to natural gas supplies, northern Jordan has been pipe-linked with Egypt via the port of Aqaba[9].

The Jordan government adopted a comprehensive economic reform program, with the International Monetary Fund in 1999 to increase the economic development and performance rates and to correct the structural imbalance in the economy and to reduce the impact of the Gulf Crisis. The package of economic reform includes; liberalization of trade and capital flows, banking and financial sector reform, public enterprise reform and privatization. In addition, it takes multiple steps to make the Jordanian securities market free from the restrictions. Among these steps: encouraging the investments of private savings, increasing investors' protection and enhancing the banks' role in simulating the capital markets through the establishment of mutual funds (Goussous, 2002a).

The Jordanian economy succeeded in achieving a number of positive indicators. For example, since 2000 the economic growth has been improved through light manufacturing products exports. The government has increasingly paid attention to economic issues. The top priorities were economic development and reform, integration with the international economy and creating favourable investment climate. In this context, in December 2001, Jordan started Free Trade Agreement with the U. S. A, will take effect on all goods and services by 2010 (Oviatt, B., 1988).

This agreement undertakes more open markets in different sectors such as communications, construction, finance, health, transportation and services, in addition to updating the economic and financial regulations to international standards and protecting intellectual

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[9] Source, and for further information, see U. S. Department of State: Bureau of Near Eastern Affairs: http://www.state.gov/r/pa/ei/bgn/3464.htm

property (Central Bank of Jordan, 2000), this agreement with U. S. A, and EU, the countries in the region have significant effects on the diversity of Jordan's economy.

Jordan is moving from the traditional economic resources (i. e. exports of phosphates and potash, overseas remittances and foreign aid) to a more open market and private-sector development plan. In addition, information technology and tourism are other promising growth sectors. Aqabe Special Economic Zone, which is under a low tax regime, is considered to be a framework of private sector economic growth. The government's efforts to improve the economy have achieved significant results. Appendix 5-2 illustrates the main economic indicators during the period 2001-2008.

5.4 Economic Indicators

Appendix 5-2 shows that the Jordanian economy has achieved a remarkable performance during the last eight years (from 2001to 2008). The GDP at current market prices increased from JD 6363 million in 2001 to JD 141864 million in 2008. Furthermore, the growth rate of GDP at constant market prices increased from 5.3% in 2001 to reach 5.6% in 2008. Moreover, the growth of most economic sectors has led to the growth of GDP. Indeed, this growth was reflected in the per capita GDP in real terms, which grew by 4.6% in 2005, maintaining the same recorded real growth as in 2004 (see Central Bank of Jordan, Annual Report, 2005). For the inflation rate, it has increased from 1.8% in 2001 to reach 14.6% in 2008. However, this increase is still at a satisfactory level. In addition, the currency has been stable with an exchange rate fixed to the U. S dollar since 1995 at JD 0.708-0.710 to the dollar.

Some factors impact negatively on the economy, such as the terrorism phenomena, overspending, Asian crisis and decline of international oil prices. These factors have

impacted negatively on the economy. Additionally, the attack on World Trade Centre in New York in 11th September 2001 has a detrimental impact on trading and the Jordanian economy. Consequently, Jordan has adopted comprehensive economic reforms in order to improve its economic performance through setting up the appropriate legislative and legal environment for economic activity that will attract foreign and local investors. The establishment of a favourable investment environment is essential in order to improve the country's economic performance.

In 1997 Jordanian economy has shifted from public towards privatisation which encourages the private sector and a redefines the role of the government in the economy. When the Executive Privatization Unit was established with aims to enhance enterprise efficiency, reduce the Jordanian government's stake in public sectors by selling its shares to technically advanced strategic investors, deepen and develop the financial market through public share offerings reduce subsidies and consolidate public finances. According to this policy, the economy will become market-driven and aim to attract both Arabic and foreign capitals to invest in the Jordan projects. Therefore, the private sector role increased again in this period and the public sector role began to diminish (Goussous, 2002a; Kanaan and Kardoosh, 2002).

The benefits amount from privatization program counts more than $1 billion. Most of the privatized companies in Transport, Electricity, Water and Telecommunications are sold through investor sales, asset sales, liquidations as well as long term leases, while the other either through majority or minority initial public offerings. The government commenced its privatization system, which removed its direct participation in the production sectors and allows the private sector to manage these in a more efficient and cost- effective manner based on fulfilling certain criteria.

By 2000 the government continued to improve the legislative and structural environment of the ASM, to enhance the disclosure and transparency on the one hand, and protect investors' rights on the other. Additionally it applied comply with the International Financial Reporting Standards. As a result of all these steps undertaken by the ASE beside the economic reforms steps applied by the government, the market capitalization grew remarkably from 5 billion JD in 2001 to 26 billion JD in the 2008. The following sections will discuss the Framework of Jordanian Financial Market structure to recognize the basic characteristics and the regulations which monitor its transactions[10].

5.5 The Framework of Jordanian Capital Market (JCM)

This section discusses the legal framework of the Jordan exchange structure, the type of securities and the listing and trading rules.

5.5.1 Amman Financial Market (AFM)

This section discusses the legal framework of the Jordan Financial Market and addresses the empirical evidence for the development of the Amman Stock Market (ASM), and the development of the Jordanian capital markets, polices, and programmes.

The Amman Stock Exchange (ASE) is considered to be one of the up-to-date emerging exchanges with a market capitalization of 226.30 of the country's GDP at the end of 2008. The foreign ownership represents 49.2% of the listed stocks[11].

The role of AFM was secondary until 1999. During that period, its main role was to facilitate the re-emergence of Jordan's capital market by providing leadership to market institutions,

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[10] www.menafn.com/updates/research_center/Jordan/.../ci040109.pdf

[11] http://www.jsc.gov.jo/overview.asp

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educating potential investors, and strengthening the legal, regulatory, and operational infrastructure.

At the same time, Jordan's economic restructuring program, in particular privatization of state-owned companies, accelerated the growth of the market. The main objectives of AFM is mobilizing savings by encouraging security investments, by monitoring the market to ensure transparent and fair trading in securities and to deter fraud, regulate the granting issuance and trading of securities through applying disclosure requirements in accordance International Accounting Standards, provide the necessary data and statistics to growth and development AFM objectives and protecting rights of minority shareholders.

5.5.2 Development of the Jordanian Capital Market

The History of Jordanian Capital Market can be summarised as follows:

Table 5- 1: The History of Jordanian Capital Market

The History of Capital Market can be summarised as follows	
1930s	Trading in Securities started informally.
1976	Amman Financial Market (AFM) was established.
1978	AFM started operations.
1997	Capital Market Reforms introduced, Securities Law issued.
1997	Jordan Securities Commission (JSC) was established.
1999	Amman Stock Exchange (ASE) was established.
1999	Securities Depository Centre (SDC) was established
2002	New Securities Law Issued.

Source: www.ammanstockexchange.com

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5.5.3 Jordan Securities Commission (JSC)

The Jordan Securities Commission is a public regulatory body in the capital market, established in October 1997. The JSC aims to supervise the issuance and the dealing in securities, regulate and monitor the activities and operations of its members under its supervision, regulate and supervise the disclosure of information related to traders, securities, issuers, and to safeguard major shareholders, investors and others from irregular market practices. The JSC undertakes many responsibilities to achieve these objectives such as: adopting accounting and auditing standards of its members and organizing information disclosure related to securities and their sources to increase the confidence of investors and achieve transparency in the market in accordance with International Standard of financial disclosure covering and to accounting and auditing standards; approving the regulations organize and control the business activities and operations for the entities that fall by laws of the ASE; Financial services companies; the SDC; preparing organizes laws and regulations on securities' short sales; and granting licenses issued under the law[12].

5.5.4 The Securities Depository Centre (SDC)

The SDC deals with transferring ownership on ASE (and related issues) and facilitates local and international investment including: the SDC was established on May 10, 1999 under the Securities Temporary law, its aims are registering, ensuring safekeeping, transferring ownership on ASE, depositing, clearing, and settling securities among brokers. The SDC is a not-for-profit institution, independent financially and administratively, recognized by the association of national numbering agencies for issuance of International Security

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[12] http:// www.jsc.gov.jo

Identification number in Jordan according to the (ISIN) numbering scheme for all shares and has been nominated to develop the Jordanian capital market associated with ASE in order to create an efficient market; and to facilitate attracting local and international investment, reducing the cost of investment and raising the efficient settlement system in Jordan, SDC has prepared many software such as: registry system for registering securities, depository system records each deal's accounts on the shareholder register, clearing system that prepares the trade contract between broker-dealers, settlement system by trades on the delivery versus payment principle[13].

5.5.5 Amman Stock Exchange (ASE)

ASE, previously known as Amman Bourse is the second of the three entities established on March 11, 1999, and it is a private sector, not-for- profit making legal entity, with financial and administrative autonomy, that is the only party authorized to act as an organized market for trading securities in Jordan. It may carry out all legal actions including concluding contracts and acquiring and disposing of movable and immovable property.

Regarding the trading system, all the traded securities either listed or not listed traded in ASE must be traded via the electronically integrated marketplace system which replaces the traditional open outcry trading system.

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[13] http://www.sdc.com.jo/arabic/index.php

Figure 5- 1: The Price Series for the ASE Indices from2001 to 2008
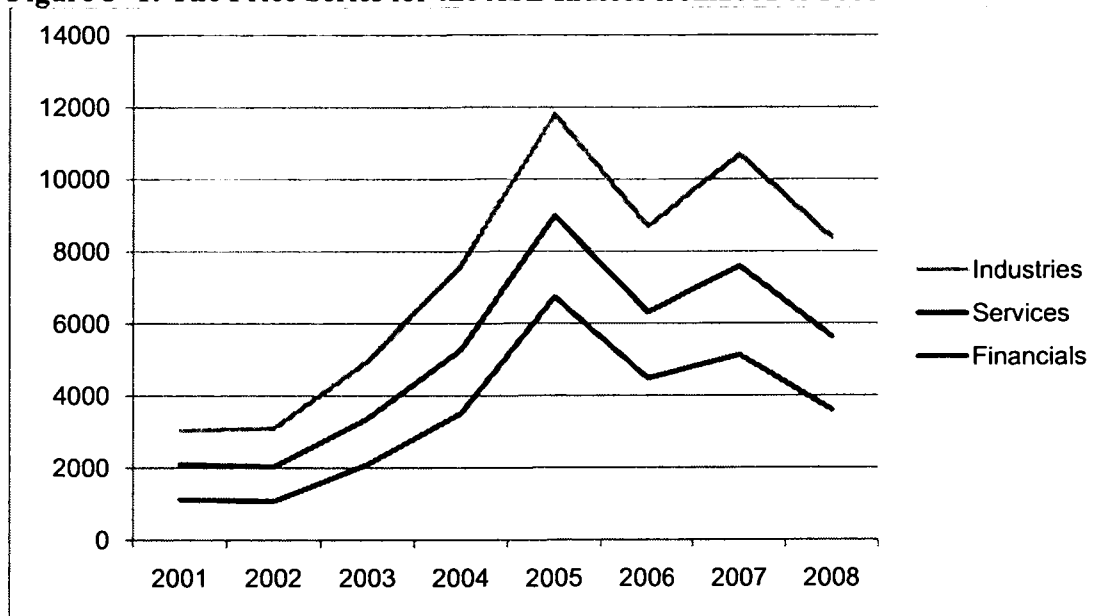
Source: www.ammanstockexchange.com

Figure (5.1) shows the developments in the prices based on the above measured price index from 2001 -2008.

The performance of the ASE during 2005, 2006 and 2007 is reflected in the increase in the market capitalization value of the companies traded in 2005 comparing with 2004, and in 2007 comparing with 2006.

Figure 5- 2: Market capitalisation from 2001 to 2008
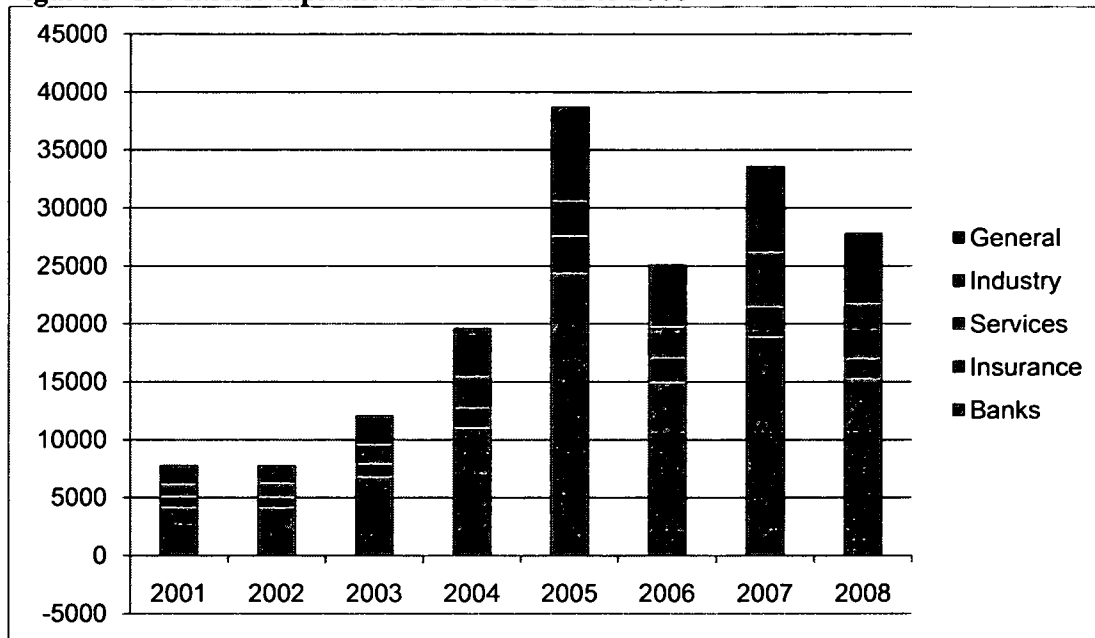
According to all of these steps and indications which strengthened the Jordan economy, the number of investors, namely, foreigner's investors increase during 2005-2007. In addition, ASE indices have increased and the trading volume and value as well. Indeed, in year 2008, market capitalization to GDP was about 226.3 per cent. Consequently, the confidence in the ASE has increased which enables the ASE to be one of the largest stock markets in the region that permits foreign investment either from the international institutions or individual investors.

Amman Stock Exchange (ASE) can be classified into two parts: the primary market and the secondary market[14]. The market where securities are initially issued according with the provisions of laws, and regulations. After issuing in the primary market, the stock is then sold to the public in the secondary market. The primary market is divided into stock market and the bond market. The secondary market is the market in which securities are traded according to the provisions of laws and regulations, where previously issued securities are

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[14] http//:www.ammanstockexc.com

bought and sold. A new classification was implemented in accordance with the directives for listing securities on ASE for the year of 2000, whereby the secondary market is divided into first market, second market, third market, stock market, bond market and transactions off the trade, in line with international standards. The part of the secondary market through which trading takes place in securities is governed by special listing rules according to the directives for listing securities on the Amman Stock Exchange. According to this directive in article 3 and 5, the companies transferring their shares from the second market to the first market must fulfil various conditions, including: the net shareholders' equity must not be less than 100% of the paid-in capital; the paid-in capital or the market capitalisation must not be less than two million JD; the company must have made net pre-tax profits for at least two fiscal years out of the last three years preceding the transfer of listing; and the company must have distributed profits or shares at least once over the last three years[15].

Companies that apply for listing of their shares on the second market must fulfil the following two conditions: the net shareholders' equity must not be less than 50% of the paid-in capital; and a full year must have elapsed since the company was granted the right to start its business[16].

The part of the secondary market through which trading takes place in unlisted securities on the ASE through new directives, upon obtaining the right to start business, a company can file an application with the ASE to trade its shares through this market. Under this new concept, trading shares on ASE of newly established companies shall be permissible, upon completion of the set-up phase and initiation of business. The stock market is simply the part of the secondary market through which trading in common stocks takes place. The bond

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[15] www.ammanstockexc.com

[16] www.ammanstockexc.com

market is that part of the secondary market through which trading in development bonds takes place. The commission on bonds (JOD 0.45-0.95 per thousand) is lower than the stocks' commission (JOD 5 - 7.4 per thousand). However, the bond market at the ASE is very small in comparison to the stock market. Off-the floor trading transactions are the part of the secondary market in which inheritance and inter-family transactions take place. These transactions are executed through the legal department of the SDC; it serves the purpose of legal transfers through inheritance transactions which shall be done through the SDC as of the same date (see ASE Annual report 2000, Newsletter, Issue no. 11 June 2000).

5.6 Professional Accounting and Auditing in Jordan

International Accounting Standard (IAS) has become important for Jordanian companies after the significant changes in the Jordanian economy. Jordan has made several attempts to close the compliance gap in both accounting and auditing professions. Open trade agreements such as the free trade agreement with EU and USA need to link the requirements of corporate financial reporting with IAS, consequently a more professional accounting system is needed in Jordan (World Bank 2002; Al-Shiab 2003).

Jordan is one of the IASC developing country members, which since 1988 have experienced fundamental changes in economic strategy and policies through improvements have been made in the accounting and disclosure requirements for publicly traded companies. A new accounting law has been drafted and modern legislative framework for auditing profession has been issued through the enactment of the Audit Law No 73 of the year 2003. Moreover, IAS implies understandable and high quality standards which help users of financial statements in Jordan to take their decisions properly. Hence, IASs adoption is one of the most essential requirements for responding to changes in capital markets and trade (World Bank 2002; Al-Shiab 2003).

Companies Act No. 22 for 1997 mentioned that shareholding companies must prepare their financial statements in accordance with GAAP. International Accounting Standards were applied in Jordan from 1998 under The Securities Law No. (23), for the year 1997. However, Jordanian Association of Certified Public Accountants (JACPA) is responsible for organising the accounting profession in the Jordanian context.

In 2007, Amman Stock Exchange has achieved extraordinary levels of indicators which are considered to be the highest since the establishment of the Amman Financial Market in 1978. The market capitalization to Gross Domestic Product (GDP) ratio of was about 226.3 percent for 2008. This ratio is one of the highest ratios in the world, and it is one of the largest stock market in the region that permits foreign investment, which reflects the significant contribution of the ASE in the national economy, through legislative and technical developments in ASE and significant improvements in the transparency and the control of the capital markets, specifically, the issuing of the new securities law no. 67 for the year 2002 (World Bank 2002; Al-Shiab 2003).

Many changes have been made for the accounting profession and audit in Jordan due to the economic developments. JACPA is an association of chartered accountants that develops educational and professional standards for its member, companies act no. 22 of 1997 and securities law no. 23 of 1997 gave consideration, authority and more power to JACPA". Many steps are undertaken to improve the professions of accounting and auditing. Among these steps are the organising of national and international conferences regarding the accounting and auditing standards (Suwaidan, 1997; Al-Shiab, 2003). The adoption of international accounting and auditing standards is the major responsibility of JACPA. The application of such standards will enhance the credibility of financial statements for the investors.

Auditing in Jordan today is more organised than any time before because, as pointed out above, the new Jordanian regulations include the Companies Acts and the JSC's requirements with more detail to guide, control, improve and protect the audit profession and the auditors' rights. The first audit office was George Khader's firm, opened in Jordan in 1944, international audit firms, Deloitte Touche, Arthur Andersen and Grant Thornton had established professional contracts with Jordanian audit companies Saba and Co., Dajani and Ala'eddin and Co. and Talal Abu-Ghazaleh respectively (Suwaidan, 1997). These three audit firms were considered the largest and the most important audit firms in Jordan.

(Al-Shiab, 2003) stated that "No doubt, the application of IAS will make for the preparation of dependable and trusty financial statements which are reliable and comparable to international standards and will make a difference to international investors". Due to these improvements, Jordan as an emerging market can be chosen as suitable context for the current study.

The notion of corporate governance and credit rating becomes more interestingly in the recent years as discussed in chapter two. Next section introduces general view about credit rating and corporate governance practises and its implications in the Jordan context.

5.7 Corporate Governance and Credit Rating in Jordan

5.7.1 Credit rating in Jordan

Credit ratings in Jordan were initiated during the 1990s, namely, in 1995 Jordan became the first rated Arab state, during the Asian financial crisis and during other periods of financial stress. The top three international rating agencies in Jordan are —Moody's investors service rating (Moody's), Standard and Poor's ratings (S & P) services and Fitch. Additionally, world'vest base inc. (WVB) has a strong interest in ratings within the Middle East, including, Jordan.

A report by E standards Forum (2009)[17] ranks Jordan in either the 2nd or 3rd quintile of the global indices benchmarking for political, economic, business, and human capital dimensions. This gives recognition to the reforms made in economic and financial liberalization, since King Abdullah II came to office. The report goes on to observe that the sovereign credit ratings in Jordan are: Moody's Ba2/Stable, and Standard and Poor's BB/Stable[18].

Capital Intelligence (CI), the leading international emerging market rating agency, announced on 23/08/08, that Jordan's credit rating was changed from a risk to an investment rating. Jordan's long- and short-term foreign and local currency ratings are 'BB' and 'BBB-', respectively. The short-term ratings for sovereignty debt are also unchanged at 'B' for foreign currency and 'A3' for local currency obligations. The CI assessment of credit outlook is one of stability.

Capital Intelligence also notes the change in the foreign currency rating which reflects a significant increase in external solvency and liquidity ratios, which indicate strong repayment capacity and an increased resilience to external shocks. Jordan's ratings have responded to the way in which the economy has been well managed and the commitment and progress regarding fiscal and structural reforms.

The statement commended Jordan for the way in which the economy is growing strongly, but notes that: 'accelerating inflation and a worsening external environment pose major risks to the short-term outlook. Real GDP increased by an annual average of 6.6% in 2001-07, compared with 3.2% in the second half of the 1990s, and rose by 6% year-on-year in the first half of 2008. The current account deficit was equivalent to 18% of GDP in 2007 and is

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[17] http://www.estandardsforum.org/jordan/standards

[18] http://www.estandardsforum.org/jordan/standards

projected by Capital Intelligence to reach 19% of GDP this year (making it one of the largest in the world) and to narrow to a still-high 11.6% of GDP by 2010' (Ibid).

For further information focusing more on the company law relating to credit rating and corporate governance (see Appendix 5-3).

5.7.2 Corporate governance in Jordan

Many studies have been conducted worldwide, especially in the U.S.A and Europe, to highlight the role of corporate governance in improving different aspects of corporations. The majorities of these studies and investigations have been conducted after collapses in various businesses across the world, and have produced many recommendations, which reflect upon many countries worldwide, including Jordan. These have produced many troubles which are highlighted with many Jordanian firms such as Petra Bank (Malkawi 2008).

The corporate sector is typically important to the economy of a country. Although corporations began to apply corporate governance for the protection of their businesses and for the safeguarding of shareholders' investments, they have supported economic effectiveness and increased opportunities from new investments with the help of laws and regulations of the country (Aljazy, 2005 and Malkawi 2008).

Good corporate governance practices in Jordan may provide a means of enhancing its competitiveness to attaining high level of credit rating which in turn will lead investors to increase their investments in the Jordanian companies (Malkawi 2008). Consequently, good corporate governance reflects Jordanian firm's ability of an entity's overall creditworthiness and its capacity to satisfy its financial obligations. Therefore, credit rating agencies are concerned that weak governance can impair a firm's financial position and leave bondholders vulnerable to losses (Fitch Ratings, 2004). The last decade has seen Jordanian corporations apply principles of corporate governance, consistent with western countries to monitor their

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activites and increase the number of their investors. Any processes to prevent the purchase or sale of securities of the corporation based on insider information from the directors or another insider, which are considered, invalid through internal procedures and regulations undertaken by the issuer to prevent such transactions. According to the securities law (n.76/2002) and companies' law (n.22/1997), the current situation of corporate governance in Jordan is summarized below:

5.7.2.1 Ownership structure

Ownership structure is characterized by a number of features.

- private shareholdings and institutional shareholding are each around 50% ;

- no taxes are levied on dividends and capital gains on shares held by foreign investors;

- the proportion of newly privatized corporations constitutes about 5% to 10% of shareholdings; and

- ownership structure varies according to the extent to which a corporation is privatized.

5.7.2.2 The rights of shareholders[19]

Specific rights of shareholders are given below:

- to have financial statements available for at least two weeks before the annual general meeting;

- to have access to published externally audited annual statements in the daily newspapers, one of which would be in the English language and the other in Arabic;

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[19] http://www.estandardsforum.org/jordan/standards/principles-of-corporate-governance

- to participate in voting at the general meeting;

- to be able to block shares for at least one day before to the annual general meeting;

- to vote as partially paid up shareholders, while bearer shareholders can attend the meeting, but they are not allowed to vote;

- according to the bye-laws, shareholders can be elected as members of the board of directors;

- to have the power to approve the distribution of dividends at the annual general meeting and power to propose higher dividends than those proposed by the board;

- pursuant to a request by 10 percent of the shareholders vote, the board of directors or auditors must attend an extraordinary general meeting;

- to give their approval to large transactions;

- to have the right to add items to the agenda by any shareholder representing 5 per cent of capital until three days before the annual general meeting; and

- to have access to corporations' audit report, income statements, and balance sheet for the previous three years and information about share classes.

5.7.2.3 *The equitable treatment of shareholders*

- any shareholders can register his /her opposition at the annual general meeting and can attend at the last moment;

- in the case of mergers with any corporation, the shareholders can withdraw from the merger corporation;

- the shareholders can file a complaint against any violation of the law from an administrative agency;

- shareholders, holding at least 10% of capital, have the right to request an inspection of the corporation and to ensure that procedures are followed correctly, and that decisions are not unfairly favoured, on condition that shareholders;

- any shareholders owning 5% of share capital has the right to complain to the SDC;

- any business transactions between the shareholders and the corporation must be disclosed to all shareholders; and

- shareholders, owning at least 5%, may stop decisions related to shareholders.

5.7.2.4 The role of stakeholders in corporate governance

There are several features pertaining to the role of stakeholders:

- those who share in the gains to the lower of the 10% of profit or the equivalent of one year's salary can be considered as stakeholders;

- stakeholder's rights are protected by specific laws or contract;

- they may access the legal process to obtain redress, for any violation of stakeholders' rights; and

- stakeholders, such as bondholders and employees, have the right to obtain information by law, including inspecting financial statements.

5.7.2.5 Disclosure and transparency

- any corporation of 100 shareholders or more must publish an annual report, a semi-annual report, and a quarterly report to be reviewed by the auditors after 45 days after publishing the reports and 90 days after the end of the respective period;

- a corporation with less than 100 shareholders must publish an annual report;

- all the above must be published in two daily newspapers;

- stock market and legal regulations require corporate disclosure about various other matters, for example, board remuneration (although executive remuneration is not reported) and share- class voting rights;

- corporations must submit annually to the ASE a statement with names and details of board members and senior managers, including nationality;

- Jordanian Accounting Standards must ensure that financial statements conform to IFRS (IAS);

- the annual general meeting appoints the auditors for audited annual and semi-annual financial statements and sets their compensation;

- any errors and misrepresentation, any resulting loss related to shareholders and errors for compensation are under the responsibility and hence liability of auditors;

- after the end of the contract, any auditor may not become an employee or board member at the corporation for three years;

- the internal auditors are entrusted to protect the corporation from any negligent oversights and it is their responsibility to establish control procedures and review annual reports and prospectuses; and

- if there is no non-executive director on the board, outsiders should be hired because some members of the committee should be non-executives.

5.7.2.6 Responsibilities of the board[20]

- a minimum of three board members are required for Jordanian corporations, and single tier boards must be comprised of an odd number of members;

- an employee must have served a two-year term in the corporation before being appointed as a board member;

- designation of the directors is through the annual general meeting and renewable for three years, according to competence, and remuneration is set as well as provisions for replacement;

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[20] http://www.estandardsforum.org/jordan/standards/principles-of-corporate-governance

- the directors submit a *curriculum vitae* to the annual general meeting, which includes three years' previous experience and with a list of corporations to which they are associated;

- often the CEO or managing director and chairman are the same person;

- there is a clear difference in the compensation of executive and non-executive directors. Executive directors receive an annual share of profit based on 10% of net income. Non-executive board members each receive travel expenses and attendance fees;

- the board of directors is under a legal responsibility to the shareholders for any distortion or forgery of corporate information;

- each fiscal year the board of directors is discharged from accountability and authority at the annual general meeting;

- any fraud, action or breaches of regulations by directors make them personally liable, but the government rather than shareholders initiates action of the power of law;

- the board must take the interests of employees into account according to the corporate law;

- the board of directors is basically responsible for monitoring interests of shareholders and for the implementation of the corporation's objectives, set by the annual general meeting, and its key officials;

- there are no rules that govern "independence" of the board; and

- it is possible for the directors to serve of on a maximum two boards, one of which as a managing director, on condition that they own at least 10% of the corporation.

More difficulties are faced by non-executive board members, especially in relation to the audit committee, because the information pertaining to it is not available to them, but most directors have full access to relevant information, because they are executives or other insiders. Appendix 5-4 summarises the final conclusion attained by the report.

5.8 Summary

This chapter provided an overview of the important features of the Jordanian market and presented important issues that serve the credit ratings and corporate governance (ownership structure) debate in Jordan. The discussion showed that Jordanian firms follow the IAS (international accounting standards) and this may add more reliability to the Jordanian data. In addition, this chapter showed that firms in Jordan can issue bonds as a source of financing but the bond market is not as developed as the stock market.

In 1998 the Jordanian financial market was transformed into a modern capital market with a new legal framework, which included new regulations requirements imposed upon companies listed on ASE. For the first time by Jordanian regulations, the listed Jordanian companies were required to apply IAS in periodic financial statements. The underlying aim of the accounting regulation modifications in Jordan was to create an attractive investment climate to encourage both domestic and foreign investors. In addition, due to the Jordanian government commitment to the WTO in 2000 the Jordanian government has commenced a process reform of its telecommunications and postal sectors. The changes in the Jordanian regulatory and its telecommunications systems result in changes in the credit ratings assessments.

Therefore, the current study targets the Jordanian credit rating practices before the new crises in 2008. However, despite these recent developments in the Jordanian financial market, the annual report is still the only well-established method for investor relations. Therefore, it is

regarded as the main focus of the current empirical investigations with respect to Jordan. In particular, this study will examine the level of credit rating practices in the Jordan credit ratings before 2008, which includes the levels of credit rating in 2005 and 2007. Also this study will examine the level of the credit rating assessments by Jordanian companies in 2005-2007.

The ASE has developed greatly since its establishment and has succeeded in accomplishing several of its goals by mobilising capital into the productive sectors of the economy. ASE appears to be well organised, attractive, and well managed with much potential for growth.

In 1997, a new security law was enacted to reflect the development of systems and the sophistication of new products and participants. The new law established an independent Jordanian Securities Commission with broad and well-defined powers to organise, develop, and monitor the securities market. The new law also established other key institutions, participants, and practices.

Despite the accomplishments so far, ASE has much room for improvement to become a regional financial market in the future. There are several comparative advantages in this market, which should be further developed in order to improve its efficiency and to attract international investments, thereby increasing the depth of the market and enabling it to better compete at emerging markets level.

CHAPTER SIX: RESEARCH METHODOLOGY

6.1 Introduction

This chapter explains the research methodology used in the present study to investigate the relationship between credit risk assessment and corporate governance, ownership structure, financial transparency and disclosure. In this research I follow a positivistic approach, utilizing quantitative data. It is necessarily applied in nature using a real data-set. In my research model the dependent variable is the credit rating. The independent variables relate to accounting and financial aspects, market and regulatory factors, ownership structure, financial transparency including disclosure and also corporate governance. The sections which follow explain the rationale for my research approach. The methodological steps of this research are summarised in Appendix 6-1.

6.2 Research Philosophies

This section elaborates on the philosophical stance of the present research. Research philosophy is very important to researchers in their understanding of the appropriate direction for their research. Saunders *et al.* (2007) illustrate the meaning of research philosophy as the understanding for the assumptions of the idea that constitute the research under study. These assumptions will underpin the research strategy and the methods that will be part of that strategy (Saunders *et al.*, 2007).

Three reasons can be identified for this choice of research philosophy: **First**, it can refine and specify the research methods to be used in the study. This includes the type of evidence gathered and its origin, the way in which evidence is interpreted, and how it helps answer the research questions posed. **Second**, knowledge of research philosophy can enable and assist the researcher to evaluate different methodologies and methods and avoid inappropriate use

and unnecessary work by identifying the limitations of particular approaches at an early stage. **Third**, knowledge of research philosophy can help the researcher be creative and innovative in either selection or adaptations of research methods (Easterby-Smith *et al.*, 2002).

6.3 Positivistic Versus Phenomenological

According to Saunders *et al.* (2007), epistemology refers to the theory of knowledge, and it concerns what constitutes acceptable knowledge in a field of study. Epistemology endeavours to vindicate a belief of the reality, starting with a psychological fact. So, the aims of epistemology are to relate knowledge to reality, and to explore the validity of knowledge. Epistemology, or theory of knowledge, refers to the development of knowledge, which encompasses both positivism and phenomenological. Some authors, such as Obasi (2002), argue for the validity of one position and often for the invalidity of the other, based upon the extent to which either approach is able to conduct an appropriate method of investigation and analysis.

Consequently, there are broadly two classifications of epistemology, and there are important differences between them, which will now be explored under the two headings: positivism and phenomenological. This research follows a positivistic approach.

A positivistic philosophy assumes things can be studied as hard facts e.g. a firm's credit risk assessment and the relationship between these facts can be established as scientific law. According to Saunders *et al.* (2007) "only phenomena that you can observe will lead to the production of credible data". For positivists, such laws have the status of truth and social objects can be studied in much the same way as natural objects. The basic reasoning of positivism assumes that an objective reality exists (such as a firm's ownership structure)

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which is independent of human behaviour and is therefore not a creation of the human mind. Therefore, the application of positivistic research is through objective methods.

To explain more about positivistic research, some authors (Easterby-Smith *et al.*, 2002), have depicted its characteristics as follows:

- reductionism: in order to understand the problem better, it should be reduced into the simplest possible elements;

- causality: social science should support the identification of causal explanation (e.g. good corporate governance practice beneficially influencing credit rating) and fundamental laws that explain regularities in human social behaviours;

- cross-sectional analysis: variations are made across samples to identify the result clearly;

- independence: the researcher must be independent from what is being observed so that other researchers using my data-set would draw the same conclusion;

- hypothesis and deduction: science proceeds through a process of hypothesis testing and then deducing what kind of observations will demonstrate the truth or falsity of these hypotheses, which if not rejected lead to fundamental laws;

- generalization: from selected samples of sufficient size inferences are made about the whole population;

- value-freedom: the data should be in an objective manner (e.g. numerical data), rather than being dependent on human beliefs and interest; and

- operationalization: concepts are operationalized in a way that allows facts to be measured quantitatively.

According to the above, a positivistic philosophy offers the same features as the natural sciences, both seeking to produce sets of generalized laws. Social reality, which may be

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applied to the whole of society/industry through the laws described on the basis of observed phenomena, exhibit expected behavioural characteristics. Consequently, according to Parsa (2001), a positivistic philosophy takes an approach, which seeks to understand causality within society, without direct reference to the opinions of actors within society, whose approach is on the basis of generalizable behaviour.

According to Parsa (2001) considers the extent to which the use of a positivistic tradition is related to the extent to which the data can be collected in a quantitative format (and this is very much the case in this research); and the extent to which the approach can be divorced from subjectivity on the part of the respondent/researcher; for indeed the statistical results should not in any way be influenced by whoever conducts the research.

As Saunders *et al.* (2007) explain phenomenology is an epistemology that provides an alternative to the traditions and foundations of positivism for conducting disciplined inquiry. For the phenomenological researcher, reality is not a rigid thing; instead it is a creation of those individuals involved in the research, which is not the case in this study because researchers do agree on the reality of the (mainly poublished) credit risk assessment levels. This definition leads to a short way of expressing the meaning, being the opposite philosophy to positivism, and as such has been described as a phenomenological philosophy. Parsa (2001) argues that there is an illogical underpinning of decisions based on the philosophy of phenomenology. Phenomenology is concerned with establishing and searching for a 'warranted acceptability', that is, evidence that is valid and sound proof for the existence of phenomena. This is in contrast to the positivist approach of making claims to absolute truth through the establishment of generalisation and laws.

Now a qualitative method requires data in the form of words rather than numbers. As such, qualitative methods refer to the many methods of collecting data, such as, participant

observation, case study, focus group and interviews. So, the interpritivistic philosophy is more usually related to qualitative methods, which attempt to generate theory and find meaning within a research problem. This approach might have been useful if I had studied how firms respond to their credit risk assessments in their financial strategies and policies. Interviews with finance directors would have created useful insights. However, the focus of this research is upon the determinants of the WVB ratings.

There are differences between the philosophy of epistemology and the philosophy of ontology. Epistemology begins with reality by illustrating knowledge as a psychological fact, whilst ontology is concerned with the assumptions that are made about the nature of reality, and looks at consistency between divergent information. Obasi (2002) illustrates that ontology seeks to connect psychological fact (knowledge) with reality. However, the philosophy of ontology contains two positions: objectivism and subjectivism, each of whose aspects will be discussed briefly, as follows:

To some extent the objectivistic philosophy, to which financial data are well suited, is close to the positivistic philosophy in that both search for interpreting the phenomena in an absolute manner without any existence to the emotion or feelings of the researchers. So, this philosophy portrays the position that social entities exist in reality external to social actors, who are concerned with their existence. The core point in this philosophy would be the separation of the researcher from the studied cases. Therefore, the researcher must be value-free and view the problem externally.

The subjectivistic philosophy is related to the interpretivistic philosophy, in which both are related to the perceptions of the individuals in the interpretation of the phenomena, and interrogate the attitude of these individuals and their motivations. My attitude to a WVB

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credit rating score has not influenced the way in which that score is analysed. Consequently, I have not adopted a subjective philosophy. Appendix 6-2 summarises the entire philosophies.

6.4 Qualitative Versus Quantitative Methods

Any scientific practice in the world is originally devised from theories and depends on the underlying philosophies and assumptions. Research methods deal with the process used in scientific inquiry, which have been categorised broadly into quantitative and qualitative methods. These methods can be presented as follow:

A major objective of quantitative research has been to study natural phenomena in the universe, by use of theories and hypotheses with recourse to mathematical models and their different measures. Consequently, it is the relationship between natural phenomena and scientific investigation that tends to fall within the framework of systematic quantitative research. There is a strong relationship between mathematical expression and empirical observation especially statistically through centralized measures and fundamental connections within quantitative research (Saunders *et al.* 2007). According to Johnson and Onwuegbuzie (2004, p.19), the strengths of quantitative research include: generalization of research findings; it is 'less time-consuming' in data analysis; and it provides researchers with independence in the research results.

The weaknesses of quantitative research include: 'the focus on theory or hypothesis testing rather than on theory or hypothesis generation' deprives the researcher from evaluating phenomena as they occur; it allows, for subsequent direct application to specific local situations, individuals, and contexts.

Qualitative research relies on reasons behind various aspects of behaviour, particularly depending on field observation. Consequently, qualitative research involves 'an in-depth

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understanding of human behaviour and the reasons that govern that behaviour'. Accordingly, Johnson and Onwueegbuzie (2004, p. 20) and Kumar Raj (2009, p. 23) have revealed some strengths and which include: 'to penetrate fronts, discover meaning, and reveal the subtlety and complexity of cases or issues through attention to detail, the ability to embrace both verbal and non-verbal behaviour; to encompass natural environments and processes; to contextualize the framework within situations; to provide a close fit between theory and data, because theory is generated from the empirical data;

And some weaknesses which include: 'findings may be unique to the relatively few people included in the research study', for knowledge produced may not be generalized to other settings; and sometimes results are 'subjective, lacking in precision, biased and idiosyncratic'.

In this study I do not undertake qualitative field observations. The disadvantage of this omission is that some case studies might have provided insights from directors of corporate boards through interviews. However, this was not practicable to undertake in addition to the extensive quantitative research.

Many researchers argue that an integration of the quantitative and qualitative research methods is useful and necessary to give a more complete picture of the social world, while some researchers differ from this viewpoint by believing that the philosophies that underpin each of the approaches are so divergent that they cannot be reconciled within a research project. However, as noticed before, there are differences and comprehensions between the two methods (see Table 6-1).

Table 6- 1: Link between philosophies and method

Philosophy	Question	Quantitative	Qualitative
Epistemology	What is the relationship of the researcher to that researched?	Researcher is independent from that being researched.	Researcher interacts with that being researched.
Ontology	What is the nature of the values?	Reality is objective and singular, apart from the researcher.	Reality is subjective and multiple as seen by participants in a study.
Axiology	What is the rule of the values?	Value-free and unbiased	Value-laden and biased

(**Source**: Adapted from Collis, J and Hussey R 2003)

However, numerical and ordinal secondary data are used for credit rating and independent variables (for accounting and financial, ownership structure, financial transparency and disclosure and corporate governance), are measurable. It follows that a quantitative approach is chosen to investigate the effect of corporate governance, ownership structure and financial transparency on WVB credit risk assessments.

6.5 Induction Versus Deduction

The research approaches affect the methodology that should be conducted in the current study. The researcher is faced with alternative paths, including two approaches, namely a deductive approach and an inductive approach.

The inductive approach has many characteristics (Saunders *et al.*, 2007), such as:

- it allows the use of a small sample when studying phenomena;

- as a result of determining the theory after collecting data, it provides more flexibility in the explanations of the study phenomena; and,

- people have a role in interpreting the cause-effect link between the variables rather than the unthinking research objects, who respond in a mechanistic way to certain circumstances'.

However, in this study I am looking for an unbiased objective interpretation that can be mechanistically verified by statistical testing. I am not looking for a plausible opinion that generally matches the facts, but more concrete evidence.

Following this discussion, there appears for us some main differences between the deductive and inductive approaches to research, as summarised in the next table (Table 6.2).

Table 6- 2: A summary of induction versus deduction

Deductive approach	Inductive approach
Scientific principle	Gaining an understanding of the meanings humans attach to an event
Moving from theory to data	Moving from data to theory
The need to explain casual relationships between variables	A close understanding of the research context
The collection of quantitative data	The collection of the qualitative data
A highly structured approach	A more flexible structured approach
Researcher independent of what is being researched	A realisation that the researcher is part of the research process
The necessity to select samples of sufficient size in order to generalise a conclusion	Less concern with the need to generalise

(**Source**: Saunders *et al.*, 2007).

Following a deductive approach usually begins with a theory related to the subject of study. Potentially important key variables are identified, put into suitable hypotheses accordingly and theoretical relationships between them are suggested, then operational hypotheses are proposed and tested rigorously (Saunders *et al.*, 2007). So, this deduction leads to a conclusion, explaining the strength of the relationship and contributing to a new understanding.

According to Saunders *et al.*, (2007), the deductive approach has many characteristics, such as:

- 'it explains the causal relationship between variables;

- it often uses a quantitative paradigm in the collection of data;

- it allows the testing of hypotheses through applied controls;

- it enables facts to be measured quantitatively through concepts (variables) being operationalised;

- it tends to be efficient in the number of key variables, so problems as a whole are better understood, since they are reduced to the simplest possible elements; and

- it applies samples for social study then allows generalizations to the whole population'.

In this study, identified hypotheses, which are underpinned by the relevant literature, are tested in order to establish the relationships between corporate governance, ownership structure, financial transparency and WVB credit ratings which are measured quantitatively. Hence, a deductive approach is adopted. Figure 6-1 summarises the philosophical stance of the present study.

Figure 6- 1: The philosophical stance of the present study
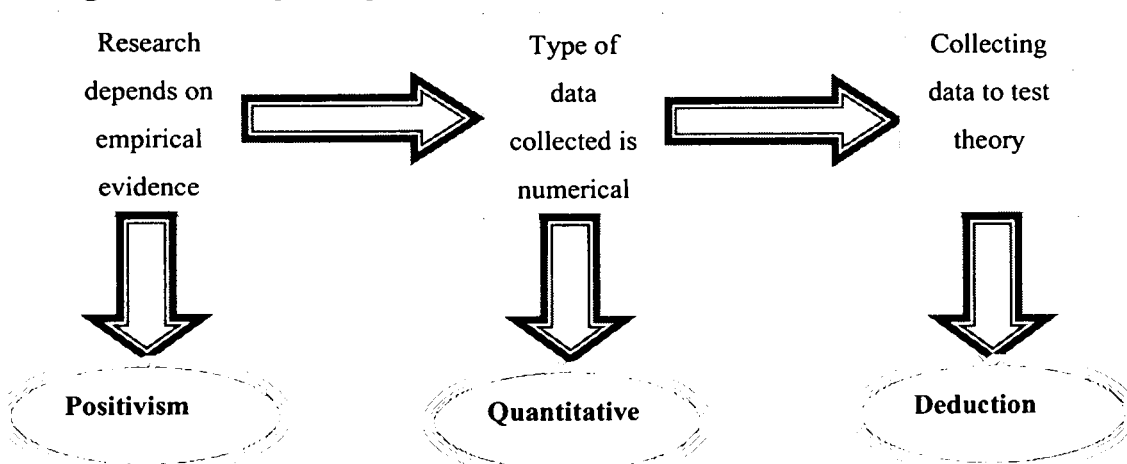
Source: adapted from descriptions found in Saunders *et al.* (2007).

6.6 Data Sources and Analysis

6.6.1 Data sources

Data collection methods are very important for research analysis, because there are different methods for this purpose. But, before discussing the data collection techniques, we should determine the purpose of the research first to help in choosing the appropriate way to collect the data. There are three types of research according to purpose, including exploratory, descriptive and explanatory research, which will be explained in some detail.

6.6.2 Exploratory research

According to Saunders *et al.*, (2007), this type of research is useful, when researchers are unsure about the nature of the problem, which they plan to study. So, it suits the more highly innovative industries, which place a high priority to discovering new ideas from this research (Hair *et al.*, 2007). The characteristics of this type are: clarifies the nature of the problem to be solved, can be used to suggest or generate hypotheses, includes the use of pilot studies, used widely in market research.

6.6.3 Descriptive research

Descriptive research, unlike exploratory research, is often confirmatory, which means that it is used to test hypotheses (Hair *et al.*, 2007). According to Hair et al., 2007 and Saunders *et al.*, (2007), descriptive research is mainly related to the narrative examination. The main characteristics of this type are: provides general frequency data about populations or samples, does not manipulate variables (e.g. as in an experiment), describes only the "who, what, when, where and how", cannot establish a causal relationship between variables, associated with descriptive statistics.

6.6.4 Explanatory research

Explanatory or causal research, attempts to discover causality, which refers to the dependence of one event or variable (the effect) on another event or variable (the cause) (Hair *et al.*, 2007). According to statistical science, the cause is called the set of independent variables and the effect is called the set of dependent variables. As a result, explanatory research will depend on theoretical support for explaining the relationship between the variables, and also formulation of the hypotheses, which test this relationship. According to the above, the purpose of the current study will be both descriptive and explanatory.

6.6.5 Type of data sources

Data collection may involve either primary or secondary data or both, which will be explained in some detail.

6.6.5.1 Primary data

The primary data is a term for data collected on source which has not been subjected to processing or any other manipulation. Primary data can be input to a computer program or used in manual analysis procedures such as gathering statistics from a survey. Further, primary data could be qualitative or could be quantitative.

6.6.5.2 Secondary data

Unlike primary data that are collected by the investigator conducting the research, secondary data are data collected by someone other than the user. Common sources of secondary data for social science include censuses, surveys, organizational records and data collected through qualitative methodologies or qualitative research (Saunders *et al.*, 2007).

According to Saunders *et al.*, (2007), secondary data have many advantages, which include:

- 'avoiding respondent fatigue';

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- more confidence because they depend on public sources;

- enormous saving in time; and

- potential for comparative analysis,

They also discuss some disadvantages to secondary data, which include *inter alia*:

- 'aggregations and definitions may be unsuitable';

- 'misalignment of purpose, when it does not match the researchers' need', and

- 'access to the data may be difficult or costly'.

According to the current study, the author will depend on secondary data collection, as it is suitable to both the research question and its purpose (descriptive and explanatory). The sources of this data are threefold:

Firstly, the researcher utilise the ASE database. The set of financial information included in the study is taken from firms' financial statements during the period 2005-2007.

The reasons for choosing this period are:

i.   The data for the period 2005-2007 are updated for the ASE. Hence, this gives the opportunity to update the empirical evidence of CRs decision making in the ASE.

ii.   The three year period is selected in order to minimise the missing observations for the credit rating variables.

Compared with other studies related to investigating corporate governance aspects and the CRs (Bhojraj and Sengupta, 2003; Skaefe *et al.*, 2006), albeit for US firms instead, the criteria for selecting the sample of the study are:

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iii. The proposed sample includes firms from the ASE during the period 2005-2007.

iv. Banks are excluded from the sample because of a different rating system.

v. Firms are selected on the condition that their main activities are concentrated in the ASE.

vi. The study includes only firms whose financial statements are available on the ASE database.

Further details of the sampling procedure are provided later (see Table 6.6).

Secondly, the JSC (Jordan Securities Commission) database for Jordanian firms is used in order to extract data for their corporate governance attributes.

Thirdly: the WVB internal and external scores are used as generously supplied by WVB. Fortunately, for each firm a separate numerical score is also supplied by the rating agency and so, instead of using only an ordered logistic regression model for four categories, I am also able to apply ordinary least squares, which enabled me to capture finer distinctions in the assessments. This is a substantial advantage over many of the previous studies that have been reviewed earlier, for instead of just a couple or several categories, for part of my analysis I utilise hundreds of distinctly separate numerical values for WVB's internal ratings, i.e. those that are not published, as opposed to the published ordinal WVB rating levels, which I also analyse.

6.7 Variables' Measurements

6.7.1 Measurement of dependent variable (credit risk assessments):

External organisations (e.g. Moody's, Standard and Poor's or Fitch) develop a credit rating for firms so that other interested parties can use these figures to assess a particular firms credit standing. My initial sample is of listed Jordanian firms that were rated by World'Vest Base (WVB) between 2005 and 2007. WVB is selected because of its coverage of Middedle Eastern firms. The data for the current study are from these sources: for CRs, the source is World'Vest Base and for other variables, the sources are the annual reports made available on the ASE. WVB reports of CRs are assigned a credit assessment score and measure the likelihood of a company failing to honour its commitments 12 months following the calculated CRs. A firm is given a numerical score which is then divided into 20 distinct risk groups based on a firm's eight CRs score. The current study draws upon the long-term CRs according to WVB credit risk ratings for using four groups from classes represented by letters arrayed downwards from BB1 (the best rating) to D (payment is in default-bankruptcy), details of which are given in Table 6-3.

Table 6- 3: WVB Ratings and Numerical Scores

WVB Ratings and numerical scores	Comment
(BB category): when DS > 5.25 and DS <= 5.65 then BB1; when DS > 4.95 and DS <= 5.25 then BB2; when DS > 4.75 and DS <= 4.95 then BB3.	Less near-term vulnerability to default than other speculative issues, however, faces ongoing uncertainties or exposure to adverse business, financial or economic conditions which could lead to inadequate capacity to meet timely interest and/or principal payments.
(B category): when DS > 4.5 and DS <= 4.75 then B1; when DS > 4.15 and DS <= 4.5 then B2; when DS > 3.75 and DS <= 4.15 then B3.	Greater vulnerability to default, but currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the capacity or willingness to pay interest and repay principal. B1="Speculative"; B2=" Speculative at best"; B3= "very speculative".
(C category); when DS > 3.2 and DS <= 3.75 then C1; when DS > 2.5 and DS <= 3.2 then C2; when DS > 1.75 and DS <=2.5 then C3.	A current identifiable vulnerability to default and dependent upon favourable business, financial and economic conditions to meet timely payment of interest and repayment of principal. Highly speculative in the event of adverse business, financial or economic conditions, "it is not likely to have the capacity to pay interest and repay principal"=C1; "it is probable the company will not likely have the capacity to pay interest and/or repay principal" =C2; "it is very likely that the company will not have the capacity to pay interest and repay principal" =C3.
(D category): when DS <= 1.75.	Payment is in default, and is technically or actually in bankruptcy.

Sours: with adopted http://www.wvb.com/news/company/view/id/200907131 .

In the current study the multiple ratings were initially collapsed into four categories, namely, category 4 (BB: BB1-BB3), category 3 (B: B1-B3), category 2 (C: C1-C3) and category 1 (D) to obtain a sufficient number of observations in each category, and because some of the higher ratings were not present (see Table 6-4).

Table 6- 4: Credit risk rating classifications

WVB Category	WVB Debt Rating	Assigned Rating Score
BB	BB1	4
	BB2	4
	BB3	4
B	B1	3
	B2	3
	B3	3
	C1	2
C	C2	2
	C3	2
D	D	1

6.7.2 The determinants of the CRs-measurement of independent variables:

This section discusses the measurement of the independent variables that determine the CRs. The model contains seventeen continuous variables namely leverage, profitability, capital intensity, firm size, growth opportunity, blockholders ownership, institution ownership, insiders ownership, government ownership, foreign ownership, family ownership, working capital accruals, timeliness, board independence, board expertise, board stock and board size. In addition, the model contains four dummy (or nominal) variables: loss, industry type, audit quality, and role duality.

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The selected independent variables consist of five categories. The first category relates to accounting and financial firm characteristic and consists of 4 variables; the second category is related to market and regulatory factors and consists of 4 variables; the third category is related to ownership structure and consists of 6 variables; the fourth group is related to financial transparency and disclosure and consists 2 of variables, while the last category relates to corporate governance factors and consists of 5 variables.

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 (e.g., Horrigan, 1966; Kaplan and Urwitz, 1979; Boardman and McEnally, 1981; Lamy and Thompson, 1988; Ziebart and Reiter, 1992; Blume *et al.*, 1998; Adams *et al.*, 2003; Galil 2003; Pettit *et al.*, 2004; Altman and Rijken, 2004; Doumpos and Patsiouras 2005; Demirovic and Thomas, 2007), or studies on corporate governance (e.g. Dann and DeAngelo, 1983; Baysinger and Butler 1985; Hermalin and Weisbach, 1991; Jensen 1993; Gordon and Pound 1993; Nesbitt 1994; Agrawal and Knoeber 1996; Shleifer and Vishny 1997; Opler and Sokobin 1997; Klein 1998; Bhagat and Black 2000; Imhoff 2003; Yermack 2003), or studies on corporate governance and credit ratings (e.g. Sengupta 1998; Bhojraj and Sengupta, 2003; Skafe *et al.*, 2006). The independent variables were determined by critically reviewing the pertinent literature as outlined in the literature review chapter. Table 6-5 summarises the operationalistion of the independent variables that determine CR.

Table 6- 5: Measurement of independent variables

Variables		Abbreviation	Description
Accounting and financial aspects	Leverage	LEV	Total debt divided by total assets.
	Profitability	PM	Net income before extraordinary items divided by net sales.
	Capital intensity	CAP_INTE	Gross fixed assets divided by total assets.
	Loss Propensity	LOSS	1 if the net income before extraordinary items is negative in the current and prior fiscal year, 0 otherwise.
Market and regulatory factors	Firm size	SIZE	Natural logarithm of total assets.
	Growth opportunities	TSQ	Tobin's q.
	Industry type	TYP_SECT	1 if firm is a financial sector, 0 otherwise
	Audit quality	AUD_BIG	1 if the company is audited by a big four company, 0 otherwise.
Ownership structure	Blockholders	BLOCK	% of shareholders who hold 5% or more ownership.
	Institution ownership	INST_OWN	% of shares held by institutional investors.
	Insider's ownership	INSID_OWN	% of shares held by insiders (managers not directors).
	Government ownership	GOV_OWN	% of shareholdings owned by government.
	Foreign ownership	FOR_OWN	% of shareholdings owned by foreign.
	Family ownership	FAML_OWN	% of shareholdings family owned.
Financial transparency and disclosure	Timeliness	TIMELINESS	negative one times the squared residual from the following regression $RET_j = \beta 0 + \beta 1\ NIBE_j + \beta 2\ LOSS_j + \beta 3\ NIBE_j * LOSS_j + \beta 4\ \Delta\ NIBE_j + \epsilon$
	Working capital accruals	WCAQ	scaled working capital accruals (SWCA) for year t are expressed as a linear combination of the scaled cash flows (SCF) for year's t -1, t and t +1, respectively: $SWCA_t = \alpha + \beta_1 SCF_{t-1} + \beta_2 SCF_t + \beta_3 SCF_{t+1} + \varepsilon_t$.
Corporate governance	Board independence	BRD_IND	Number of independent directors on the board.
	Role duality	R_D	1 if the CEO is the chairman at the same time, 0 otherwise.
	Board expertise	BRD_EXPERT	Number of independent directors that hold seats on other firms' boards.
	Board stock	BRD_STOCK	Number of directors that own stock in the firm.
	Board size	BRD_SIZE	Number of the members on the board.

6.7.2.1 Measurement for financial transparency and disclosure variables

Two proxies can be used to measure financial transparency and disclosure: timeliness and working capital accruals.

The financial transparency aspect of disclosure is important to establish the impact of earnings on the returns of the companies. If those earnings closely map onto the returns then this is an indication of transparency of the accounting data. However, if the relationship is weak, the transparency is poor. A measure is required to establish what we might mean by poor or good transparency. There is a logical argument that the timeliness of the impact of the accounting data should have an impact on the CR (Skaife *et al.*, 2006). There are several procedures that need to be followed to establish an objective measure of timeliness. First of all, the market returns on the shares need to be measured. This is achieved by taking the end of year price plus any dividends during the period and measuring the result as a proportion of the beginning of year price. Thus, the market return is established. Of course, the return can be affected by more general economic events that affect all shares and so the overall market impact needs to be separated out. It is common practice to adjust the returns by deducting the required beta-adjusted market return to arrive at the excess market return. The required return for this purpose is that derived by the capital asset pricing model. Thus, we take the equity risk premium and multiply by the beta coefficient to derive the firm's risk premium and add the risk free rate to the result (Sharpe, 1964).

6.7.2.1.1 Timeliness

The proxy for timeliness (see Skaife *et al.*, 2006) is: negative one times the squared residual from the following regression

$$RET_j = \beta_0 + \beta_1 NIBE_j + \beta_2 LOSS_j + \beta_3 NIBE_j * LOSS_j + \beta_4 \Delta NIBE_j + \epsilon$$

Where

RET_j= the market-adjusted return over the fiscal year for firm j;

$NIBE_j$ = net income before extraordinary items;

$LOSS_j$ = one if NIBE is negative, zero otherwise;

$\Delta NIBE_j$ = the change in net income before extraordinary items.

For estimating the risk premium for Jordan, it has been established by Amoeteng and Kargar (2004), based on the International Finance Company's stock market database for the period 1999 to 2002 inclusively, that the monthly mean percentage rate of return on the equity market for Jordan was 0.1192. However, this was a period of time when many stock markets experienced negative rates of return. For example, they cite Standard and Poor 500, FT 100 and Nikkei each with negative rates of return. The actual unsystematic risks (standard deviations) of these three countries' monthly rates of return were 5.1831, 4.5863 and 6.8141, respectively, compared with a standard deviation of 3.5454 for Jordan. This would suggest that Jordan has a lower risk premium than these other countries. One way to proceed is to take separate estimates of the risk premium for each country and estimate that for Jordan based on the size of its own risk relative to that of each of the other n countries. Hence:

estimate of Jordan's risk premium = $(1/n)$ x Σ (for all i = 1 to n) [(risk premium for country i) x (standard deviation of returns for Jordan)/(standard deviation of returns for country i)]

Simulated risk premia for the US, UK and Japan have been estimated at 5.4%, 4.4% and 3.3%, respectively (see Omran and Pointon, 2008). It follows that the estimate of Jordan's risk premium would be of the order of:

$(1/3)[0.054(3.5454/5.1831) + 0.044(3.5454/4.5863) + 0.033(3.5454/6.8141)]$

= 0.0294 = 2.94%.

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It is also necessary to establish a figure as a proxy for the risk-free rate. Creane *et al.*, (2003), who have undertaken an analysis of financial development in the Middle East, discuss the issuance of five year bonds by the Jordanian government with a market yield estimated at 4.5 per cent. This is chosen for the proxy of the risk-free rate. It follows that the excess rate of return for firm j, RET$_j$, is given by:

$$RET_j = r_{Aj} - [0.045 + 0.0294 * \beta_j],$$

Where

r_{Aj} is the actual rate of return for firm j, whose beta is β_j.

Having established the excess rate of return, this can be regressed against earnings related measures, to establish residuals. It can be argued that the lower the value of the squared residuals the more timely the earnings' measures. This procedure, set out by Gu (2002) and cited and applied by Ashbaugh-Skaife *et al.*, (2006), is designed to measure the extent to which earnings' measures do not explain excess returns. The procedure these researchers follow, and which we also adopt, is to multiply the result by minus one so that the negatively adjusted independent variable is hypothesised to be associated with timeliness. In other words, greater values of the revised independent variable suggest more timely earnings.

6.7.2.1.2 Working capital accruals

The scaled working capital accruals (SWCA) for year t are expressed as a linear combination of the scaled cash flows (SCF) for year's t -1, t and t +1, respectively:

$$SWCA_t = \alpha + \beta_1 SCF_{t-1} + \beta_2 SCF_t + \beta_3 SCF_{t+1} + \varepsilon_t.$$

The regressions were run for each of the three sectors, namely, the financial, industry and service sectors. Then, the negative values of the current residuals (ε_t) are used to represent scaled working capital accruals, the proxy for transparency:

SWAQ (transparency) = - $((\varepsilon_t^2)^{0.5} < 0$.

The proxy we use for transparency is slightly different from the one used by Ashbaugh-Skaife *et al.*, (2006). Firstly, following Dechow and Dichev (2002), they take the residuals from a regression of scaled working capital accruals against scaled cash flow terms for the current, previous and next years, respectively. The working capital accruals and the cash flows are scaled by the average total assets. Secondly, they derive the standard deviation of the residuals based on the previous 3 to 5 years, and multiply by the factor of minus one to generate the correctly hypothesized sign. [21]

The model in this thesis takes account of more recent transparency than the Ashbaugh-Skaife model, since it reflects the actual absolute deviation (from zero) of the current residual rather than the standard deviation of the past three to five years. Thus, my modified procedure reflects a more contemporaneous measure of transparency. From the regression at step one, an equation is generated from which to predict the working capital accruals and such predictions are compared with actual values to arrive at the residuals in the normal way. All values are then treated as negative, i.e. the final figures are minus one times the absolute values, in order to establish the correctly hypothesized sign. Based on the above proxy,

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[21] Using Dechow and Dichev (2002) adjustments, similar to those by Ashbaugh-Skaife *et al.*, (2006) to model the quality of the financial reporting of accruals, Francis *et al.*, (2005) demonstrate that there is a negative relationship between the quality of accruals and the cost of debt. In their work, control factors are included to accommodate the effect of other cost of capital related variables, such as size and book to market value. Furthermore, Prevost *et al.*, (2008) examine the impact of abnormal accruals on the yield spreads on corporate bonds, and conclude that, especially for speculative bonds, accruals which depart from normality are associated with a higher cost of debt. Clearly, this has implications for credit rating in that the behaviour of firms to try to distort earnings, by making them less value relevant, is unravelled by investors and reflected in the market price of tradable corporate bonds so that the CR should reflect the underlying earnings.

greater transparency should be associated with a higher quality of accruals, i.e. associated with a greater success in the extent to which the SWCAQ reflect the cash flows.

Later in this chapter I will explain how models will be used to test the relationship between the independent and dependent variables.

6.8 Sample Size.

The strategy for sample selection is to select all companies listed on the ASE in December 2005, 2006 and 2007, excluding banks and companies that do not have a WVB_CR. Table 6-6 summarises the classification of the listed Jordanian companies from 2005-2007.

Table 6- 6: Population of the study

	2005	2006	2007	Total
Number of companies listed on ASE	212	237	255	704
(-) Banks	(16)	(16)	(16)	(48)
(-) Companies without a WVB_CR	(15)	(27)	(37)	(79)
Final sample of companies with a WVB_CR	181	194	202	577

6.9 Data Analysis

There are some steps need to be followed, regarding:

- Determining the nature of the data to be analysed: the nature of the data either is quantitative or qualitative. Since most of the collected data are numerical, the study

will utilise quantitative data analysis in investigating CR in Jordanian listed companies and in testing the relationship between credit rating and corporate characteristics, such as, ownership structure, financial transparency and disclosure and corporate governance.

- Determining the type of the data for which there are two types of data:

- Firstly, categorical data whose values cannot be measured numerically but can be classified into categories according to their characteristics. These categories either belong to two sets and are called dichotomous (or dummy data) or to more than two sets without ranking in order which are called nominal data. When the categorical data are placed in rank order, they are called ordinal data the CRs are ordered and, therefore, fall into this category; for example, AAA, AA1,AA2,AA3,A1,A2,A3,BBB1, BBB2, BBB3, BB1, BB2, BB3, B1, B2, B3, C1, C2, C3 and D.

- Secondly, quantifiable data, whose values are measured numerically. This type of data is classified into two sub-types: interval and ratio or continuous and discrete data. If the relative differences between the two data values can be calculated then the data are called ratio data, otherwise they are called interval data. On the other hand, if the data can take any value from the measurement scale they are called continuous data; otherwise, they are called discrete data, when they take only one of a finite number of values from that scale (Saunders, *et al.*, 2007). According to the current study, there are 17 ratio and continous variables. Figure 6-2 summarises these types of data.

Figure 6- 2: Summary of the types of data and variables related to this study
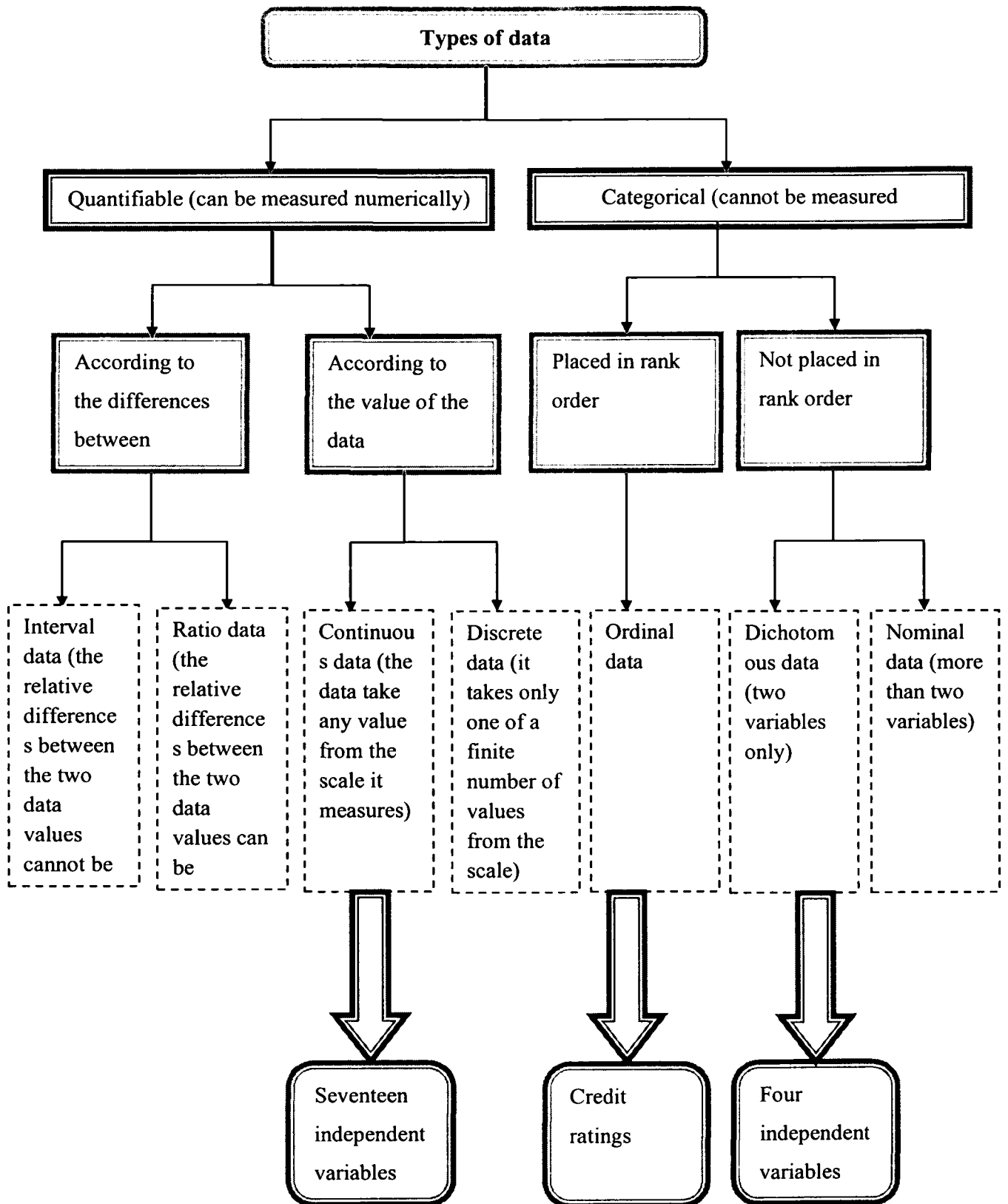
Having recognised the type of data, the data are prepared, ready for analysis. Adapting data for analysis is an important step because it facilitates the analytical process, saves time and makes the results more reliable. However, preparing data includes processing data through statistical software. Firstly, data entry in an Excel sheet is to be compatable with the chosen statistics' software, which is to be used in analysing the data. In this study, analysis of the data is expected to be performed using SPPSS (V.17) and Statagraphics 5.Secondly, data coding will be performed in this study. This includes identifying dichotomous and nominal variables, as well as continues variables at the same time as entering the data value. For example, a dichotomous variable taking on the value of '0' or '1' is used for a high or low rating; a continuous variable is used for the WVB internal numerical scores; and an ordinal score of 4, 3, 2, and 1 is used for BB, B, C and D credit risk categories, respectively. They are used in different models as explained later. Thirdly, the data have to be checked to ensure that the codes of the different variables are well defined, and to check for any missing data in the sample of the study, to ensure that the data are well entered.

6.10 Statistical Techniques

Many techniques will be used in the current study. Bivariate analysis is used for each independent variable by using parametric and non parametric tests. According to Cooper and Schindler (2001) and Saunders *et al.*, (2007), parametric tests have some assumptions, which the researcher should be aware of, and include:

- 'the observation must be independent;
- the observation should be drawn from normally distributed populations; and
- these populations should have equal variances.

6.10.1 Parametric tests

The parametric tests will include:

- 'the Pearson product moment correlation coefficient (r), to measure the association between all the dependent variables and the continuous independent variables;

- the t-test and Levene test, which determine the association between all the dependent variables and any dichotomous independent variables', and

- One-way analysis of variance (ANOVA), which tests differences in mean values between groups.

6.11.2 Non-parametric test

The non-parametric test will include:

- the Spearman's rank correlation which will be performed for the same purpose of Pearson correlation on parametric test;

- 'the Mann-Whitney U-test, which is conducted for the same purpose as the t-test on parametric data'. For continuous variables (i.e. firm size, leverage, profitability, growth opportunity (Tobin's q), capital intensity, block ownership, institution, insiders, government, family ownership, foreign ownership, timeliness, working capital accruals, board independence, board size, board expertise and board stock), correlation coefficients is used. Pearson product-moment correlation (a parametric test) is used when the normality assumption was satisfied, whereas Spearman rank correlation (non-parametric tests) is performed for continuous independent variables, if the assumption of normality is violated. T-test (parametric) and Mann Whitney (non-parametric) tests are used to examine the impact of the four categorical variables (loss, sector type, audit type, and role duality) on the CRs.

6.10.3 The Regression Model

As has been mentioned earlier, the availability of continuous numerical credit scores obtained directly from WVB enables more rigorous statistical testing to be undertaken.

The ordinary least squares (OLS) model of the current study can be illustrated as follow:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_{21} X_{21i} + \varepsilon_i$$

Where:

Y: credit rating (numerical score).

i = number of company.

α = the intercept.

$\beta_1 \ldots \beta_{21}$ = the coefficients of the independent variables.

$X_1 \ldots X_{21}$ = the explanatory variables.

ε = the error term.

Ordinary least squares (OLS) models will be run by using SPSS V.17, each model containing 17 continuous variables (X_1 = Leverage, X_2 = Profitability, X_3 = Capital intensity, X_5 = Company size, X_6 = Tobin's q, X_9 = Block holder ownership, X_{10} = Institutional ownership, X_{11} = Insider ownership, X_{12} = Governmental ownership, X_{13} = Family ownership, X_{14} = Foreign ownership, X_{15} = Working capital accruals, X_{16} = Timeliness of earnings, X_{17} = Board independence, X_{19} = Board expertise, X_{20} = Board stock, and X_{21} = Board size) and 4 categorical variables (X_4 = Loss propensity, X_7 = Type of sector, X_8 = Audit type, and X_{18} = Role duality).

Before running the regression model, it will be essential to check the major assumptions of regression, namely: normality of residuals, multicollinearity (see Gujarati, 2003),

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homoscedasticity of residuals e.g. constant variance (Field, 2007), linearity of relationships, and independence of errors (Tabachnick and Fidell, 2001).

6.10.3.1 Assumptions Underlying Multiple Regressions

Regarding the multiple regression techniques (parametric testing), there are some assumption which have to be checked before running the regression model, which performed using SPSS, namely, for normality, multicollinearity, linearity, homoscedasticity, and independence of the errors (Field, 2007). If any of the latter assumptions are not supported, the results of the OLS model may be misleading and inefficient to the study unless they are properly accommodated. These assumptions can be illustrated as follows:

6.10.3.1.1 Normality of Residuals

Normality implies that errors (residuals) should be normally distributed (see, for example, Saunders et al, 2007). Technically, normality is necessary only for hypothesis tests to be valid. Then normality assumption can be tested by normality plots, such as: P-P plots and histograms for both the residual and dependent variable. Normality is achieved when there is a well defined symmetrical bell shaped curve to represent the distribution.

6.10.3.1.2 Multicollinearity

Multicollinearity implies that there is a linear relationship between two or more independent variables (Gujarati, 2003). When multicollinearity exists, it will be difficult to differentiate the individual effects of the explanatory variables, and the OLS estimators may be biased and tend to have greater variances. Multicollinearity can be tested simply by using a correlation matrix of Pearson's product moment. When the correlation coefficient exceeds 0.80, it will be a matter of concern for collinearity (Gujarati, 2003; and Field, 2007).

Further, the variance inflation factor (VIF) and tolerance value will be used to check whether there is a collinearity problem between the independent variables or not, having performed an

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OLS model. Saunders *et al.*, (2007) and Field (2007) indicate that a large value of VIF (10 or above) and a very small value of tolerance (0.10 or below) indicate high collinearity.

6.10.3.1.3 Homoscedasticity of Residuals

The homoscedasticity assumption means that the variance of the error terms is constant for each observation (Saunders *et al.*, 2007; Field, 2007). To examine the homoscedasticity graphically, one can look at plots of residuals versus predicted values, and notice if the absolute residuals are becoming larger (more spread-out) as a function of predicted values (Field, 2007).

6.10.3.1.4 Linearity

The relationship between the dependent and independent variables should be linear (Saunders, et al. 2007). To examine this, one can look at the plots of the residuals versus the independent variable values. If linearity exists, there will be no obvious clustering of positive residuals or a clustering of negative residuals. Linearity can also easily be checked through plotting each independent variable against the dependent variable and see how well does the fitted regression line represent their relationship from the graphs for checking linearity of each independent indicate, most of the independent variables in the model do not have an obvious linear relationship with the dependent variable. In such cases transformation of variables is undertaken. In such a situation, data transformation is required (Cook, 1998). Transformation of data the most common techniques used by many researchers. Moreover, Field (2007) states that log transformation is the most common way. Therefore, this study will transform the variables' data before implementing statistical tests for the proposed hypotheses. Consequently, the current study applies the transformation for independent variables as a result of not achieving the linearity assumption.

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6.10.3.1.5 Independence of Errors

The independence of errors assumption refers to a lack of correlation between errors, as pointed out by Tabachnick and Fidell (2001). The Durbin-Watson test is used to test the autocorrelation of errors. In particular, it measures whether adjacent residuals are correlated or not (Field, 2007). The test value varies between 0 and 4, and a value of 2 indicates uncorrelation of errors. Negative correlation occurs if the value of the test is significantly above 2, while positive correlation occurs if the value is significantly below 2 (Field, 2007). However, Field (2007) has argued that the number of explanatory variables in the regression model and the number of observation are major determinants of the value of the Durbin-Watson test statistic. The problem here is that there is no exact acceptable value, by which independence of errors can be judged. However, Field (2007) pointed out a conservative rule that values less than 1 or greater than 3 are certainly cause for concern. Moreover, even values near two may be biased depending on the sample and the model.

6.10.4 Other Modelling Techniques

There have been a large number of studies over the last 40 years attempting to build models that accurately predict CR, as discussed in the literature review.

According to the previous studies performed in the area of CR prediction, a wide range of different methodologies has been highlighted. These studies show that financial variables can be used to estimate between 55% - 70% of corporate bonds accurately.

6.10.4.1 Logistic regression (LR)

The ordinary least squares (OLS) technique has been applied to develop the firm rating model, which suffers as explained before from some problems in its assumptions. Logistic regression (LR) is used for model formulation and is specific to a binary classification problem (high/ low rate); it is known to exhibit better generalization behaviour than least

squares regression, as is observed empirically (Baesens, 2003; Lim et al., 2000; Van Gestel *et al.*, 2004).

6.10.4.2 Ordinal Logistic Regression (OLR)

Further, the ordinal logistic regression (OLR) model (Johnson and Albert, 1999; McCullagh, 1980; McCullagh and Neider, 1989) is an extension of the binary logistic regression model for ordinal multi-class categorization problems, like e.g., category 4 (BB3-BB), category 3 (B3-B), category 2 (C3-C) and category 1 (D). Hence, it is obvious that ordinal logistic regression is an interesting technique to model credit ratings in Jordanian environment. Classifying the ordered logit into its constituent components adds more depth in the analyses of the data and provides new directions for explanation of the relationships between CR and different group determinants.

Thus, we seek to map financial and industry variables to CRs, which are surrogates for creditworthiness. The structure of CRs, however, presents several econometric issues. **First**, the ratings are discrete rather than continuous. **Second**, there is a natural ordering to the ratings—AA is a higher rating than A, which is a higher rating than BBB. **Third**, the ratings' categories are not necessarily evenly spaced—the BBB rating category, for example, may traverse a wider range of financial and industry variables than the other categories. Kaplan and Urwitz (1979) and Blume, Lim and Mackinlay (1998) discuss many of these issues.

According to the logistic regression, I use an alternative classification scheme that partitions CRs into two categories—BB categories, as the indicator of higher credit risk, and lower categories. We use the marginal effects model by calculating the marginal changes in the probability of a firm receiving a BB category of CR as a result of a one standardized unit change in each of our governance variables.

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Two logistic multivariate analyses will be used for examining the association between the CR and explanatory variables namely ordered logistic regression (OLR), and binary logistic regression analysis (LR). An analysis of the output from these models, together with the untransformed ordinary least squares (U_OLS) and trasformed ordinary least squares (T_OLS) models, will represent one of the main contributions of the study. Together the models provide more thorough evidence on the determinants of CR.

6.10.4.3 Logistic Binary Regression (LR) and Ordinal Logit Regression (OLR) Models

According to the LR, the study will summarize the relationship between the dependent and independent variables in the following equation of the natural logarithm of the ratings' odds-ratio. The same methodology will be to different models, as follows:

Model 1: log of ratings' odds-ratio = f (control variables) + ε.

Model 2: log of ratings' odds-ratio = f (control variables, ownership structure) +ε.

Model 3: log of ratings' odds-ratio = f (control variables, financial transparency) +ε.

Model 4: log of ratings' odds-ratio = f (control variables, governance attributes) +ε.

Model 5: log of ratings' odds-ratio = f (accounting and financial variables, market and regulatory variables, ownership structure, financial transparency, governance attributes) +ε.

More formally, $\ln [P/(1-P)] = f(X_1 ... X_n) + \varepsilon$

$$= \alpha + \sum_{i=1}^{n} \beta_i X_i + \varepsilon$$

$$p = \frac{1}{1+\exp(-[\alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n])}$$

where p represents the probability of being in category 1 and not category 0 for binary logistic regression, and X_1, X_1, ... X_{21} are: Leverage, Profitability, Capital intensity, Loss propensity, Company size, Growth opportunity, Type of sector, Audit type, Blockholder ownership, Institutional ownership, Insider ownership, Governmental ownership, Family ownership, Foreign ownership, Working capital accruals, Timeliness of earnings, Board independence, Role duality, Board expertise, Board stock and Board size, are before.

As to ordinal logistic regression, a similar methodology applies expect that an order ranked list (1, 2, 3, 4) of categories operates and parameter coefficients (β_s) are determined for paired orderings down the risk.

According to the above, the dependent variable is the log of the odds-ratio for the credit rating of the long term debt and which consists of two groups, namely, the (BB) categories group and the below categories to (D) category. Under logistic regression there are two grades, whereas ordinal logistic regression there several grades.

By using the five previous models, the current study can indicate the effect of each group on CR. Four different categories can be used to measure the credit rating. Each category represents successive classes of risk. So the firms can be ranked according to their credit rating category.

6.10.4.4 Marginal Effects

The next stage is to assess the relative importance of key factors (x_1, x_2, x_3...) in the models. Their impact can be evaluated by calculating the change in probability of receiving a higher rated category arising from each ownership structure, financial transparency and disclosure and corporate governance on firm characteristic variable in turn. These are designated as the marginal effects for this model, which are the direct impacts of a unit change in the respective

variable, holding all other variables constant. In the case of the logistic regression we can write the probability of an assessment being in the higher category as:

Probability (Y = 1) = (*oddsratio*) / (1+*oddsratio*)

where

$\exp(a + bX_1 + cX_2 + dX_3 + \cdots) = $ *odds ratio*

$a, b, c, d, \ldots$ = respective coefficients.

For a unit change in X, the partial change in the probability (Y = 1) is given by:

$$\frac{\partial p}{\partial X} = \frac{\partial}{\partial X}\left[\frac{\exp(a+bX_1+cX_2+dX_3+\cdots)}{1+\exp(a+bX_1+cX_2+dX_3+\cdots)}\right]$$

$$= b\left[\frac{\exp(a+bX_1+cX_2+dX_3+\cdots)}{[1+\exp(a+bX_1+cX_2+dX_3+\cdots)]^{\wedge}2}\right]$$

$$= bp\,(1-p)$$

In the above formula for the marginal effects, the values of p *and* $(1-p)$ are evaluated at their mean values for the in dependent variables.

The essence of the marginal effects calculation is to assess the sensitivity of the upper credit rating category to a unit change in each CG on firm characteristic variable. This is important for firm because it shows the key factors and their role in helping to achieve a higher grade CR. Skaife *et al.*, (2006) also suggest an alternative approach is to evaluate the probability (y = 1) for both upper and lower quartile values of the independent variables, citing Agresti (2002).

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6.11 Summary

This chapter described the research methodology followed in the present study in order to examine the topic of corporate governance and CRs to accomplish its objectives and respond to the main research questions. In addition, the current study represents three years period country study namely Jordan that aims to investigate descriptively and empirically the determinants for WVB_CR of the Jordanian listed companies.

There are different philosophies of the research which is epistemology, ontology and axiology. The research methods which are either quantitative or qualitative, the research approaches that are either induction or deduction, the suitable methodology to this study that embraces the positivistic philosophy, quantitative method and deduction approach. The data sources sets out the proposed and analysis. This study is described how the research draws upon secondary data, the hypothesis tests. The nature of the data is quantitative, the type of the data continuous, dichotomous and nominal, and the analysis of data descriptive analysis.

Moreover, explaining the measurements of current study for both dependent and independent variables. Both parametric and non-parametric tests are performed to achieve the triangulation. Further, untransformed ordinary least squares (OLS), transformed ordinary least squares (T_OLS), binary logistic regression (LR) and ordinal logistic regression (OLR) models will be used to examine the relationship between CR and the explanatory variables.

CHAPTER SEVEN: DEVELOPMENT OF HYPOTHESES AND THE RESEARCH MODELS

7.1 Introduction

This chapter consists of two sections. The initial hypotheses' development section will be discussed in relation to the theoretical background. The second section focuses on the research models.

7.2 Hypotheses' Development

In reflection of the study problem, the independent variables should be identified and theorised in order to formulate testable hypotheses, this study has five sets of hypotheses. The first and second, sets of hypotheses represent the relationships between the accounting and financial category-variables, market and regulatory category-variables and CRs respectively. The third set of hypotheses investigates the relationship between CRs and a firm's ownership structure. The fourth group of hypotheses represents the relationship between CRs and a firm's financial transparency and disclosure. Finally the fifth group of hypotheses pertain to the relationship between CR and corporate governance.

7.2.1 Accounting and Financial Category Variables

The hypotheses, related to the accounting and financial variables, are developed below:

7.2.1.1 Leverage

Leverage provides the relationship between the capital provided by the creditors/banks and the equity from shareholders. The higher the ratio, the greater the risk there is of a credit default (Doumpos and Pasiouras, 2005). So CRs would go down generally if there is an

increase in leverage (Skaife *et al.*, 2006). According to the wealth redistribution hypothesis there is an anticipated relationship between CRs and leverage. Highly leveraged firms will be responsible for fulfilling the bondholders' needs by attracting higher ratings from CRAs to make these bondholders more confident about the ability of the firms to observe their financial obligations towards them.

When there occurs a better monitoring for management this will tend to lead to bondholders' interests being generally aligned. As a result of lending agreements between bondholders and management of the firms, monitoring costs will arise. These costs should be minimized and the conflict between the management and bondholders should be avoided if possible. However, because of wealth-transfer effects, a reduction in future cash flows increases bondholders' default risk (Skaife *et al.*, 2006). Jensen and Meckling (1976) Watts (1977) and Watts and Zimmerman (1986) propose that agency costs will be raised as the proportion of bondholders in the company's capital structure increase.

One way for a reduction in bondholders' default risk is attaining higher CRs of these firms because the risk of default increases with leverage. Both the shareholders and bondholders would demand a higher CR. Both shareholders and creditors need more information to assess the financial ability in terms of cash generation of the high leverage company (Cantor and Packer, 1997; Blum, Lim and Mackinalay, 1998; Adam *et al.*, 2003; Gray et al. 2006; Skaife *et al.*, 2006).

According to the signalling theory, highly leverage firms values reflect greater default risk, which lead to lower CRs which are bad signs for these companies in the market. In the same way, it can be argued that the low-leveraged companies may reflect decreased default risk; this leads to higher CRs revealing enhanced creditworthiness which is a good sign for stakeholders. Given the presence of debt there underlies a negative relationship between

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leverage and CR, because high leverage lead to greater default risk, and increases the chances of financial bankruptcy. At the same time debts need to be serviced and as such restrict the cash flow of the company. This helps in disciplining management and ensuring that there are no unnecessary cash flow diversions. The debtors also act as good overseers of firm activity to protect their investments and as such endorse profitable investments while steering the company from wasteful expenditure. Therefore, firms attaining higher CRs give stronger signals of the firms' ability to cover service debt and capital repayments through current and future cash flows to the firm. Thus, for Jordanian firms the following hypothesis is proposed:

H1-1: There is a negative relationship between leverage and CR.

7.2.1.2 Profitability

Profitability simply means a proper use of resources of the firm to generate income. The relationship between profitability and CR is important for many reasons. According to agency theory, any firm achieving a high profit is prone to earn a high rating from a CRA. This may indicate better future operating cash flows for the firm, with benefits to shareholders and bondholders (Borthman, 1989; Bouzouita and Young, 1998; Adam *et al.*, 2003; Gray *et al.*, 2006). The more profitable the firm is, the lower the likelihood of default and of facing financial difficulties and bankruptcy. Consequently, lower default risk should lead to firms having higher CRs. Therefore, a positive relationship is expected between profitability and CRs.

High profitability should be a significant factor that affects a firm attaining a higher CR, and providing a strong signal to raise bondholders' confidence through a reduction in the default risk. According to legitimacy theory, highly profit able firms will legitimate themselves to

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attain higher CR through creating future cash flows. Legitimacy theory suggests a positive relationship between the profitability of the firm and CRs.

According to the management disciplining hypothesis, controlling shareholders prefer a firm to be able to create future cash flows to ensure that pay out dividends, or retain funds after covering for interest debt financing. On the other hand, managers of highly profitable companies are motivated to help attain a higher CR of the company to achieve their own personal advantages. This indicates a positive relationship between profitability and CR.

According to the asymmetric information problems between the firm and its investors, such firms need higher CRs to minimize the information asymmetry, through an improvement in the future cash flows expected. Profitable firms are likely to have higher CR to reduce asymmetric information.

The wealth redistribution hypothesis assumes that more highly profitable firms are financially stronger and are able to face default risk and bankruptcy costs than firms of lower profitability. This lead to higher CRs suggesting a reduced transfer of wealth between shareholders and bondholders through future cash flows to the firm and a positive relationship between profitability and CR. Finally, a highly profitable firm might expect to achieve a high CR from a CRA and keep its image intact in the investors' mind. This research assumes a positive relationship between profitability and CR as is shown in the following hypothesis:

H1-2: There is a positive relationship between profitability and CR.

7.2.1.3 Capital Intensity

Capital intensity refers to the amount of gross fixed assets to the total assets owned by firm (Skaefe *et al.*, 2006). The wealth redistribution hypothesis suggests that collateralized assets

can be used as a monitoring instrument to control managers, and prevent threats of transferring wealth from bondholders to shareholders. Lenders require collateral since it is considered an explicit promise over debt. Therefore, a positive relationship is expected between capital intensity and CR.

A firm's value can be evaluated to some extent by a firm's current investment which is reflected by their proportion of fixed assets and the firm's future investment, which is reflected by assets that are yet to be acquired (Myers, 1977). This feature which maximizes its benefit as collateralization for debt also increases the lenders' guarantee. Consequently, greater fixed asset ownership can assist in attaining higher CRs.

Asset can make debt more secured. Also, tangibility of assets increases the liquidation value of the firm, and decreases the hazards of mispricing and the difficulties of financial loss in the case of bankruptcy. As to stakeholder theory, it can be assumed that companies with high fixed assets may have high CR and signal that to their stakeholders to reflect their high performance which increase their value and cash flow. Therefore, this theory also expects a positive relationship.

Firms prefer debt over equity. This is due to the fact that debt is considered more secured, and has less agency costs. The demand for debt will be covered by collateral assets, gives a better guarantee for bondholders and less transfer wealth from bondholders to shareholders. Therefore, the more the capital intensity present, the lower the risk to debt-providers, and the more the secured debt, thus leading a firm to attaining higher CR, and so a positive relationship is expected between capital intensity and CR. This research will follow these theories which expect a positive relationship between capital intensity and CRs represented in the following hypothesis:

H1-3: There is a positive relationship between capital intensity and CR.

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7.2.1.4 Loss Propensity

Firms with a propensity for losses are expected to have lower ratings reflecting a loss of reputation and an increase in default risk suggesting worse improving future cash flows to the firm. When a firm incurs a loss it sends out a signal that the CR is likely to be lower. If a firm reports negative earnings in more than one year, the likelihood of default is expected to be greater.

According to the above discussion, and because CR theories give positive implications for the relationship between profitability and CR, losses in net income are expected to have a negative impact on CRs. It shows the instability of the firm and will make creditors feel insecure, accordingly for Jordanian firms too, it is expected that there will be a negative relationship between loss propensity and CR.

By contrast, a highly profitable firm with a good CR can generate more confidence from its stakeholders, and help them in making coherent investment decisions, which may lead to an increase in the capital market base of these firms. Under the disciplining management hypothesis, the bondholders act as good overseers of firm activity to protect their investments and as such endorse profitable investments while steering the company from wasteful expenditure. But firms with lower current and future cash flows are likely to give a strong signal of their inability to cover their debt and capital repayments, which may lead to a lower CR.

The wealth redistribution hypothesis assumes that loss firms lead to default risk and bankruptcy costs. This would lead to lower CRs and an anticpated transfer of wealth between shareholders and bondholders through the future cash flows to the firm, implying a negative relationship between loss propensity and CR. Finally, a high loss firm may achieve a lower CR from a CRA and tarnish its image in the investors' mind. Thus, this research proposes a

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negative relationship between loss propensity and CR as is shown in the following hypothesis:

H1-4: There is a negative relationship between loss propensity and CR.

7.2.2 Market and Regulatory Category Variables

The hypotheses, related to the market and regulatory variables, are developed below:

7.2.2.1 Firm Size

Firm size is represented by the total assets and has been extensively used in research related to determining CR assessments (for example: Pottier 1997, 1998; Blum, *et al.* 1998; Bouzouita and Young, 1998; Skaife, *et al.* 2006).

Agency theory expects an important role for the relationship between a firm's size and CR, an enlarged size of a firm increases information asymmetry between its stakeholders and management, with a consequential increase in agency cost. However, through maintaining better corporate governance practices, a firm may reduce agency conflict with possible implications for creditworthiness and CR.

CRs are monitoring tools because they can avoid such costs in the case of economies of scale. Large investors occupy this monitoring role in these firms through attaining higher CRs and this also reflects a positive relation between a firm's size and CRs.

Large firms are less subject to default and bankruptcy risk (O'Brien and Bhushan, 1990) and should have the required resources and cash generating ability. They may minimize the concerns of their investors through their attaining higher CR assessments. According to signalling theory, if large firms can, through information disclosure, convey to their investors more effectively their ability to enhance current and future cash flows, then large firms should have better CRs and be more desirable to institutional investors.

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The wealth transfer hypothesis assumes that large firms are more diversified, have lower risk, a better reputation, more stable cash flows and fewer hazards assessed as default risk (Wing and Yiu, 1997) Thus these firms are in a stronger position to face bankruptcy and default risk and these lead to less transfer of wealth from bondholders to shareholders. Therefore, a positive relationship is expected between firm size and CRs (Skaefe *et al*, 2006). Therefore, the hypothesis relating to the firm size is:

H2-1: There is a positive relationship between a firm's size and its CR.

7.2.2.2 Growth Opportunities

According to signalling theory, firms with high growth opportunities provide a positive signal about the firm's future cash flows and hence institutional investors prefer to invest in high growth firms' rather than lower growth firms. In addition, high growth firms may bring more capital gains to institutional investors than lower-growth firms (Adams and Hardwick, 2003). Thus, a firm's growth rate is considered to be a positive signal for investors. Furthermore, firms with lower growth opportunities are more likely to fall into bankruptcy. Therefore, this indicates a positive relationship between growth opportunities and CRs.

Growth opportunities indicate prospects for sound future cash flow performance and improved economic value. Consequently, the greater the perceived ability of the firm to cover service debt and capital repayments the higher the CR should be (Adams and Hardwick, 2003).

Pottier and Sommer, (1999) and Adams *et al.*, (2003) find positive relationship between growth opportunities and CRs. Furthermore, legitimacy theory assumes that highly growth companies will legitimate themselves through attaining a higher CR.

According to the asymmetric information hypothesis, firms with higher growth opportunities have higher CRs, which enable them to reduce information asymmetric problems between investors and firms, because higher CRs give more evidence about the ability of firms to generate greater future cash flows and cover interest on debt and capital repayments in a timely maner. Growth opportunities could be an indicator for the firm's success and the level of its profitability.

Growth opportunities also reduce transfers of wealth between shareholders and bondholders, according to wealth transfer hypothesis. This research will thus propose a positive relationship between growth opportunities and CRs as represented formally in the following hypothesis:

H2-2: There is a positive relationship between growth opportunities and CR.

7.2.2.3 Sector Type

In general, the Jordanian corporate sector can be divided into three major types, namely industry, finance and service, and they all have different CR grades. Thus, a variety of characteristics may influence the grade of CRs within each sector.

Funding requirements for asset needs are likely to vary by sector type. Firms within the same sector are likely to have similar types of assets; firms in the same sector may also face the same default risk because they share the same technology in production of similar goods and services as well as incurring similar costs for raw materials and labour (Skaife *et al.*, 2006). Some sectors may be associated with scale economies, and thus be composed predominantly of larger firms.

Particularly, Demsetz (1973) found that industrial sector type has a significant relationship with the level of CR. Also, Iskander and Emery (1994) report that industry factors play an

important and significant role in the determination of CRs, after controlling for financial characteristics.

Gray *et al.*, (2006) reveal that firms in the same industrial field tend to have similar amounts of leverage. Also, Skaefe *et al.*, (2006) argue that industry regulation has a strong positive effect on long-term debt capacity. This perhaps indicates lower agency costs of debt in regulated industries through attaining higher CRs associated with product and industry characteristics. The type of sector hypothesis can be stated as follows:

> **H2-3: There is appositive relationship between the type of sector and CR.**

7.2.2.4 Audit Type

Audit quality refers to the degree to which audits of the financial reports of companies conform to applicable standards (Deis and Giroux 1992; Aldhizer *et al.*, 1995; Krishnan and Schauer, 2001). DeAngelo (1981, p. 186) explains about "the market assessed joint probability that a given auditor will both (a) discover a breach in the client's accounting system, and (b) report the breach", whilst Titman and Trueman (1986, p. 160) refers to the auditor and "the accuracy of information he supplies to investors".

According to agency theory, the existence of auditors alleviates the conflict between all stakeholders including shareholders, bondholders and management as they tend to reduce information asymmetry through more information. Firms will choose a level of audit quality whilst big auditors prefer to audit the clients that yield higher creditworthy to keep their reputations in the market, (Jensen and Meckling, 1976; Watts, 1977; Watts and Zimmerman, 1986; Haniffa, 1999).

Large audit firms give good signals through auditor change prior to an initial public offering typically since a larger auditor possesses more credibility in the market. Consequently, the

appointment of big firms is a signal to the market that the audit process is performed effectively and they are deemed to provide information about the reliability of information pertaining to the ability of firms to generate greater future cash flows (Arther C. Allen, 1994).

Feltham et al. (1991) note that the cost of choosing a big auditor may outweigh the incremental benefits and auditor choice depends on a trade-off of costs and benefits. Also there can be a differential effect of client-specific risk across auditor types (Hogan, 1997). "fail to adequately reflect the underlying complexity of the choices which IPO firms face" Lee et al., (2003, p. 379). Using big auditor firms gives a good signal regarding earnings' forecasts after accounting for firm-specific risk (Lee et al., 2003). As result, using big audit companies may signal to their investors their ability to attain higher CRs and attract investors in these companies.

According to stewardship monitoring theory managers are trustworthy people who act in the best interest of firms and shareholders, and audits help reinforce this view by monitoring the performance of the appointed steward (agent). Cleary, major audit/ accounting scandals invalidate this perspective. High audit quality would mean a higher level of assurance for the principal. The greater the agency conflict of interests between two groups (those who own stakeholders and managers) the greater the agency costs, and the greater the demand for audits of high quality.

Only innovative firms are able to cope with unstable and continuously changing demands and markets. To be audited by a big audit firm adds authenticity to their innovative activities. According to innovation theory, big four audit can help support firms attaining higher credit ratings because the CRAs depends on the four big audit report.

The four big audit firms will influence companies to provide more information to all stakeholders about a firm's creditworthiness because they have higher skills and better

experience; in addition seek to maintain their reputation in the market, thus such big audit firms tend to audit larger, less risky clients (Beatty, 1989). These large companies should legitimate themselves through their higher CR. Therefore, the expectation, according to legitimacy theory is to find a positive relationship between audit type and CR. The hypothesis can be stated as follows:

> *H2-4: There is a significant relationship between the type of audit and CR.*

7.2.3 Ownership Structure Category Variables

The hypotheses, related to the ownership structure variables, are developed below:

7.2.3.1 Blockholder Ownership

According to management disciplining hypothesis, the conflict between owners and managers arises because ownership structure tends to be widely diffused (Oviatt, B. 1988). Yet, there are opportunities to reduce this conflict because of dispersed shareholders, who demand protection over their residual claims through a mechanism that monitors management actions, and limits their opportunistic behaviour by protecting the interests of owners through CRAs by providing more information.

This aids the shareholders through enhanced future cash flows of the firm (Skaife *et al.*, 2006). Therefore, the CR will be a valuable source of obtaining the information for the various categories of diffused investors.

With the separation between ownership and control it is proposed that the agency problem of conflict between the principal and the agent will increase with widely held companies (Fama and Jensen, 1983). To mitigate the severity of such problem, managers may be motivated to present, a good CR to their stakeholder if possible.

On the other hand, when concentrated ownership allows these shareholders to exercise a positive influence over management to secure benefits (that are useful for their own interests) and to act as a catalyst to expand access to higher ratings from CRAs, this should help preserve their competitive advantage over others, and generate good future cash flows.

As a result of the above, it is widely held that many firms will tend to aim for the best grade from agency ratings and thereby supply the shareholders with necessary information about the future cash flows of the firm. Research confirms this by showing a significant relationship between ownership diffusion and the CR (Bhojaj and Sengupta, 2003; Ashbough- skaife *et al.*, 2006).

According to the Jordanian context, the blockholder governance system is dominant; most of the Jordanian listed companies are concentrated (Al-Khouri, 2005). Based on the above arguments, the current study investigates the relationship between the blockholder ownership and CR for the Jordanian listed companies, through the hypothesis relating to blockholder's ownership:

> *H3-1: There is a significant relationship between blockkholder's ownership and CR.*

7.2.3.2 Institutional Ownership

Institutions that hold large equity stakes in a firm are very important to a well-functioning ownership structure. They have their own financial interests and independence, and can use their interests to guide towards best performance through liaising with management in their local policies of the firm in an unbiased way, and if they observe any self-serving behaviour they can put pressure on management by using their voting power (Jensen, 1973; Shleifer and Vishny, 1977). Institutional ownership is effectively a blockholder in a corporation with significant power to monitor the corporation executives (Lin *et al.*, 2007) better than minority shareholders to ensure that management practices lead to maximisation of firm value.

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Institutional ownership could be sensitive to a company's CR. The information asymmetry which arises from agency costs should be minimized between the companies and their institutions, and corporate governance activities are influenced by CR (Ashbaugh-Skaife *et al.* 2006).

According to management disciplining hypothesis, the existence of institutions alleviates the conflict between shareholders and management as they tend to encourage companies to attain higher CRs to reduce information asymmetry. Ashbaugh-Skaife *et al.*, (2006) argue that information asymmetry will be reduced by attaining higher CRs and this situation is expected by the investment funds through greater future cash flows to firms.

Gordon and Pound (1993) find that any change in institutional ownership structure by shareholders significantly influences a firm through use of voting outcomes. Shareholders have different interests, which may influence the management of a firm, especially if they are large owners such as institutions.

Higher CRs may reduce the information asymmetry and enhance the stock market liquidity, which represent a good sign for the stakeholders. Therefore, signalling theory purports that higher CR is associated with a higher proportion of institutional investors. Future cash flows to the firm timely represent one of the very important requirements of institutional investors. The CRs by CRAs will be a very useful tool to help investors assess the probability distribution of future cash flows to bondholders (Ashbough-Skaife *et al.*, 2006).

According to legitimacy theory, company may attempt to legitimates themselves and be motivated to attain higher CRs for their institutional investors. According to innovation theory, a company may face pressure to adopt an innovation not only from customers, but also from other parties, such as institutional investors (Abrahamson, 1991; O'Neill et al., 1998). Institutional investors are more sophisticated and generally own enough technical

expertise to monitor the mangers. It is found that institutional investor's pressure plays an important role in urging a company to adopt an innovation (Abrahamson and Rosenkopf 1997; Guler *et al.*, 2002). Institutional investors have greater resources to access information including full reports by agencies on individual companies. Additionally, the internet provides direct access to information, by all stakeholders but institutional ownership would tend to motivate firms to attain higher credit ratings.

The last few years have witnessed an increased in the percentage of the shareholdings in Jordanian listed companies in the hands of institutional investors (Goussous, 2002a; Kanaan and Kardoosh, 2002). Several major Jordanian private investor groups have acquired substantial equity in a number of privatized companies (ibid), and increased their proportion in listed Jordanian companies. Consequently, institutional investors can play a role in the governance of the companies; though information requests and requiring companies to gain their consent to many important board decisions. So, institutional ownership structure can be considered a significant influence on a firm's credit rating, as proposed by the following hypothesis:

H3-2: There is a significant relationship between institutional ownership and CR.

7.2.3.3 Insider's Ownership

Insider's officers and directors' ownership refers to the holding of significant stock positions align strategically with management. They often oppose the shareholder-sponsored proposals, because of their acting according to their personal interests and not heeding to the interests of the owners, which may cause a moral hazard problem. This can lead to conflict between owners and managers according to the management disciplining hypothesis (see Skaife *et al.*, 2006). So, one way to allay this problem is through managerial ownership and improvements in the informativeness of earnings (Jensen and Meckling, 1976; Warfield *et al.*, 1995).

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Consequently, entrenched management has a good chance of attaining higher CRs through creating better future cash flows to firm which would have a positive impact on the ability of to cover debt interests and capital repayment in a timely manner, and this represents a good signal for all stakeholders including bondholders. Therefore, inside ownership should increase the likelihood of attaining higher CRs for the firm.

Agency theory suggests that the separation of ownership and control creates agency costs. Therefore, suitable insider shareholdings may reduce these costs. Also, outside block ownership, institutional holdings or concentrated ownership tend to mitigate agency costs by creating a relatively efficient monitoring process over managers, and thus positively affect a firm's performance (De Miguel et al, 2005).

On the other hand, stewardship theory supports governance mechanisms, because the executives have incentives to ensure the principal's interests are aligned with their interests and empower the firm's management and avoid mechanisms that monitor and control it. Consequently, they are less likely to make decisions that may harm the interests of shareholders (Chen and Jian, 2007).

Under the management disciplining hypothesis, convergence of interests between shareholders and managers through managerial ownership may prevent the squandering of shareholders' wealth. Insider ownership of significant stock positions tend to prevent the squandering of shareholders' wealth due to the consensus in interests between management and shareholders (Shleifer and Vishny, 1997). According to Ashbough-Skaife et al., (2006) increasing insider ownership by those who hold significant stock positions leads to an enhancement in creating higher future cash flows and attaining higher CRs.

Skaife et al. (2006) state that the percentage of insider officers and directors i.e. management is significantly associated with credit rating. Consequently, the larger management

shareholdings may influence CR as the managers seek to inform the stakeholders of their good performance. Therefore, managerial ownership reduces the shareholders' need for controlling and monitoring. In this regard, Ashbough-Skaife *et al.*, (2006) mention that the lower the insider managerial ownership, the greater the agency problem. According to these proponents, insider ownership has a negative impact on CRs.

Overall, the code of corporate governance in the Jordan allowed managerial ownership in Jordanian listed companies, which influence on the CRs of the Jordanian listed firms. According to the above, the hypothesis to accommodate this variable is as follows:

H3-3: There is a significant relationship between insider ownership and CR.

7.2.3.4 Governmental Ownership

Government ownership of firms has had a long tradition in both developed and developing economies. Despite a wave of privatisation around the world in the past few decades, a significant proportion of the firm's assets around the world are still controlled by state-owned institutions. Government ownership represents a hybrid of dispersed and concentrated ownership. If the government is viewed as a single entity, state-owned firms have very concentrated ownership.

Government ownership of firms poses special governance problems. Governments can use their state owned institutions to support excessive government spending and to favour borrowers that are less than creditworthy. The bureaucrat managers thus are not given strong incentives to perform, since they operate under soft budget constraints and other pressures, such as political influence or bureaucratic sectoral interests.

Government ownership also reduces the monitoring incentives of private stakeholders, who would assume that their credits are guaranteed. In addition, government ownership thwarts

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competitive forces, limits the effectiveness of government supervision in the firm sector (Caprio and Levine 2002), and tends to increase the opacity of firms' operations. Why does government ownership of firms have such implications for corporate governance? It would be helpful to gain insights by examining the rationale for government ownership of firms. There are several different theories of government participation in firms, which have different perspectives in both the existence and the role of government ownership firms.

Governments seek to maximise social welfare, but this can generate corruption and misallocation (Banerjee, 1997; Hart et al., 1997). According to this view, governments design public financial institutions to address market failures. However, since state-owned enterprises maximise multiple non measurable objectives, agency costs within government bureaucracy can result in low-powered managerial incentives (Tirole, 1994). Certainly, low-powered incentives are not always bad Laffont and Tirole (1993) showed that, under some circumstances, a concern for quality calls for low-powered incentives. But given the incentive problems associated with the control of SOEs, the agency view concludes that the ultimate efficiency of SOEs depends on the trade-off between internal and allocative efficiency (Tirole, 1994).

The characterization of high governmental ownership may not be enhancing shareholder's value, for state-owned firms channel resources to socially profitable activities, and public managers may exert less effort (or divert away more resources) than would their private counterparts. Instead, it will be achieving goals that are related to the nation (Mak and Li, 2001). The agency view predicts that, in general, whilst state-owned firms serve social objectives and allocate resources where private markets fail, public managers of state-owned firms exert low effort or divert resources for personal benefits, such as career concerns, with an eye toward future job prospects in the private sector. Therefore, it is expected to find that companies with high government ownership have high CR.

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According to the legitimacy theory an important assumption is that politicians are self-interested individuals who pursue their own personal, political, and economic objectives rather than maximising social welfare. The main objective of politicians is to maintain voting support (Shleifer and Vishny, 1994; La Porta *et al.*, 2002). According to this view, politicians create and maintain state-owned firms not to channel funds to economically efficient uses, but rather to maximise their own personal objectives and legitimate themselves and hence differentiate themselves from the others. The result of this political interference is that resource allocation has little or negative impact on economic growth and in turn on CR.

Most listed Jordanian firms are state-owned companies, while, on the other hand some companies have a mixed ownership. Therefore, there is a need for examining the influence of this mixed structure of the Jordanian listed firms on CRs. Overall, the code of corporate governance in Jordan has allowed governmental ownership in Jordanian listed companies, which arguably has influence as the CRs of these listed firms. Despite the assumed importance of this variable (governmental ownership), as far as the author is aware it has not been investigated before in relation to CR assessments. So, depending on the above debate, the hypothesis will be:

H3-4: There is a significant relationship between governmental ownership and CR.

7.2.3.5 Family Ownership

Clearly, family firms refer to family-run businesses, sometimes small or medium sized firms as well as larger owner-managed businesses, and the latter are measured by the percentage of share capital owned by the family (Neubauer and Lank, 1998).

Jensen and Meckling (1976) give an exposition of the well-known agency theory whereby separation of ownership and control gives managers the freedom to expropriate non-

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pecuniary benefits at the expense of the owners of the firm. The separation of ownership and management lead to the dilution of control of the family in the business But in firms in which family ownership is concentrated, this can lead to little separation between them (Haniffa and Cooke, 2002). According to the agency theory, management ownership concentration gives results better aligned to managerial and shareholder interests and this should lead to increases in firm's value. Consequently, firms with high family ownership should expect higher CRs.

Fama and Jensen (1983) argue that family firms lead to less separation between management and shareholders, and reduces agency problems but at the same time decreases financial performance and increases the cost of capital; because the management ownership is concentrated in one group and if this level rises above its optimum level, there may be a decreased interest of investors in diversification opportunities for the investor with a decreased market liquidity.

Therefore, these firms should enhance their ability to create current and future cash flows and attract more loans from different investors. One way to achieve this is by increasing the level of CR assessments. Therefore, family firms have an incentive to legitimize themselves by attaining higher CRs. According to legitimacy theory, there is a positive relationship between CR assessments and family ownership.

Moreover, according to signalling theory, family owned firms may try to attain a higher CR signal and their good performance to different investors to attract them to invest in these companies, despite negative attitudes of investors regarding large family ownership. Furthermore, family companies should justify their existence by legitimacy their activities. Therefore, these companies should enhance their communication with different stakeholders revealing how they adapt to the increasing pressure from society and ensure survival and continuity within this society. One way to achieve this is by increasing the level of CR.

Consequently, it might be expected to find a positive relationship between companies with high family ownership and CR according to legitimacy theory.

According to the Jordanian environment, many listed companies include family ownership. As far as the author is aware, no previous study has examined the association between CR and the existence of family ownership. Consequently, the current study fills the gap in the CR's literature by investigating this association. Therefore, the expected hypothesis will be:

> *H3-5: There is a significant relationship between family ownership and CR.*

7.2.3.6 Foreign Ownership

The competitive environment is changing at an accelerating pace, leading to a high level of uncertainty. This growing uncertainty is the result of greater customer expectations, the dilution of borders between competitive environments, and the move towards global competition. Some firms build barriers to inhibit competition, to gain access to markets, to improve the level of market support and to gain timely knowledge of events occurring in the market place. As the level of dynamics in business environments increases, the development of strategies that will differentiate the organisation from its competitors becomes the key success factor (Feurer *et al.*, 1996).

Consequently, a good CR may attract more foreign investors in these companies, which should lead to an increase in the value of these companies and decrease their cost of capital (Bekeart and Harvey, 2000). Additionally, attracting foreign investors may increase the foreign currency which is greatly needed in developing countries (Managena and Tauringana, 2007). Therefore, it will be expected that there will be a positive relationship between foreign ownership and CR. Foreign owners arguably need more information about the ability of firms to cover interest debt and capital repayments and require more confidence about the ability of

management to meet their needs, and provide timely repayments for investors through current and future cash flows.

Foreign owners may press companies to divulge otherwise private information and to depend on technology for communication as an important signal, because increasing companies' quality of information improve investors' abilities to estimate company' value. CRs assessments will be a very useful tool in providing the information and conveying it to the various shareholders and bondholders.

According to the legitimacy theory, firms can legitimate themselves through the increased number of foreign ownership which represents a good sign for these companies in a globally competitive environment. Foreign ownership represents a sign of a good financial position and higher expected future cash flow, which influences a company's expected performance and CR.

According to the innovation theory (Katz and Kahn, 1978), firms that hold CRs can be accessed by the international financial markets more easily, providing an incentive for firms to improve future cash flows. Foreign ownership pressure should play an important role in urging a company to adopt innovations.

Although the importance of this variable (foreign ownership), has been stressed to the extent of the author's knowledge, it has been not investigated before in relation to CR assessments. So, depending on the above debate, the hypothesis will be:

> *H3-6: There is a significant relationship between foreign ownership and CR.*

7.2.4 Financial Transparency and Disclosure Category Variables

The hypotheses, related to the financial transparency and disclosure variables, are developed as follows:

7.2.4.1 Working Capital Accruals

Working capital is an important aspect of financial transparency disclosing cash flow information through statements of changes in working capital and changes in financial position.

Financial transparency should radically deal with asymmetric information arising from the role-separation of management from providers of long-term capital (Merton, 1987). This should provide a beneficial effect for shareholders through a reduction in the cost of equity (Botosan, 1997), achieved by the provision of high quality information (Diamond and Verrecchia, 1991), the creation of greater market liquidity and reduced transactional friction. Furthermore, there may be additional beneficial effects through a reduction in the perceived uncertainty by investors (Coles, Lowenstein and Suay, 1995).

CR is one of the various monitoring devices used to reduce agency costs (Gonzalez, 2004). Consequently, CR works to mitigate the severity of the problem of information asymmetry between agents and principals. Managers have an incentive to try and show the company's best profile, indicating that they are acting in the interests of all stakeholders. They would like to attain a higher CR as evidence of the ability of the firm to cover capital repayments through strong current and future cash flows assisted by sufficient working capital. Additionally, CRs should help mitigate conflict of wealth transfers between certain stakeholders (Jensen and Meckling, 1976; cited by Skaife *et al.*, 2006).

According to the agency theory, conflicts between shareholders and bondholders arise as shareholders are able to transfer wealth from bondholders and reduce the current and future

cash flows to the firm. Thus may reduce the working capital and the level of internally funded projects which would have provided future income to meet the firm's debt commitments. A consequential reduction in interest cover may be responsible for an increase in the risk of default. Furthermore, shareholders may be supportive of managers investing in riskier projects, provided the expected shareholder return is commensurate. To compensate themselves from default risk bondholders may demand a higher rate of interest on the debt.

The objective of the statement of changes in financial position is to enable an evaluation of a firm's liquidity and to evaluate the changes in the structure of the assets and the equity of the firm by reporting on the flows of funds into and out of the firm during the financial period (Davidson et al., 1979). Skaife *et al.,* (2006) investigate the relationship between working capital accruals, a measure of financial transparency and CRs and find a significant relationship with firms' CRs. Thus, the following hypothesis is proposed:

H4-1: There is a significant relationship between working capital accruals and CR.

7.2.4.2 Timeliness of Earnings

Timeliness of earnings refers to financial transparency in disclosing earnings which provide investors more relevant information which should help them assess the retrieval of their capital repayments and interest on debt.

Innovation theory is supportive of timeliness of earnings. Firstly, for wealth creation firms need to be innovative (Katz and Kahn, 1978). Secondly, the diffusion of information an innovation needs to be effected in timely manners since investors demand up-to-date pertinent information.

Firms which achieve the required current and future cash flows may reduce wealth transfers from bondholders to shareholders through timeliness of earnings, according to the wealth-

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transfer hypothesis. It has been posited that there is a direct link between the issuance of information, that is both pertinent and timely, and a higher CR being assessed. Sengupta (1998) investigated this proposition by evaluating Association for Investment Management and Research (AIMR) disclosure ratings of firms, and found that firms with higher disclosure ratings were charged lower interest rates on their debt. They argued that the lower cost was due to a reduction in information risk, which in turn reduced the credit risk perceived by their bondholders. Furthermore, the enhancement of information disclosure might be effected by the enlargement of institutional shareholders on account of their own needs and preferences. Timeliness of firm's earnings and cash flows via financial reports rests on the premise that this information is pertinent to investors (Gu, 2002). Thus, timeliness captures the transparency of firms' financial reporting of earnings and cash flows and providing information to help investors to assess liquidity, solvency and wealth distribution in evaluating default risk associated with debt (Wild *et al.*, 2003).

Higher quality, more transparent information on earnings means less information asymmetry between the firm and its bondholders, leading to less uncertainty about default risk which, in turn, should lead to higher CRs (Gu, 2002). Barth and Landsman (2003) provide empirical support for this claim in that they find that firms with more value relevant earnings enjoy a lower cost of debt.

Financial statement transparency encompasses the relevance and reliability of accounting information in assessing current financial and economic corporate conditions (Skaife *et al.*, 2006). The more information about the firm's current economic activities that is embedded in current earnings and the more precise that information (i.e., the more relevant and reliable it is). The more transparent the economic activities of a company is to its stakeholders, Skaife

et al., (2006) investigate the relationship between timeliness as measure for financial transparency and CRs and find a significant relationship.

> **H4-2: There is a significant relationship between timeliness of earnings and CR.**

7.2.5 Corporate Governance Category Variables

Most of the corporate governance variables can be explained by the agency theory, especially, from the bondholder perspective.

The hypothesis related to the corporate governance variables are:

7.2.5.1 Independent of Directors

Board independence among all board of directors' characteristics has received probably the greatest academic debate. To increase the performance and efficiency of the board of directors, a majority of members should be independent (Clarke, 2007). Basically, the existence of independent directors on a company's board should restrict opportunism by this company's managers and enhance their performance (e.g. Fama and Jensen, 1983).

Agency theory supports the notion that boards of directors should include a majority of outside directors as they are independent of the management and are more willing to monitor the management effectively. On the other hand, stewardship theory suggests that control should be kept in the hands of inside directors as there is no need for independent monitoring devices on people who are considered trustworthy and committed. According to signalling theory, investors regard good monitoring procedures by the board of directors reflected in an

independent board, which can be regarded as a significant signal of good corporate governance (Black *et al.*, 2001 and 2002).

Firms face cost associated with the violation of statutory rules and regulations and might need to increase the proportion of independent directors to attain an optimal board, which would avoid violation risk damaging the company (Baysinger and Butler, 1985; Weisbach, 1988), although Baysinger and Butler (1985) find no significant associations between board compositions, outsiders and various measures of corporate performance (see also Beasley, 1996). However, there are some factors that may limit the benefits derived from using non executive directors such as the non executive appointments' process (Crowther and Jatana, 2005) and tenure of the current independent (non-executive) directors in the same company (Patelli and Prencipe, 2007). These factors may influence the importance of the role of independent directors.

Bhojraj and Sengupta (2003) investigated the effect of corporate governance on bond ratings and yields, and demonstrated a positive relationship between CRs and the number of outside directors on the board. In the same vein, Skaife *et al.*, (2006) investigated the effect of many corporate governance variables (board independence and board expertise, *inter alia*) on credit rating, which was broader in scope than many previous studies. They interestingly found that a firm's credit rating is positively associated with the presence of the degree of board independence.

In the Jordanian environment to provide for an independent presence and voice on the board, the CG code recommends that the board of directors should comprise at least one-third independent members of the board. The legal definition of independent directors reguires them not to have previously been an employee of the company; to have no family or business link with it; not to hold any cross directorships; not to represent any significant shareholders;

and not to have worked in the company for three years before. Consequently, the relationship between the board independence and CR is reflected in the following hypothesis:

H5-1: There is a significant relationship between board independence and CR.

7.2.5.2 Role Duality

Role duality refers to two positions at the same time for the same person, and, in this context, the positions are the CEO and the chair of the board. The CEO has a full-time position and is responsible for the daily management of the company as well as implementing company strategies. However, the chairman is usually part-time and whose main responsibility is to ensure the effectiveness of the board (Weir and Laing, 2001). Nearly all best practice codes support the separation of the two positions which lead to a more independent board (Cadbury report, 1992).

The separation of the CEO position from the chairman supports the assumption of agency theory (Eisenhardt, 1989) as duality may reduce the monitoring effectiveness at shareholders and hence make it easier for managers to exert self-interested behavior without any control over them. On the other hand the stewardship theory (Davis, Schoorman and Donaldson, 1997) regards managers as trustworthy people who are unlikely to achieve their personal interests at the expense of shareholders. Hence, this theory views CEO/Chairman duality as fostering strong and unified leadership (Heracleous, 2001). Accordingly there is a need to examine the relationship between role duality and CR, because of different results relating to the agency theory, stewardship theory and role duality.

The Jordanian code calls for a balanced board, so that too much power is not vested in any one individual, which may compromise the quality of the board's decision making.

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Consequently, it recommended the separation of the roles of the chief executive and chairman, so as to avoid concentration of power, and to serve as a balancing mechanism for the board. To the best of the author's knowledge, no previous study has examined the association between CR and role duality. This research will propose such a relationship between role duality and credit ratings as represented in the following hypothesis:

> **H5-2: There is a significant relationship between role duality and CR.**

7.2.5.3 Board Competency (Expertise)

Board expertise refers to some directors from within the board sitting on more than one board at the same time. This will help with transition experiences between these boards and should enable them to share information to collect the best grade from the CR assessment. The availability of directors or chairperson on more than one board can influence the credit rating, because of transition experiences, which are gained from other firms.

On the other hand, this may have a negative impact when the other company did not recognise the importance of CRs. Also, cross holdings of directorship may put the company at a competitive disadvantage, and in the case of executive directors their existence on more than one board will make them less independent as they will be more sympathetic with others who are in a similar situation (Haniffa, 1999).

According to agency theory, respectively regarding the conflict between the roles of directors when sitting on more than one board, this conflict is expected to impact on CR, because one person sitting on more than one board will affect board decisions due to the influence and power of this person through transferring this experience from one corporation to another. But many researchers have argued that the competence and knowledge of board experts, leads to a better monitoring of the function of management and better decisions, and leads to

reducing default risk, so there is a significant relationship between this variable and CR, as demonstrated by Klein (1998) and Skaife *et al.*, (2006). According to this result, the hypothesis is as follows:

> *H4-3: There is a significant relationship between board expertise and CR.*

7.2.5.4 Board Stock

Board compensation is identified as "executive compensation which plays a fundamental role in attracting and maintaining quality managers and provides motivate for executives to perform their duties in shareholders' best interests" (Bizjak *et al.*, 2000). Moreover, key issues are whether board members are remunerated and motivated in ways that ensure the long-term success of the company, and the compensation contract of board of directors is designed to motivate the board of directors to attain good performance (Black, 2001).

The 'board structure and process' component of governance, generally recognizes a compensation pack to board of directors as a reward depending on their performance (Skaife et al, 2006). Thus, compensation can be seen as an effective motivation to promote corporate executives to align their activities with the shareholders' or stakeholders' interest. In corporations, CEOs and executives prefer the less performance-sensitive compensation pack, for they bear less risk of poor performance that would reduce their compensation level. However, the board prefers to reward managers under a greater performance-sensitive compensation contract, since such a contract motivates managers to focus on the performance of corporation. Therefore, a gap of expectation of compensation contract exists between the board and the executives. Thus, to mitigate the gap of interest, there would be a dialogue between boards and executives to ensure the contract that can be accepted by board and executives. The process of making a compensation contract can be seen as a negotiation between board and executives (Ryan Jr. *et al.*, 2004).

Bebchuk *et al.*, (2002) argue in trying to reach an optimal contract, boards of director should hold stock in large and publicly held companies to minimize agency costs that exist between shareholders and board of directors including executive and non-executive, (Jensen, 1993). Bedchuk *et al.*, (2002) argue that under an optimal compensation contract, boards with greater ownership in the firm are more likely to be "attracting and retaining high quality executives, providing executives with incentives to exert sufficient effort and to make decisions that serve shareholders' interests, minimizing overall costs and provide a better job of monitoring management and fulfilling their fiduciary responsibilities".

Board stock has received very little attention in the credit rating issue despite its intrinsic importance, Skaife *et al.*, (2006) argue that board stock might be an interesting variable to be considered in the CR issue because it will indirectly reflect the monitoring role of the board of directors including independent and non-independent directors who are expected to try to attain a higher credit rating. Yermack (1998) finds evidence that smaller boards are more beneficial and more likely to dismiss a CEO after poor performance and inefficiency.

The results of previous studies which examine the board stock (for example, Yermack, 2003) find a positive relationship between option awards and board stock associated with subsequent firm performance and firms' investment opportunities. Other studies examine the relationship between board stock and CRs. Skaefe *et al.*, (2006) show a significant relationship between CR and board stock. Yermack (2003) shows that independent boards would more likely approve the higher performance sensitive compensation contract through paying more closely to stock performance through the use of options and other equity awards generally. In the current study we use board stock to predict a significant relationship between this variable and CRs.

> *H5-4: There is a significant relationship between board stock and CR.*

7.2.5.5 The Size of the Board of Directors

Board size is an important aspect to consider, for it is shown to influence significantly the performance of the firm. According to management disciplining hypothesis, the relationship between shareholders and management can lead to a conflict between them, because of the separation of owners' equity from the management of the business, which requires better monitoring procedures to regulate this relationship. So, the size of the board of directors may be good for controlling and monitoring the firm's actions.

A board that is too large would arguably be of the order of 30 or more members; and, corresponding, a board that is too small would be of the order of to seven members, each adversely affecting the firm's organizational decision-making (Cascio, 2004). However, there is no consensus as to whether larger or smaller boards are better with respect to their impact on firm performance. Cascio (2004) finds some evidence that smaller boards are more beneficial but at the same time there is also evidence that larger boards are more effective. Increased board size may have a negative effect on the board's performance and on the strategic decision-making (Goodstein et al., 1994). In addition, Yermack (1996) and Haniffa and Hudaib (2006), find that companies with a high board size experience a negative impact on their performance.

Agrawal and Knoeber (2001) recognise this and observe that a large board size may perform close monitoring, guide companies in the successful acquisition of skills and resources, reduce economic and technological uncertainties through the supply sifting of critical information about the contextual environment to the firm, deal with troublesome authoritative CEOs, and provide an array of more specialized skills and opinions among its members compared with a small board. Therefore, increasing board size may attain a higher CR.

According to the above, a diverse and enlarged board membership should intensify their desire to attain higher ratings from CRAs by increasing their ability to create future net cash

inflows to the firm, affecting firm performance to all stakeholders to attract more investors and satisfy shareholders' needs.

The main legislation regulating corporate governance in Jordan is securities law no. 76/2002, and companies' law no. 22/1997, for regulating board structure and responsibilities, and the new Listing and Delisting Rules (see Sourial, 2004) which elaborate the enhancement of board practices within the framework of corporate governance. Public shareholding companies have a single tier board comprised of an odd number of members, with a minimum three and a maximum of thirteen. The directors must be shareholders. To the researcher's knowledge, there are no previous research studies relating to the determinants of CR which directly account for the board size for the study period. Therefore, this research will propose such a relationship between board size and CRs as represented in the following hypothesis:

H5-5: There is a significant relationship between size of board and CR.

7.3 Research Model

The availability of continuous numerical credit scores obtained directly from WVB enables more rigorous statistical testing to be undertaken. Ordinary least squares (OLS), binary logistic regression (LR) and ordinal logistic regression (OLR) models will be used to examine the relationship between CR and the explanatory variables. Two OLS models will be used for numerical credit scores including the untransformed ordinary least squares (U_OLS) and transformed ordinary least squares (T_OLS) models of the current study, as follows:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \ldots + \beta_{21} X_{21i} + \varepsilon_i$$

where:

Y: credit rating (numerical score).

i = number to identify the company.

α = the intercept.

$\beta_1 \ldots \beta_{21}$ = the coefficients of the independent variables.

$X_1 \ldots X_{21}$ = the explanatory variables.

ε = the error term.

Two logistic multivariate analyses will be used for examining the association between the CR and explanatory variables, namely, ordered logistic regression, and binary logistic regression analysis.

According to the logistic regression, the study will model the relationship between the dependent (the natural logarithm of the ratings' odds-ratio) and independent variables. The same methodology will be for the different models.

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More formally, $\ln[P/(1-P)] = f(X_1 ... X_n) + \varepsilon$

$$= \alpha + \sum_{i=1}^{n} \beta_i X_i + \varepsilon$$

$$p = \frac{1}{1 + \exp(-[\alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_n X_n])}$$

As to ordinal logistic regression, a similar methodology applies expect that an ordered ranked list (1, 2, 3, 4) of categories operates and parameter coefficients (βs) are determined for paired orderings down the risk.

According to the above, the dependent variable is the log of the odds-ratio for the credit rating of the long term debt and which consists of two groups, namely, the (BB) categories group and the below categories to (D) category. Under logistic regression there are two grades, whereas ordinal logistic regression employs several grades.

The impact, in terms of the marginal effect, can be evaluated by calculating the change in probability of receiving a higher rated category arising from each corporate governance or firm characteristic variable in turn. These are designated as the marginal effects for this model, which are the direct impacts of a unit change in the respective variable, holding all other variables constant. In the case of the logistic regression we can write the probability of an assessment being in the higher category as:

Probability (Y = 1) = *(oddsratio)* / (1+*oddsratio*)

where

$$\exp(a + bX_1 + cX_2 + dX_3 + \cdots) = odds\ ratio$$

$a, b, c, d, ...$ = respective coefficients.

For a unit change in X, the partial change in the probability $(Y = 1)$ is given by:

$$\frac{\partial p}{\partial X} = \frac{\partial}{\partial X}\left[\frac{\exp(a+bX_1+cX_2+dX_3+\cdots)}{1+\exp(a+bX_1+cX_2+dX_3+\cdots)}\right]$$

$$= b\left[\frac{\exp(a+bX_1+cX_2+dX_3+\cdots)}{[1+\exp(a+bX_1+cX_2+dX_3+\cdots)]^{\wedge}2}\right]$$

$$= bp\,(1-p)$$

In the above formula for the marginal effects, the values of p and $(1-p)$ are evaluated at their mean values for the independent variables.

7.4 Summary

Chapter seven represents the proposed hypotheses that evolve partly from the theoretical framework presented in chapter four. These theories are the bases for the hypotheses which will be tested to prove if there is any relationship between the dependent variable (CR) and independent variables under various categories: accounting and financial aspects, market and regulatory factors, ownership structure, financial transparency and disclosure and corporate governance.

Many hypotheses are mentioned to propose the relationship between CR and the independent variables drawing on the previous empirical literature review. The nature of some of these variables is discussed in the context of the Jordanian environment. Some of these variables have not been mentioned before in any literature review pertaining to CR, which adds to the contribution of this study.

The next chapter will discuss the univariate and multivariate analyses to determine the relationship between CR and the independent variables.

CHAPTER EIGHT: UNIVARIATE AND MULTIVARIATE REGRESSION ANALYSIS

8.1 Introduction

This chapter reports on the outcomes of the research methods used to achieve the specified research objectives of the study, as presented in Chapter One. The intention is to examine the determinants of the CRs for Jordanian companies listed in the Amman Stock Exchange (ASE).

The results of examining the hypotheses which were developed in chapter seven will be discussed. The analyses which will be used to fulfil this goal are: first, a descriptive analysis that relates to dependent and independent variables, univariate analysis which is related to independent variable descriptive of only one variable, bivariate and correlation analysis (between two variables), parametric and non-parametric tests, and one-way analyseis. Second, multivariate analyses are undertaken, which are related to all independent variables by using many statistical tools such as untransformed ordinary least squares (U_OLS), transformed ordinary least squares (T_OLS), binary logistic regression (LR), and ordered logit regression (OLR).

8.2. Descriptive Analysis

8.2.1. Descriptive Analysis for Dependent Variables

Chapter six showed the measurements of the research variables. This section will use the sample set to further show and discuss some descriptive statistics analyses for these variables. The descriptive statistics include mean, standard deviation, median, minimum and maximum.

The sample of this study includes all Jordanian listed companies which have CRs from the WVB agency over the period 2005-2007. According to the population of this study, the

percentage of Jordanian firms which have a WVB_CR 85% for 2005, 82% for 2006 and 79% for 2007. The CRs of this agency are spread from a minimum of category D to a maximum of category BB. The percentage of Jordanian firms with CRs scores from BB3 to BB is 9.45%, whilst for firms with CRs from B3 to B it is 10.4%, on the other hand 56.45% have CRs from C3 to C but 23.75% have a D credit rating. The mean for all Jordanian firm CRs is C2. It can be observed that a significant minority has a very low rating. (Table 8-1 presents the sector credit ratings).

Table 8-1: The rating of different sectors in Amman Stock Exchange CRs Firms

Sector company	D	C3 - C	B3 - B	BB3 - BB	Total
Finance sector	19.63	55.71	12.79	11.87	100%
Finance sector compared with all sectors	7.45	21.14	4.85	4.51	37.95%
Service sector	21.20	63.01	8.22	6.81	100%
Service sector compared with all sectors	5.55	15.90	2.08	1.73	25.26
Industry sector	29.25	52.83	9.43	8.49	100%
Industry sector compared with all sectors	10.75	19.41	3.47	3.12	36.75%
Total observation	23.75	56.45	10.4	9.45	100%

The classifications of the sectors are as per the ASE. The table shows that CR firms are spread across the sectors but a large proportion of the sample comes from the following sectors: Financial (38%), Industry (37%). This is mainly because of the ASE where some of these sectors have experienced a rapid growth. It can see that as to the CR in the BB3-BB

category there are more in the finance sector, namely, 11.87%, compared with service of 6.81%, but as a proportion of all sectors in the same category it is 4.76% for financials, 1.73% for service, and 8.49% for industry.

It is quite interesting to note that on the D credit rating that a significant minority has a very low rating, namely 23.75% for all sectors, comprising financial 7.45%, service 5.55% and industry 10.75%, but as a proportion of its own respective compare with each sector the figures are: financial 19.63%, service 21.2% and industry 29.25%. We find that the financial sector has the majority from category C3-C for all sectors namely, CR 21.14%, compared with service 15.9% and industry 19.41%, while within each sectors they are 55.71% for financial, 63% for service and 52.83 for industry. Finally, the B3-B category accounts for 10.40% of all categories, broken down into: financial 4.85%, service 2.08% and industry 3.47%, and within each sector financials have 12.79%, service 8.22% and industry 9.43%.

8.2.2. Descriptive Analysis for Independent Variables

8.2.2.1. Univariate descriptive statistics

Table 8-2 shows summary statistics of the independent continuous variables in the study. The first variable is the size (total assets), that averages (median) total assets 42,802,317 JD (16,399,646 JD). Total assets for the sample range from 473,221 to 42,802317 JD with a high standard deviation of 8.361. Large firms gain from economies of scale and are stronger in facing default risk, enjoy high CRs, have lower risk, are likely to have a good reputation, have more stable future cash flows and face fewer hazards of being liquidated, while the average (median) capital intensity 0.08 (0.04), which means that 92% of a firm's assets are fixed assets with a low standard deviation 0.249 and coefficients of variation 0.77. Unexpectedly, it has been noticed that industrial firms have lower fixed assets than non-industrial firms. The average (median) leverage is 31.71% (29.00). Profitable firms are

stronger in facing financial distress and continuing in the future than unprofitable firms. The mean for the net profit margin is 0.47,and its median is 19.10, with a standard deviation of 0.744; net profit margin for the sample ranges from 0.001 to 7.155, and finally the average (median) Tobin's q is 1.60 (1.41). Tobin's q for the sample ranges from 0.039 to 1.61 with a high standard deviation of 0.751. Growth opportunities are considered to be an indicator for the firm's success and the level of its profitability; this encourages investors to lend to these firms which might present high growth rates or valuable growth opportunities in the firm's future.

There is a substantial mean proportion of blockholders at 57%. The institutional mean shareholding is sizeable at 33%. Indeed agency theory states that the higher the proportion of large institutional investors or greater concentrated ownership, the greater the monitoring role of these investors, and therefore the greater the chance for better financial performance. By contrast, mean shareholding by insiders (officers and directors) is only 5%. There is some indication of family ownership with a mean of 13%, as well as foreign ownership at 10%, and a tiny governmental ownership at 2%.

With respect to the financial transparency dimension, the average (median) WCAQ and timeliness values are -0.16% (0-.087%), and 0-.43% (0-.22%), respectively. Large values of working capital accruals and timeliness reflect a higher quality in financial reporting. On average, 33% of board members are independent, which indicates an important presence on the board. Additionally, 52% of board members have expertise through sitting on other boards. But attributes should, through the corporate governance mechanism, beneficially affect firm credit rating.

Table 8- 2: Summary statistics of independent continuous variables

Variables	Mean	S.D.	Max.	Min.	Median.
Accounting and Financial Category					
LEV	.32	.23	1.17	.002	29.00
PM	.47	.75	7.16	.001	19.10
SIZE	42802317	8.36	664791204	473221	16399646
Market and Regulatory Category					
CAP_INTEN	.080	.081	.35	.001	.04
TSQ	1.61	.75	5.83	.039	1.41
Ownership Structure Category					
BLOCK_OWN	.57	.227	1.000	000	.58
INST_OWN	.33	.271	1.000	000	.26
INSID_OWN	.05	.108	1.000	000	.004
GOV_OWN	.02	.076	.999	000	.000
FAML_OWN	.13	.168	.79	000	.05
FOREN_OWN	.10	.185	.99	000	.000
Financial Transparency Category					
WCAQ	-.16	.185	000	-1.626	-.87
TIMELINESS	-.43	.664	000	-7.010	-.22
Corporate Governance Category					
BRD_IND	.33	.153	.88	000	000
BRD_EXPERT	.52	.228	.43	000	000
BRD_STOCK	.85	.231	.93	000	000
BRD_SIZE	8.27	2.166	13	5	5

Note: LEV = leverage, PM = profitability, SIZE = company size, CAP_INTEN = capital intensity, TSQ= Tobin's q, BLOCK_OWN = blockholder ownership, INST_OWN = institutional Ownership, INSID_OWN = insider ownership, GOV_OWN = governmental ownership, FAMILY_OWN = family ownership, FOR_OWN = foreign ownership, WCAQ= working capital accruals, TIMELINESS= timeliness of earnings, BRD_IND = board independent directors, BRD_EXPERT= board expertise, BRD_STOCK= board stock, BRD_SIZE = board size.

8.2.2.2 Bivariate and Correlation Analysis

Table 8- 3: Bivariate analysis between CR and continuous variables

Variables	Pearson	Spearman
Accounting and Financial Category		
LEV	.031	.049
PM	.049	.152***
CAP_INTEN	.028	-.020
Market and Regulatory Category		
SIZE	.438***	.702***
TSQ	.119***	.137***
Ownership Structure Category		
BLOCK_OWN	.025	.016
INST_OWN	.134***	.165***
INSID_OWN	-.072**	-.010
GOV_OWN	.001	.050
FAML_OWN	.018	.060**
FOREN_OWN	.161***	.252***
Financial Transparency Category		
WCAQ	.086**	-.029
TIMELINESS	-.011	-.037
Corporate Governance Category		
BRD_IND	.100***	.100***
BRD_EXPERT	.173***	.177***
BRD_STOCK	.154***	.129***
BRD_SIZE	.288***	.275***

Note: *** significant at 1% and ** significant at 5%.

Table 8- 4: T-test and Mann Whitney tests for Nominal Variables

Variables	T-Test		Mann Whitney test	
	Mean	T. value	Mean Rank	Z value
TYP_SECT		2.064***		-2.058**
Financial	3.073		307.27	
Non-Financial	2.778		277.83	
AUD_BIG		6.959***		-6.689***
Big 4	3.316		331.64	
NB4	2.385		238.45	
Role Duality		1.114		-1.114
Yes	3.031		303.75	
No	2.847		284.75	
LOSS		-3.419		-3.385***
Yes	2.505		249.98	
No	3.035		302.81	

Note: (1) *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
(2) TYP_SECT= type of sector, AUT_BIG = 4big audit, LOSS = loss propensity.

Table 8-3 set out the relationship between the CR score and the pre-specified independent variables for testing Pearson product moment correlation and Spearman's rank order correlation coefficients which are significantly correlated with all groups variables.

According to the Pearson product moment and spearman rank correlation coefficients, firm size (total assets) and growth opportunity (Tobin's q) are each significantly related to the CR score at 1% level of significance. So, larger firms with better growth opportunities, which

may be considered to be an indicator for the firm's creditworthiness, reflect better CRs, which should encourage investors to lend to these firms with confidence in their stability and future growth opportunities. Under the one criterion, namely, the Spearman rank order correlation coefficient, profitability is also significant at the 1% of significance, which is consistent with rational economic thinking.

Also the table above shows the ownership structure variables, including institution and foreign ownership, which are significantly correlated with CR at the 1% significance level for both Pearson's and Spearman's correlation coefficients. Insider ownership is significant at the 5% level of significance (for the Pearson coefficient) and family ownership at the 5% level of significance (for the Spearman coefficient).

According to the correlation analysis for the financial transparency related variables, the Pearson correlation coefficient indicates that the entire WCAQ variable is correlated significantly with CR at the 5 % significance level. Large WCAQ reflect a higher quality financial reporting, which has consequently led to higher CRs.

Finally, the results for corporate governance demonstrate that these variables are each significant at the 1% level of significance and also the four variables namely board independence, board expertise, board stock and board size are each correlated at the level 1% significance with CR for both Pearson and Spearman's correlation coefficients. Hence, the attributes of a larger board size, greater board independence, higher levels of board expertise a greater members of board members having a financial interest in the organization through stock ownership are beneficial to a higher CR score.

Table 8-4 shows the results from analysing the relationship between each dummy variable as an independent variable and CR as the dependent variable. The mean numerical CR score is significantly higher for financial firms than for that of the non-financials, at the 5% level of

significance under both the t-test and Mann-whitney test. This finding would suggest different underlying risks according to sector and different degress of financial strength. Audit type also has a significant relationship with CR at a significance level of 1% for both the t-test and Mann-Whitney test, revealing the benefits to better CRs arising from choosing a big four audit firm rather than a smaller audit firms. Finally, the occurrence of losses over two years bears a significant relationship with CR at the 1% level of significance under the Mann-Whitney test, revealing that greater loss propensity is associated with a lower rating.

8.3 Multivariate Analysis: Ordinary Least Squares (OLS) Regression

8.3.1 Assumptions Underlying Multiple Regressions

Details of tests on the assumptions underlying the multiple regressions are given below:

8.3.1.1 Normality of Residuals

The residuals of the dependent variable are approximately normally distributed (See Appendix 8-1). If this had not been the case, the analysis of the OLS results would have been potentially misleading.

8.3.1.2 Multicollinearity

According to the current study there is no multicollinearity problem between the continuous independent variables, because the correlation coefficients are less than 0.80, which is the critical figure for practical purposes according to Gujarati (2003). This means that the explanatory variables are sufficiently independent of one another.

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Table 8- 5: Correlation matrix for independent variables

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
A	-0.137**	0.215**	0.088*	-0.074*	0.173**	0.162**	0.014	0.171**	-0.031	0.037	0.074*	-0.021	-0.017	0.030	-0.080*	0.155**
B		-0.060	-0.197**	0.069*	-0.070*	-0.046	-0.022	-0.039	0.077*	0.014	-0.183**	-0.072*	0.029	-0.010	-0.015	-0.053
C			0.085*	0.121**	0.102**	0.234*	-0.085*	0.262*	-0.118**	0.269*	0.019	-0.009	-0.084*	0.054	-0.200**	0.268
D				0.003	0.073*	0.144**	-0.043	0.037	-0.065	0.020	0.003	0.068	-0.026	0.049	0.064	0.075*
E					0.096*	0.091*	0.071*	0.047	0.032	0.135**	-0.036	-0.167**	-0.016	0.037	-0.056	0.048
F						0.601**	0.049	0.185**	-0.024	0.334*	0.110*	-0.011	-0.128**	0.041	-0.208**	-0.094*
G							-0.054	0.217**	-0.401**	0.333*	0.020	0.021	-0.158**	0.111*	-0.320*	0.039
H								-0.088*	0.217**	0.070*	0.011	-0.141**	0.056	-0.070*	0.068	-0.087*
I									-0.145**	0.059	0.051	-0.078*	0.008	-0.159**	-0.15	0.114**
J										-0.183**	0.036	-0.091*	-0.094*	-0.035	0.214**	-0.012
K											-0.035	0.037	-0.054	-0.003	-0.154**	-0.087*
L												0.085*	-0.082*	0.008	0.021	0.078*
M													0.010	-0.023	-0.002	-0.018
N														0.087*	0.068	0.031
O															-0.008	0.074*
P																0.05

Note: A= leverage, B= profitability, C= size, D= capital intensity, E= Tobin's q, F= blockholder, G= institutional ownership, H= insider ownership, I= governmental ownership, J= family ownership, K= foreign ownership L= working capital accruals, M= timeliness of earnings, N= board independence, O= board expertise, P= board stock, Q= board size.

Tolerance tests are show in Table 8-6. The biggest variance inflection factor (VIF) value is 0.90 and the lowest tolerance (1/VIF) is 1.104; consequently no serious multicollinearity, between the independent variables, exists for this study.

Table 8- 6: Multicollinearity test for determinants of credit ratings

Variables	Variance Inflation Factor	Tolerance
LEV	.788	1.269
PM	.812	1.232
SIZE	.518	1.931
CAP_INTEN	.820	1.220
TSQ	.900	1.111
TYP_SECT	.787	1.271
LOSS	.771	1.296
BLOCK_OWN	.479	2.089
INST_OWN	.400	2.498
INSID_OWN	.811	1.233
GOV_OWN	.839	1.191
FAML_OWN	.663	1.508
FOREN_OWN	.774	1.292
WCAQ	.905	1.104
TIMELINESS	.903	1.107
AUD_BIG	.820	1.219
BRD_IND	.897	1.115
R_D	.816	1.225
BRD_EXPERT	.881	1.136
BRD_STOCK	.829	1.207
BRD_SIZE	.784	1.275

8.3.1.3 Homoscedasticity of Residuals

The residuals appear to be randomly scattered around the '0' horizontal line (See Appendix 8-2). This means that the current data are homoscedastic. The variability is not changing; otherwise the results of the analysis would be misleading.

8.3.1.4 Linearity

Residual plots indicated some non-linearities, which are later corrected by transforming variables. A number of log transformations are undertake in line with the recommendation by Field (2007).

8.3.1.5 Independence of Errors

In this study the Durbin-Watson statistic for model 1, before transformation of variables, is 0.973 which is near to the lower boundary and so there is some correlation between residuals. Hence, the evidence seems to indicate that the model in this study does not fully meet the assumption of independence of errors (See Table 8-7).

Table 8- 7: Durbin-Watson

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate	Durbin-Watson
1	.719[a]	.517	.498	1.181351	.973

8.3.2 Results of the OLS Analysis

Before evaluating the results, it should be noted that the multiple regression analysis was run by using SPSS Version 17, for examining the relationship between credit rating and explanatory variables the from five groups, namely, accounting and financial, market and regulatory, ownership structure, corporate governance and financial transparency variables.

8.3.2.1 First Model

The first model was run with un-transformed data. The results of this model are explained in the following tables:

Table 8- 8: Untransformed Ordinary Least Squares (U-OLS) model

Variables	Coefficient	t-statisticv
Accounting and Financial Variables		
LEV	-1.304	-5.310***
PM	0.151	2.064**
CAP_INTEN	0.518	0.736
LOSS	0.171	-1.354
Market and Regulatory Variables		
SIZE	2.133	17.194***
TSQ	0.207	3.00**
TYP_SECT	0.176	1.542
AUD_BIG	0.018	0.167
Ownership Structure Variables		
BLOCK_OWN	0.450	-1.434
INST_OWN	-0.604	-2.089**
INSID_OWN	0.142	0.281
GOV_OWN	-1.028	1.45
FAML_OWN	0.802	2.223**
FOREN_OWN	0.627	2.062**
Financial Transparency Variables		
WCAQ	0.550	2.00**
TIMELINESS	-0.025	-0.326
Corporate Governance Variables		
BRD_IND	-0.486	-1.426
R_D	-0.97	-0.125
BRD_EXPERT	0.340	1.47
BRD_STOCK	0.037	-1.56
BRD_SIZE	0.052	-0.043**
Constant	-13.00	-14.2***
F-Ratio	28.22	
Adjusted R-square	49.8	

Note: *** significant at 1%, ** significant at 5%, * significant at 10%.

8.3.2.2 Second Model

As explained earlier, non-linearity between independent and dependent variables can cause too much positive or negative clustering of residuals. By transforming some variables, typically through log transforms, this potential problem can be much reduced. This model incorporates transformed data for variables-measurement. The results of this model are explained in the following tables:

Table 8- 9: Transformed Ordinary Least Squares (T-OLS) model

variables	Coefficient	t –statistic
Accounting and Financial Variables		
LEV	-1.766	-6.187***
PM	0.224	2.489**
CAP_INTEN	-0.016	-0.381
LOSS	0.267	-1.657*
Market and Regulatory Variables		
SIZE	2.991	20.963***
TSQ	0.307	3.788***
TYP_SECT	0.0175	1.079
AUD_BIG	0.000	-0.002
Ownership Structure Variables		
BLOCK_OWN	-0.116	-0.379
INST_OWN	0.083	1.363
INSID_OWN	2.534	4.224***
GOV_OWN	-0.224	-1.256
FAML_OWN	1.132	2.961***
FOREN_OWN	1.206	3.368***
Financial Transparency Variables		
WCAQ	0.538	1.845*
TIMELINESS	0.086	1.868*
Corporate Governance Variables		
BRD_IND	0.217	1.742*
R_D	-0.352	-2.307**
BRD_EXPERT	0.283	0.793
BRD_STOCK	0.717	1.938**
BRD_SIZE	0.069	2.365**
Constant	-21.00	-22.00***
F-Ratio	41.78	
Adjusted R-square	59.9	

Note: *** significant at 1%, ** significant at 5%, * significant at 10%.

As indicated from Tables 8.8 and 8.9, the adjusted R-squares were around 50% for untransformed data, which improved to around 60% for the transformed data, comparable with previous studies. That (Horrigan 1966; Thomas et al., 1967; and Skaife et al., 2006) had R-squares of 48%, 56%, 60% adjusted R-square of the model of the current study is acceptable.

According to the accounting and financial variables of the first category in first model, just leverage and profitability have a significant relationship at a level of 1% and 5% significance, respectively, with CR, while three out of four variables in the second model were found to be significant and represented leverage, and profitability and loss significant at the 1%, 5% and 10% level of significance, respectively. Thus, leverage, profitability, and loss propensity are important determinants of WVB credit risk assessment in descending order.

Concerning the market and regulatory category, two out of four variables in both models were found to be significant, the findings providing evidence for the influence of these variables on CR, and represent firm size and growth opportunities, which are associated and positively significant at the level 1% of in both models, except at 5% level of significance for growth opportunities in the first model with CR. This implies that firm size and growth opportunities have a role to play in the determination of WVB credit risk assessments.

As to the ownership structure category, four out of six variables were found to have an impact on the CR in one or both models. For the un-transformed first model, institution, family and foreign ownerships bear a significant relationship with CR at the 5% level of significance, while insider, family, and foreign ownership of the transformed (second) model bear a significance relationship with CR at the 1% level of significance.

Regarding the financial transparency category, only working capital accruals are associated with CR at the 5% level of significance, regarding to the first model, while the second model

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both variables have a significant association with CR at the 10% of significance. Thus, level WCAQ and timeliness variables impact on CR.

Finally, with regard to the corporate governance category, for the untransformed model only board size was found to have a significant negatively relationship with CR at a level of 5% significance. By contrast in the second model, board independence (at 10%), board stock (at 5%), and board size (at 5%) are significantly positively associated with CR at the prescribed levels of significance. Role duality is negatively associated with CR (at 5%).

8.3.3 Discussion of the OLS results

As in the previous section, the untransformed and transformed models are used for this analysis. The focus here is on the significance of the variables that influence the CR, discussed according to the different groups of explanatory variables.

8.3.3.1 Accounting and Financial Category

Four accounting and financial variables have been introduced in the current study to examine their impact on CR. As summary of the findings of these variables is presented in Table 8.10

Table 8-10: The Significance of Accounting and Financial Variables for CRs of Jordanian Firms

Variables	Bivariate Analysis		Multivariate Regression Analysis	
	P	N P	U_OLS	T_OLS
LEV			(***)	(***)
PM		***	**	**
CAP_INTEN				
LOSS		(***)		(*)

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
P= Parametric (Pearson, t-test), N P= Non Parametric (Spearman, Mann-Whitney).

As indicated in Table 8-10, three variables have been found to have a strong relationship with CR. The profitability and loss variables demonstrate different results between bivariate and multivariate analyses. The reason for finding a potentially significant association between any independent and dependent variables in the multivariate analysis which not appear in the bivariate analysis is due to the possible impact of the combination of other variables in the multivariate analysis (OLS) on the significance of this variable. On the other hand, when a significant association appears in the bivariate analysis which is not in the multivariate analysis, this may be due to the multicollinearity (even if minor) between the independent variables which explain the lack of significance of this variable (Hosain et al., 1994).

Where there are differences between the findings of bivariate and multivariate analyses regarding some variables, the emphasis will be given to the multivariate analysis for the determinants of CR in the Jordanian context by examining groups of variables simultaneously.

Multivariate analyses have supported the influence of leverage on the Jordanian listed companies' CR being significantly negatively related to CR at the 99 per cent level of confidence and as expected, there is a clear inverse relationship between financial risk, as evidenced by the relative debt level, and the firm's CR. Bivariate and multivariate analysis indicate that loss propensity has a negatively significant effect on CR at the 99% and 90% level of confidence, respectively. A negative effect supports the disciplining of management hypothesis in that managers would be constrained in their financial decisions, on behalf of the company, because of a lower CR caused by the losses incurred and would be disciplined to help enable the firm to perform better.

No empirical evidence, whether based on bivariate or multivariate analysis in the current study, have been found to support the relationship between the Jordanian listed company's capital intensity and CR. One observation is that in the Jordanian data-set the level of fixed assets appeared to be relatively small.

Based on the above discussion overall, it can be noticed that the accounting and financial category of selected variables nevertheless is associated with CR.

8.3.3.2 Market and Regulatory Category

Four market and summarised regulator variables were investigated in the current study, results are in Table 8-11.

Table 8-11: The Significance of Market and Regulatory Variables for CRs of Jordanian Firms

Variables	Bivariate Analysis		Multivariate Regression Analysis	
	P	NP	U_OLS	T_OLS
SIZE	***	***	***	***
TSQ	***	***	**	***
TYP_SECT	***	(**)		
TYP_AUD	***	(***)		

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
P= Parametric (Pearson, t-test), N P= Non Parametric (Spearman, Mann-Whitney).

It can be seen from Table 8-11 that all the market and regulatory variables have a significant impact on CR at the presented levels and mainly at the 99% level of confidence in both bivariate and multivariate analyses-except type of sector and type of audit variables which have a significant influence in only the bivariate analysis.

The results of the bivariate and multivariate analyses reveal a positive relationship between the firm's size and CR. All these results are statistically significant at the 99% level of confidence. The results show that larger the size of the total assets of Jordanian listed companies is an important criterion in determining a higher CR. This supports the signalling theory, which assumes that large firms are stronger when facing bankruptcy and financial distress through the creation of future cash flows to the firm. Thus, there is an incentive for larger companies to attain higher CRs since this should reduce the cost of capital on account of the lower perceived credit risk their. In addition, for most of these large companies the benefits of high CRs should be reflected in the provision of provide future cash flows to all stakeholders, including bondholders.

Tobin's q (TSQ) is a proxy used to measure the growth opportunities. The results of bivariate and multivariate analyses are highly significant, namely, at the 99% level of confidence. Concerning this growth potential variable, both bivariate and multivariate analyses indicate that Jordanian listed companies with higher growth potential generally have higher CRs as reflected in the positive relationship between the firm's CR and growth opportunities. This positive and significant effect gives support to the argument of signalling theory, which is undervalued on plainly unrecorded. Companies with high growth may signal that to their investors to illustrate their high expected performance which should result in their higher future profits, consequently attracting a higher CR. Also, firms with greater growth opportunities might have lower leverage ratios enabling firms to reduce expensive default risk and reduce the risk of expropriation of wealth to shareholders from bondholders. Indeed, the correlation between growth opportunities and leverage is negative (-.074) although the multicollinearity is not an issue for this data-set.

Type of sector and audit showed incongruous results between bivariate and multivariate analyses. Only bivariate analysis indicates a significant association between type of sector and audit and CR of Jordanian listed companies. Type of sector bears a significant level (at the 99%, 95% confidence level) relationship with CR for non-parametric and parametric tests, respectively; and audit type is significant (at the 99% confidence level) with CR for both parametric and non-parametric tests. The multivariate analysis implies that type sector and type audit has an insignificant impact on CRs in the Jordanian context. This result suggest that it is the quality of the companies rather the quality of the auditing firm, that is important to the CR, although the bivariate (parametric) test reveals same auditing in attracting a big 4 audit company.

Based on the above discussion, it can be illustrated that two out of four variables of the market and regulatory category have at the prescribed levels a significant association with CR in the Jordanian context in both bivariate and multivariate analyses. Two variables, namely, type of sector and audit has been found to have insignificant impact on CR regarding the multivariate analysis. Nevertheless, the statistical results support the significant influence of some of the variables in the market and regulatory category on CR in the Jordanian context.

8.3.3.3 Ownership Structure Category

Six different aspects structures of ownership structure are examined in the current study to investigate their impact on CR in the Jordanian context. The findings for these variables are presented in Table 8-12.

Table 8-12: The Significance of Ownership Structure Variables for CRs of Jordanian Firms

Variables	Bivariate Analysis		Multivariate Regression Analysis	
	P	NP	U_OLS	T_OLS
BLOCK_OWN				
INST_OWN	***	***	(**)	
INSID_OWN	(**)			***
GOV_OWN				
FAMILY_OWN			**	***
FOREN_OWN	***	***	**	***

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.

P= Parametric (Pearson, t-test), N P= Non Parametric (Spearman, Mann-Whitney).

As indicated in Table 8-12, multivariate and bivariate analyses report that several ownership structure variables have a strong influence on the Jordanian listed CR. Yet, foreign ownership is the only ownership structure variable that has identical results from both bivariate and multivariate analyses. The statistic results reveal that there is a positive relationship between the foreign ownership of the Jordanian listed companies and CR at a confidence level of 99 %. Bivariate analysis finds this association at level significance of 1%, while untransformed and log transformation models find it at a significance level of 5%, and 1% respectively. This reveals that the existence of foreign ownership of Jordanian listed companies has a strong influence on the level of CR.

Supportive of legitimacy theory, the influence of foreign ownership in Jordanian companies may push firms to seek ways to enhance their CRs as an information tool by providing

stakeholders with greater security in the firm's ability to cover future debt through obligations future cash flows to legitimate themselves above rival companies.

The findings of the current study are supported by Aydin et al (2007), who find a significant association between foreign ownership and firm performance. Thus, this role should be more prominent through greater foreign ownership in the Jordanian listed companies.

Pertaining to institutional ownership both bivariate and multivariate regression analyses demonstrate on association with CR in the Jordanian context but at different levels of significance; bivariate showing a positive significance at the 99% level of confidence, and a negative significance at the 95% level of confidence for the multivariate analysis, namely, for U_OLS. Institutional ownership can be a threat to creditor's interests as this class of shareholders can expend enormous energy on blocking debt holder benefits. The multivariate (U_OLS) analysis suggests that a lower institutional ownership is beneficial from a creditor's point of view; so there may be an optimum level of institutional ownership which balances the costs and benefits associated with more shareholder control.

Only multivariate analysis reports significant positive relationship between family ownership and CR of the Jordanian listed companies at 95% and 99% confidence levels for each model, respectively. Stewardship theory supports this result, whereby management and family ownership should lead to corporate success (Davis, Schoorman and Donaldson, 1997), as family owners have inside knowledge about their business, which gives them an edge in running their business profitably, as Westhead (2003) explains, they are part of the management and have a vested interest in the company's success, they will act as stewards to ensure that there is continued success, and will work to solve organizational problems and take on tasks to fulfil business goals.

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Thus, higher family ownership firms have better CRs reflecting their firms' ability to create more than sufficient future cash flows to cover debt interest and capital repayments. These findings demonstrate that for Jordanian listed companies there is a key role played by family owners in enhancing the creditworthiness of companies. Also, legitimacy and stakeholder theories can explain this positive relationship. Family ownership may help attain higher CRs to avoid both litigation and reputation costs resulting from lower creditworthiness. Further, these companies are in the public eye and therefore, should enhance their communication with various stakeholders and legitimize themselves by attaining higher CRs. Finally, family ownership may be enforced by different stakeholders to provide a higher CR as evidence of the ability of these firms to cover capital repayments through the generation of future cash flows to mitigate any bad effect otherwise resulting from a reduced need for family owners to press for greater accounting disclosure because of their inside knowledge.

Both bivariate and multivariate regression analyses show disagreement in the results of insider ownership by managers and other corporate officers. Only multivariate analysis reports a strong positive relationship between insider ownership and CR of the Jordanian listed companies at a significant level of 99% confidence. The multivariate findings demonstrate that Jordanian listed companies with a higher proportion of insider ownership can attain a higher CR. On the other hand, bivariate analyses show a negative relationship between insider ownership and CR at the 95% confidence level. These empirical findings may be attributed to both signalling and stewardship theories. A higher proportion of insider ownership of Jordanian companies may attract higher CRs to signal their good performance and secure creditworthiness, which anticipates higher liquidity for these companies and strong future cash flows. According to stewardship theory, higher managerial ownership can help prevent the misuse of shareholders' wealth, due to a convergence in interests between them, supporting a higher CR.

No empirical evidence, based on both bivariate and multivariate analyses, in the current study has been found to support the relationship between CR and either the Jordanian listed company's blockholders or governmental ownership. This means that Jordanian listed companies with a lower proportion of governmental ownership do not necessarily decrease their level of CR. Skaife et al (2006) hypothesized neither a positive or negative effect for blockholders although they reported a negative effect for their sample of US firms. In case of a high proportion of governmental ownership, governmental owners have the authority to access the required information without the need of CR reports. Therefore, Jordanian listed companies with a higher proportion of governmental ownership do not need CRs, as the required information is available internally, and vice versa. Therefore, there will be no conflict between the shareholders and management, which can reduce the agency problem in this case, and hence reduce the level of credit ratings. To summarise, the results reveal that the listings of blockholders and governmental owners of Jordanian companies in the ASE has no impact on CR.

8.3.3.4 Financial Transparency and Disclosure Category

Two financial transparency variables were investigated in the current study.

Table 8- 13: The Significance of Financial Transparency and Disclosure Variables for CRs of Jordanian Firms.

Variables	Bivariate Analysis		Multivariate Regression Analysis	
	P	NP	U_OLS	T_OLS
WCAQ	**		**	*
TIMELINESS				*

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
     P= Parametric (Pearson, t-test), N P= Non Parametric (Spearman, Mann-Whitney).

Working capital accruals is the only financial transparency variable that has identical results from both bivariate (parametric) and multivariate analyses. Bivariate analysis indicates a significant positive relationship between WCAQ and CR at the 95% level of confidence. The statistical results reveal that there is a positive relationship between the working capital accruals of the Jordanian listed companies and CR at a confidence level of 95% and 90% for each multivariate model respectively. This reveals that the existence of working capital accruals as a measure for financial transparency of Jordanian listed companies has a clear influence on the level of CR. Greater financial transparency, through its beneficial reduction in information asymmetry, has a favourable impact on a firm's credit rating. This supports an agency theoretic perspective of the minimisation of information asymmetry induced by higher credit ratings reflecting stronger cash flows associated with working capital accruals.

The multivariate analysis, namely, for T_OLS finds timeliness attracts a positive and significant association with CR at the 90 per cent of confidence. When the earnings of a firm are of high quality regarding their timeliness in their financial reporting this may act as a signal indicating that there is greater confidence in the strength of their future cash flows to the firm since it has a positive significant effect on its CR. Timeliness will lend credence to the financial and accounting operations of the firm, which for a creditor is very important. It can thus be agued that innovative firms are more likely to utilise internet technology for information diffusion with a positive impact on both information flows to the investor and credit rating assessments. Also high quality in the timeliness of earnings and the consequential credit rating effect should help firms to legitimize themselves with the authorities, indicating that the findings here support legitimacy theory in this context.

8.3.3.5 Corporate Governance Category

From analysing the impact of corporate governance on CR, mixed results have been found from applying both bivariate and multivariate techniques. These results are presented in Table 8-14.

Table 8- 14: The Significance of Corporate Governance Variables for CRs of Jordanian Firms

Variables	Bivariate Analysis		Multivariate Regression Analysis	
	P	NP	U_OLS	T_OLS
BRD_IND	***			*
R_D				(**)
BRD_EXPERT	***	***		
BRD_STOCK	***	***		**
BRD_SIZE	***	***	(**)	**

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
P= Parametric (Pearson, t-test), N P= Non Parametric (Spearman, Maan-Whitney).

As seen from Table 8-14, biviariate analysis show a significant association for all the corporate governance variables, except the existence of role duality, while multivariate analysis (for the transformed model) indicates this result for board independence, role duality, board stock and board size.

With regard to board size, while bivariate analysis indicate a positive significant association between board size and CR at level 99% of confidence, the multivariate analysis indicates this result to be significant and negative for the first model and positive for the second model at the 95% level of confidence. This finding shows that the larger the size of the Jordanian listed companies' board of directors, the higher the level of CR. Yet, it has been argued that a board size that is too large can disrupt the functioning of the board and an ideal board size is

around 7 to 10 members (Lipton and Lorsch, 1992; Jensen, 1993), which compares favourably for Jordan in which the mean size of the board is 7. But, agency theory can explain the view that increasing board size will be a good sign of good corporate governance practices, which may encourage CRAs to increase the rating for the companies with a higher board size. As the board size of a firm increases it is thus more than likely that the firm will move into a higher category of credit rating by enhancing the experience diversity on the board. This diversity is useful for sharing knowledge between members and is reflected in the quality of the firm's activities and its credit worthiness. Companies may be motivated to be governed by a larger size of director's board in order to legitimize themselves to their stakeholders, which in turn should have a beneficial impact on credit worthiness and hence on its CR.

The role duality on the board of directors has been found to bear a negative significant relationship with CR in only the multivariate analysis for the second model, which found such a relationship at a significance level of 5 %. So, the separation between the chairman and CEO roles in the Jordanian listed companies has a negative impact on the level of CR. A negative effect supports the management disciplining hypothesis and suggests that role duality could lead to domination of management over the board and untimely lead to poorer firm performance (Keasey et al., 2005). The dominant prevailing form in the Jordanian listed companies is the combination of roles, not the separation between chairman/CEO roles. This is consistent with findings by the World Bank (2004 a), which observers that most of the board chairmen in Jordanian companies are also insider officers. Therefore, it is highly recommended for the Jordanian listed companies to separate the role between their chairman and CEO, and when this happens it tends to have a favourable effect on the level of their CR. By contrast, to combine roles between the chairman and CEO may weaken the board's independence due to the concentration of the power in one person. This lack of independence

represents a weak governance system, which may even lead to companies not attaining higher CRs because of detrimental effect, on their stakeholders, especially bondholders.

Similarly, board expertise has been found to have a positive significant association in only the bivariate analysis at a level of 99% confidence. Again multivariate analysis is not able to provide empirical evidence for a significant influence of board expertise on CR in the Jordanian context. I would suggest that further research is needed as to why board expertise is not as important as expected. Expertise from serving on other boards of directors should have been useful. It could be that they lack the internal knowledge that managers, for example, possess and the CR agency realises this.

With regard to board stock, while bivariate analysis indicate a positive significant association between board size and CR at 99% level of confidence, the multivariate analysis (transformed model) indicate this result at the 95% level of confidence. A positive effect supports agency theory, which can explain the suggested result. Increasing board stock will push the firm to a good performance. These director stock and option awards are useful in tying directors' pay more closely to stock performance, which helps in attaining a higher CR. Consequently, this indicates that as the board stock of a firm increases it is more than likely that the firm will move into a higher category of CR.

Interestingly, both the parametric bivariate analysis and the second model in the multivariate analysis reveal a positive association between the number of independent directors and CR at different levels of significance, i.e. at the 99% and 90% level of confidence, respectively. The management disciplining hypothesis supports the boards of directors having a majority of outside directors as they are independent of the management and are more willing to monitor the management more effectively. This monitoring role supports to fulfil the shareholders' and other stakeholders', especially bondholders' interests, and it will tend to

push the firm into a higher category of CR. Therefore, Jordanian companies should attempt to attain higher CRs and in also achieving these interests would tend to alleviate any conflict between management and their shareholders. According to signalling theory, bondholders can have better monitoring procedures by the board of directors through greater independence on the board, and this can be regarded as a significant signal of good firm performance leading it to attain a higher CR.

8.4 Bivariate and One-way Analysis

8.4.1   Bivariate Analysis

We investigate the relationship between each group of independent variables and CR. Table 8.15 summarises the results of all tests.

8.4.1.1 Accounting and Financial Category

Table 8- 15: Results of ANOVA and other statistical analysis (Accounting and Financial Category)

	LEV	PM	CAP_INTEN	LOSS
Average (Mean)				
BB3-BB	0.303774	0.41134	0.0679	0.4690
B3-B	0.322834	0.50143	0.07821	0.3130
C3-C	0.334143	0.5297	0.05577	0.2321
D	0.3532	0.2524	0.197	0.8
Standard deviation				
BB3-BB	0.2258	0.708152	0.07083	0.50015
B3-B	0.23138	0.79114	0.1612	0.4634
C3-C	0.20574	0.6653	0.06786	0.4260
D	0.045207	0.15156	0.07804	0.4472
Standardized Skewness				
BB3-BB	5.28689	18.2113	8.6483	0.7669
B3-B	6.5385	26.9938	76.4031	5.7297
C3-C	1.2509	5.1111	4.71368	3.98396
D	-1.01756	1.72584	-1.80392	-2.04124
Standardized Kurtosis				
BB3-BB	1.43266	28.8394	3.7942	6.1440
B3-B	3.357	74.0514	547.913	-4.623
C3-C	-1.07887	3.12358	2.54633	-0.476
D	-0.043039	1.76567	1.79101	2.2822
Fisher's least significant difference test				
(BB3-BB) to (B3-B)	-0.01906	-0.09011	-0.01033	0.15868**
(BB3-BB) to (C3-C)	-0.030368	-0.1183	0.01210	0.23688**
(BB3-BB) to (D)	-0.04943	0.15894	-0.1291**	-0.33097
(B3-B) to (C3-C)	-0.01131	-0.0283	0.0224	0.07820
(B3-B) to (D)	-0.03037	0.24903	-0.11879**	-0.48965**
(C3-C) to (D)	-0.019057	0.27728	-0.14123**	-0.56785**
Test of Means				
ANOVA F-Ratio	0.47	0.90	2.30*	7.75***
Test of Variances				
Cochran's C Test	0.359535***	0.392901	0.623311***	0.295539
Bartlett's Test	1.01809**	1.02385***	1.36266***	1.00494
Levene's Test	1.81851	0.63048	0.916748	6.56105***
Kruskal-Wallis Median Test Statistic				
Average range				
BB3-BB	277.761	258.15	299.321	317.814
B3-B	292.676	308.786	283.61	272.034
C3-C	309.473	309.223	256.411	249.473
D	354.5	309.3	500.1	413.3
Test statistic	2.7846	12.7224***	11.329***	22.447***

Note: *, **, *** denote significance at the 90%, 95% and 99% level of confidence, respectively.

As seen from Table 8-15 CR is related accounting and financial, market and regulatory, ownership structure, financial transparency and corporate governance variables. Table 8-15 summarise the ANOVA and other test statistics for the main four accounting and financial variables used as determinants of CR. From the ANOVA test, there is evidence of differences between the means of some of the accounting and financial variable categories items. As shown in the table above, the ANOVA F-Ratio was 0.47, 0.90, 2.30, and 7.75, respectively, for leverage, profitability, capital intensity and loss. The latter two are significant at the prescribed 90% and 99% levels of confidence, respectively. Thus, there are significant differences between the mean levels of capital intensity and the mean degrees of loss propensity among the different credit rated categories. Borrowing levels should have an impact on CR. Yet, it seems suprising that the mean average levels are not significantly different between the credit rating categories, even though it can be observed that as the mean level increases (from 0.304 to 0.323 to 0.334 to 0.353) the credit rating category is lowered. The more sophisticated multivariate analysis conducted later may, however, pick up these effects which are not strongly observed in this preliminary data analysis.

As to differences in rating categories, the above results are confirmed for capital intensity and loss, as are significant by Fisher's least significant difference test at the 95% level of confidence, and reveal that the lowest rated group has greater loss propensity and greater capital intensity (fixed assets/total assets).

Thus, a statistically significant difference in means was found between (BB3-BB) to (B3-B) and between (BB3-BB) to (C3-C) for loss only, while significant difference was found between (BB3-BB) to (D) for capital intensity only, while significant difference was found between (B3-B) to (D) and between (C3-C) to (D) for both capital intensity and loss. Moreover, the Kruskal-Wallis Median Test Statistic shows statistically significant differences

at the 99% confidence level for profitability, capital intensity and loss with test statistics of 12.7224, 11.329 and 22.447, respectively. The Cochran's C / Bartlett's / Levene's tests revealed significantly unequal variances.

It is interesting to observe that the mean leverage increase from 30%, to 32%, to 33%, and to 35% as the categories for credit rating are lowered from BB3-BB to B3-B to C3-C to D. This is as predicted. However, the mean leverage figures are not statistically different from each other at the prescribed levels of confidence (see Fisher tests discussed earlier).

A normal distribution has a Skewness of zero and a kurtosis of 3 (see Campbell et al, 1997, pp. 16-17). However, financial data often exhibit non-normality. We observe that for PM, for example, the C3-C category exhibit a kurtosis of 3.12, which is normal but the B3-B and the BB3-BB categories have huge kurtosis of 74.05 and 28.84, respectively.

The non-normality suggests that more reliance should be placed on the medians rather than the means for comparative purposes. The kruskal-wallis test reveals in this regard significant differences between the medians at the 99% level of confidence.

8.4.1.2 Market and Regulatory Category

Table 8- 16: Results of ANOVA and other statistical analysis (Market and Regulatory Category)

	SIZE	TSQ	TYP_SECT	AUT_BIG
Average (Mean)				
BB3-BB	6.93165	1.4765	0.3363	0.40
B3-B	7.2959	1.6345	0.4034	0.60
C3-C	8.0132	1.7686	0.4642	0.77
D	8.6564	3.3928	0.00	1.00
Standard Deviation				
BB3-BB	0.421495	0.7234	0.4735	0.492
B3-B	0.592959	0.6894	0.4914	0.491
C3-C	0.60460	0.8561	0.5032	0.426
D	0.12428	1.2864	0.00	0.00
Standardized Skewness				
BB3-BB	3.45592	12.1497	4.2821	2.453
B3-B	-46.5859	9.66599	2.7508	-2.853
C3-C	-6.58504	5.02339	0.4497	-3.983
D	0.25576	1.79024		
Standardized Kurtosis				
BB3-BB	12.6813	21.3116	-4.6852	-5.698
B3-B	273.774	10.3957	-6.4527	-6.411
C3-C	9.6777	6.2785	-3.1360	-0.476
D	-0.36983	1.8288		
Fisher's Least Significant Difference Test				
(BB3-BB) to (B3-B)	0.364277**	0.15793**	-0.06716	-0.197**
(BB3-BB) to (C3-C)	1.08156**	0.29211**	-0.1280	-0.365**
(BB3-BB) to (D)	1.72475**	1.9163**	0.3363	-0.597**
(B3-B) to (C3-C)	0.717287**	0.13417	-0.0608	-0.168**
(B3-B) to (D)	1.36047**	1.7584**	0.4034	-0.4
(C3-C) to (D)	0.643186**	1.62418**	0.4643**	-0.232
Test of Means				
ANOVA F-Ratio	77.87***	13.57***	2.44*	13.22***
Test of Variances				
Cochran's C Test	0.399087	0.488685***	0.352247	0.36389
Bartlett's Test	1.06832	1.01554**	1.00089	1.00328
Levene's Test	2.05885*	0.752554	2.43588*	3.10484**
Kruskal-Wallis Median Test Statistic				
Average range				
BB3-BB	178.354	253.803	276.518	248.666
B3-B	330.602	303.869	295.895	305.6
C3-C	494.938	331.33	313.446	354.027
D	570.8	543.4	179.5	421.0
Test statistic	217.355***	27.6349***	7.2534*	37.281

Note: *, **, *** denote significance at the 90%, 95% and 99% level of confidence, respectively.

Table 8-16 also reveals that the summarised the ANOVA test statistics for main four market and regulatory variables used to determinants of CR. However, the ANOVA F-ratio for this group is significant at the 99% of confidence for size, growth opportunity and big audit, while significant at the 90% of confidence for the sector type. It can be observed that there is is a large mean in category D for both size and Tobin's q, while the big mean in category C3-C for sector type and category BB3- BB for audit type.

According to Fisher's least significant difference test, there are differences between the means for different categories of WVB_CR. A statistically significant difference is found between (BB3-BB) to (B3-B), and between (BB3-BB) to (C3-C), and (BB3-BB) to (D) for size, Tobin's q and audit type, and significant difference between (B3-B) to (C3-C) for size and audit type, while significant difference between (B3-B) to (D) for size and Tobin's q, and finally a significant difference between (C3-C) to (D) for size, Tobin's q and sector type.

At the 99% level of confidence there are significant differences in the standard deviations for Tobin's q and audit type for the different credit rating categories using Cochran's C test (Toben's q), Bartlett's test (Toben's q) and Levene's test (audit type). At the 90% level of confidence there are also significant differences in the standard deviations for size and sector using Levene's test for each.

The ANOVA test for means makes an implicit assumption that the standard deviations are equal for each category. This assumption is therefore seriously challenged for Tobin's q and audit. Hence, more reliance can be placed on the inference that mean size differences are significant. Basically, the size factor would seem to be especially important in credit rating. Furthermore, the larger firms tend to have lower ratings.

According to the Kruskal-Wallis Median Test Statistic this shows statistically significant differences at the 99% confidence level for size and Tobin's q with a test Statistic of 217.355, 27.6349 respectively, and at 90% confidence level for sector type with a test Statistic of 7.2534.

It can be observed, that the mean Tobin's q, sector type and audit type increase from (1.477, to 1.635, and to 1.769) for Tobin's q, and (0.336, to 0.403, and to 0.464) for sector type, and (0.40, to 0.60, and to 0.77) for audit type, as the categories for CR are lowered from BB3-BB to B3-B to C3-C. These results are interenting because of the implied consistent relationships between credit rating categories and the hypothesized factors.

8.4.1.3 Ownership Structure Category

Table 8- 17: Results of ANOVA and other statistical analysis (Ownership Structure Category)

	BLOCK_ OWN	INST_ OWN	INSID_ OWN	GOV- OWN	FAMILY_ OWN	FOREN_ OWN
Average (Mean)						
BB3-BB	0.5596	0.30693	0.037588	0.0236	0.1133	0.0510
B3-B	0.5595	0.3204	0.05140	0.00617	0.1405	0.1010
C3-C	0.5889	0.3892	0.04621	0.03030	0.1124	0.1586
D	0.8616	0.8882	0.00	0.2432	0.0	0.5188
Standard Deviation						
BB3-BB	0.2421	0.28092	0.08468	0.10293	0.16439	0.15179
B3-B	0.2154	0.25459	0.1159	0.03295	0.1695	0.194369
C3-C	0.2217	0.25081	0.14437	0.08593	0.1684	0.191843
D	0.0491	0.060697	0.0	0.05386	0.0	0.100964
Standardized Skewness						
BB3-BB	-1.3369	5.24437	21.978	36.9501	12.0051	24.047
B3-B	-1.2877	4.9797	29.173	54.2418	9.6551	17.9169
C3-C	-0.1794	1.36177	17.031	9.4736	6.8823	3.5406
D	0.3396	-1.68599		-2.0254		-0.2282
Standardized Kurtosis						
BB3-BB	-2.1526	-0.575166	45.761	132.585	11.832	50.624
B3-B	-2.4138	-0.93865	73.656	249.161	5.309	23.956
C3-C	-1.4556	-0.960029	54.493	14.066	7.911	0.1173
D	0.0787	1.51848		2.253		-0.7751
Fisher's Least Significant Difference Test						
(BB3-BB) to (B3-B)	0.0000945	-0.013462	-0.01382	0.01745**	-0.0272	-0.050075**
(BB3-BB) to (C3-C)	-0.0294	-0.08227**	-0.00863	-0.00668	0.00087	-0.10762**
(BB3-BB) to (D)	-0.30205**	-0.58128**	0.0376	-0.2196**	0.1133	-0.46783**
(B3-B) to (C3-C)	-0.02949	-0.06881	0.0052	-0.02413**	0.02808	-0.05754**
(B3-B) to (D)	-0.30214**	-0.56781**	0.05140	-0.2370**	0.14051	-0.41775**
(C3-C) to (D)	-0.2727**	-0.4990**	0.0462	-0.2129**	0.1124	-0.36021**
Test of Means						
ANOVA F-Ratio	3.18**	9.06***	0.99	18.98***	2.24*	16.42***
Test of Variances						
Cochran's C Test	0.37437***	0.375212***	0.502796	0.482303***	0.341623	0.3504***
Bartlett's Test	1.0211***	1.01903**	1.06756	1.96116***	1.00042	1.03104***
Levene's Test	3.084414**	2.29454*	0.948806	3.24742**	2.03279*	5.7996***
Kruskal-Wallis Median Test Statistic						
Average range						
BB3-BB	286.416	271.967	278.199	289.445	270.281	242.681
B3-B	284.134	288.762	307.076	279.5	308.229	303.498
C3-C	304.223	335.563	254.83	311.964	283.938	377.857
D	517.5	551.2	111.5	562.7	76.5	546.5
Test statistic	10.1618**	19.1148***	13.130***	48.756	15.1611***	59.031***

Note: *, **, *** denote significance at the 90%, 95% and 99% level of confidence, respectively.

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According to the Table 8-17 there is evidence of significant differences between ownership structure groups. The ANOVA F-Ratio was 9.06, 18.98 and 16.42 for institution, governmental and foreign ownership respectively significant at the 99% of confidence level, while ANOVA F-Ratio was 3.18 for block ownership significant at the 95% of confidence level, while ANOVA F-Ratio was 2.24 for family ownership significant at the 90% of confidence level, which infer that there are significant alterences between the mean levels of capital intensity and the mean degrees of loss prosperity amongal the different credit rated categories

However, the governmental and foreign ownership between categories (BB3-BB) to (B3-B) and (B3-B) to (C3-C) are significantly different as revealed by Fisher's least significant difference test, while the institution and foreign ownership are significantly different as revealed by Fisher's least significant difference test between category (BB3-BB) to (C3-C), and finally all variables except insider ownership are significantly different as revealed by Fisher's least significant difference test between (BB3-BB) to (D), (B3-B) to (D) and (C3-C) to (D) categories.

Besides, the ownership structure group, namely, institution, governmental and foreign ownership are significantly as revealed by Fisher's least significant difference test. The Cochran's C / Barltett's / Levene's tests revealed unequal variances.

There is also significant at the 99% level of confidence for all variables except insiders ownership to both Cochran's C and Bartlett's Test respectively except institution ownership is significant at 95% with Bartlett's Test, while variables with Levene's Test are significant at the 99% level of confidence for foreign ownership, while block and governmental at 95%, and institution and family ownership at 90% level of confidence.

Moreover, the Kruskal-Wallis Median Test Statistic shows statistically significant differences at the 99% confidence level for all ownership variables except block at the 95%with a test Statistic of 10.1618, 19.1148, 13.130, 15.1611 and 59.031 respectively except governmental is 48.756 and insignificant.

The results for ownership structure so far reveal a few surprises (re: foreign and institutional ownership) but it is clear that there are logical negative relationship between CR and blockholder ownership and governmental ownership, respectively, which are supported in the review of the literature (see chapter four).

8.4.1.4 Financial Transparency and Disclosure Category

Table 8- 18: Results of ANOVA and other statistical analysis (Financial Transparency and Disclosure Category)

	WCAQ	TIMELINESS
Average (Mean)		
BB3-BB	-0.1718	-0.4081
B3-B	-0.1460	-0.4371
C3-C	-0.1433	-0.3679
D	-0.1646	-1.231
Standard deviation		
BB3-BB	0.2252	0.7493
B3-B	0.16067	0.6042
C3-C	0.113605	0.4015
D	0.076568	1.551
Standardized Skewness		
BB3-BB	-16.172	-33.287
B3-B	-15.2849	-20.65
C3-C	-4.24957	-4.5395
D	-1.77402	-0.62656
Standardized Kurtosis		
BB3-BB	28.9429	117.104
B3-B	20.0019	37.607
C3-C	4.00263	2.717
D	1.85774	-1.2144
Fisher's Least Significant Difference Test		
(BB3-BB) to (B3-B)	-0.02574	0.0290
(BB3-BB) to (C3-C)	-0.02850	-0.0401
(BB3-BB) to (D)	-0.00715	-0.8229
(B3-B) to (C3-C)	-0.00276	-0.0691
(B3-B) to (D)	0.01858	0.7939**
(C3-C) to (D)	0.02135	0.8631**
Test of Means		
ANOVA F-Ratio	0.92	2.70**
Test of Variances		
Cochran's C Test	0.532097***	0.688645***
Bartlett's Test	1.09786	1.07875
Levene's Test	2.86955**	3.34657**
Kruskal-Wallis Median Test Statistic		
Average range		
BB3-BB	295.091	297.606
B3-B	291.064	282.64
C3-C	262.393	289.545
D	192.0	262.8
test statistic	3.4654	1.1485

Note: *, **, *** denote significance at the 90%, 95% and 99% level of confidence, respectively.

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There is evidence of significant differences between financial transparency variables group. As shown in table above, the ANOVA F-Ratio is 0.92 which is very insignificant, and 2.70 which is significant at 95%, respectively, for WCAQ and TIMELINESS. The latter two are significant at the prescribed at the (90% level of confidence), which infer that there are significant alterences between the mean levels of WCAQ and the mean degrees of TIMELINESS prosperity amongal the different credit rated categories.

Besides, the financial transparency group, namely, TIMELINESS is significantly as revealed by Fisher's least significant difference test. The Cochran's C / Barltett's / Levene's tests revealed unequal variances. There is also a reduction in the standard deviation of WCAQ and TIMELINESS in category C3-C, and increased in category BB3-BB, which is significant at the 99% level of confidence for both WCAQ and TIMELINESS to Cochran's C, while significant at the at 95% level of confidence for group to Levene's Test. Consequently, difference test between each group, and a statistically significant difference is found between (B3-B) to (D) and between (C3-C) to (D) for group. Moreover, the Kruskal-Wallis Median Test Statistic shows statistically insignificant differences for this group.

As predicted, it is worthy of observation that the mean timeliness increases from - 41%, to - 44% to - 37% as the categories for credit rating are lowered from BB3-BB to B3-B to C3-C, and from -17% to -15% to -14% for WCAQ for same categories. However, the mean leverage figures are not statistically difference from each other of the prescribed levels of confidence. We observe that for timeliness the C3-C category exhibit a kurtosis of 2.717, which is normal but the all categories have huge kurtosis. The non-normality suggests that more reliance should be placed the median rather than the mean for comparative purposes.

8.4.1.5 Corporate Governance Category

Table 8- 19: Results of ANOVA and other statistical analysis (Corporate Governance Category)

	BRD_IND	R_D	BRD_EXPERT	BRD_STOCK	BRD_SIZE
Average (Mean)					
BB3-BB	0.3399	0.19027	0.4747	0.8794	7.6770
B3-B	0.3246	0.2586	0.5443	0.8748	8.3310
C3-C	0.2946	0.25	0.5728	0.7473	9.6607
D	0.2018	0.6	0.4594	0.7684	11
Standard Deviation					
BB3-BB	0.16799	0.3934	0.2205	0.2025	2.0628
B3-B	0.145398	0.4386	0.2325	0.5325	2.2447
C3-C	0.126179	0.4369	0.2250	0.2728	2.5246
D	0.107199	0.5477	0.0266	0.3312	2.9155
Standardized Skewness					
BB3-BB	2.8836	9.75089	2.1171	-7.1350	1.1048
B3-B	4.1665	7.70472	1.9427	85.1349	0.7738
C3-C	0.9076	3.6255	-0.4801	-3.4433	-1.8758
D	0.1408	-0.5555	0.7143	-0.8855	-0.5526
Standardized Kurtosis					
BB3-BB	1.8646	1.62285	-1.4671	20.0179	-1.8429
B3-B	2.24524	-2.70168	-0.01573	656.338	0.7286
C3-C	2.01207	-0.93936	-0.8757	0.6273	0.4176
D	-0.9557	-1.52145	0.5032	-0.5775	-0.7297
Fisher's Least Significant Difference Test					
(BB3-BB) to (B3-B)	0.01534	-0.0684	-0.0696**	0.00467	0.6540**
(BB3-BB) to (C3-C)	0.05432**	-0.0597	-0.9819**	0.1322**	1.9837**
(BB3-BB) to (D)	0.1381**	-0.4097**	0.01525	0.1110	-3.3230**
(B3-B) to (C3-C)	0.02998	0.0086	-0.02859	0.12752**	1.3297**
(B3-B) to (D)	0.12281	-0.3414	0.084842	0.1064	-2.6698**
(C3-C) to (D)	0.09283	-0.35	0.1134	-0.02115	-1.3393
Test of Means					
ANOVA F-Ratio	2.52*	2.42*	5.27***	1.79	15.36***
Test of Variances					
Cochran's C Test	0.3676***	0.35797***	0.351051***	0.557402***	0.351709***
Bartlett's Test	1.0177**	1.00664	1.02461***	1.4406***	1.00888
Levene's Test	3.45031**	1.41841	2.47017*	1.22267	0.575436
Kruskal-Wallis Median Test Statistic					
Average range					
BB3-BB	302.381	276.392	255.973	306.097	250.33
B3-B	286.453	296.112	307.816	289.234	296.693
C3-C	260.875	293.625	327.902	219.902	391.188
D	146.9	394.6	254.8	276.5	446.2
Test statistic	6.7799*	7.1972*	15.8488***	13.659***	38.9974

Note: *, **, *** denote significance at the 90%, 95% and 99% level of confidence, respectively.

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Table 8-19 summarised the ANOVA test statistics for main five corporate governance variables used to determinants of CR. There is evidence of significant differences between corporate governance variables groups. As shown in table above, the ANOVA F-Ratio was 2.562, 2.42, 5.27, 1.79 and 15.36 respectively for board independence, role duality, board expertise, board stock and board size. The board expertise and board size are significant at the 99% level of confidence, while board independence, role duality are significant at the 90% level of confidence.

Besides, the accounting and financial groups, namely, capital intensity and loss are significantly as revealed by Fisher's least significant difference test. The Cochran's C / Barltett's / Levene's tests revealed unequal variances. There is significant at the 99% levels of confidence for all corporate governance to Cochran's C Test, while at the 99% level of confidence for board expertise and board stock to Bartlett's Test and at 95% for board independent, while at the 95% level of confidence to Levene's Test for board independent but the board expertise at the 90% level of confidence.

Consequently, difference test between each group, and a statistically significant difference is found between (BB3-BB) to (B3-B) for board expert and board size, and significant difference between (BB3-BB) to (C3-C) for board independence, board expertise, board stock and board size, while significant difference is found between (BB3-BB) to (D) for board independent, role duality and board size, while significant difference is found between (B3-B) to (D) for board stock and board size, and finally significant difference between (B3-B) to (D) for board size. Moreover, the Kruskal-Wallis Median Test Statistic shows statistically significant differences at the 99% confidence level for board expert and board stock with a test Statistic of 15.8488 and 13.659 respectively, while significant differences at the 90% confidence level for independent and role duality with a test Statistic of 6.7799 and

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7.1972 respectively. It is interesting to observe that the mean board size increase from 7.68%, to 8.33% and to 9.66% as the categories for credit rating is lowered from BB3-BB to B3-B to C3-C. This is as predicted. However, the mean board size figures are not statistically difference from each other of the prescribed levels of confidence. Distribution a skeurence and a kurtosis of the corporate governance data offer exhibit non-normality. We observe that for board independent, for example, the BB3-BB an C3-C categories exhibit a kurtosis of 2.884 and 0.908 which is normal but the B3-B category have huge kurtosis of 4.167. The non-normality suggests that more reliance should be placed the median rather than the mean for comparative purposes. The kurskal-wallins test reveals in this regards significant differences between the medians at the 99% level of confidence.

8.5 Advanced Multivariate Regression Analysis

For both binary logistic regression and ordinal logit regression analysis, five models will be tested to enable an analysis to be undertaken of the impact of control variables, ownership structure, financial transparency and disclosure, corporate governance, and all variables combined.

8.5.1 Logistic Regression (LR)

8.5.1.1 Result of the Logistic Regression (LR)

A basic logistic regression utilizes a binary split, which here reflects a higher or lower credit rating. The dependent variable is the probability of a higher rating as a proportion of the probability of a lower rating. This is a useful categorization, which will later be extended to incorporate more than two categories. In this basic logistic regression, I investigate the significance of variables in their contribution to the respective higher or lower rating categories. Table 8-20 shows the results of this model.

Table 8- 20: Logistic Regression (LR) Model 1 for Control Variables

variables	Estimated Coefficient	Wald
LEV	-2.021***	15.884
SIZE	3.662***	125.775
TSQ	0.799***	25.329

It is worth being reminded of the fact that there are several variables within each of the four categories which would be too many to include in one overall model without further analysis. The main focus is upon three categories, namely, ownership structure, financial transparency including disclosure, and corporate governance. Control variables are thus chosen from the remaining two categories, namely, accounting and financial aspects and market and regulatory factors. The control variables are leverage, firm size and Tobin's q. Table 8-20 confirms that these variables are highly significant (at the 99% level of confidence). Having dealt with the control variables for presentational purposes, the logistic regressions that follow (Models 2, 3, 4 and 5) only record the variables within each category even though the control variables were also included in the models and were significant in each case at the 99% level of confidence.

8.5.1.1.1 The results of the LR model 2 (Ownership Structure Category)

Table 8- 21: logistic regression model for ownership structure variables

Variables	Estimated Coefficient		Wald
BLOCK_OWN		0.715	1.082
INST_OWN		-0.839	1.747
INSID_OWN		-0.220	0.048
GOV_OWN		-13.124***	12.937
FAML_OWN		1.704**	4.658
FOREN_OWN		2.065***	8.223
Chi-square (Model)	289.153***		
-2Log likelihood	510.598		
R-square	39.4		
Constant	-30.279		

The ownership category reveals an adjusted R-square of 39.4%. Three from six variables have been revealed to have a significant association with CR, namely, governmental, family and foreign ownership. The results show block holder, institution and insiders ownerships have insignificant associations with CR. Governmental ownership is significantly negatively associated with CR at the 1% level. Foreign ownership indicates a positive relationship to CR at the level of 1%, while family ownership is associated is positively and significantly with

CR at the 5% level. These three significant results confirm the correct signs as previously hypothesized.

8.5.1.1.2 The results of the LR model 3 (Financial Transparency and Disclosure Category)

Table 8-22: logistic regression model for financial transparency and disclosure variables

Variables	Estimated Coefficient		Wald
WCAQ		0.297	0.297
TIMELINESS		1.285	0.058
Chi-square (Model)	253.858***		
-2Log likelihood	545.893		
R-square	35.6		
Constant	-26.820		

Financial transparency category refer to the R-square is 35, 6% and insignificant associated with CR, but it needs to be mentioned that the control variables were significant and included in the model.

8.5.1.1.3 The results of the LR model 4 (Corporate Governance Category)

Table 8- 23: logistic model for corporate governance variables

Variables	Estimated Coefficient		Wald
BRD_IND		-0.536	0.598
R_D		0.119	0.219
BRD_EXPERT		0.902**	3.585
BRD_STOCK		-0.917**	3.239
BRD_SIZE		0.020	0.141
Chi-square (Model)	260.704***		
-2Log likelihood	539.047		
R-square	36.4		
Constant	-25.212		

Regarding to the corporate governance dimension, CR is associated positively with board expertise at the 5% level of significance, while board stock negatively associated with CR at the 5% level of significance. With regard to the previous models, it can be noticed that the ownership model had the highest R2, which underlines the power of ownership structures variables in explaining CR.

8.5.1.1.4 The results of the full LR model 5 (All Categories Variables)

Table 8- 24: Full Logistic Regression Model for all Categories Variables

variables	Estimated Coefficient		Wald
Accounting and Financial Variables			
LEV		-1.994***	10.883
PM		0.339**	4.045
CAP_INTEN		1.994	1.503
LOSS		-1.112***	11.473
Market and Regulatory Variables			
SIZE		3.682***	90.209
TSQ		0.648***	15.408
TYP_SECT		0.330	1.053
AUD_BIG		0.301	1.531
Ownership Structure Variables			
BLOCK_OWN		0.724	0.903
INST_OWN		-1.303*	3.382
INSID_OWN		-0.638	0.367
GOV_OWN		-12.506***	0.560
FAML_OWN		1.658**	4.078
FOREN_OWN		2.225***	9.081
WCAQ		0.560	0.650
TIMELINESS		1.452	6.344
Corporate Governance Variables			
BRD_IND		-0.746	0.789
R_D		0.238	0.603
BRD_EXPERT		0.906*	2.673
BRD_STOCK		-1.579***	6.919
BRD_SIZE		0.058	0.978
Constant	-26.729		
Chi-square (Model)	318.226***		
-2 Log Likelihood	481.526		
R-square	42.4		

Table 8- 25: Classification* Logistic Regression Model for all Categories Variables

		Predicted		
		LR4		
	Observed	0	1	Percentage Correct
Step 1	LR4 0	241	43	84.9
	1	50	243	82.9
	Overall Percentage			83.9

Note: *. The cut value is .500

As table 8-24 indicates the adjusted R-square is 42.4% for the full logistic model, the results of the basic logistic model demonstrate that each independent group has at least two significant variables in relation to the CR. Company size indicates positive significance at the 99%, confidence level. Similarly, leverage is highly significant (at 99%) confidence level and negative, as expected. Growth opportunity (Tobin's q) is highly significant (at 99%) confidence level and positive, again as expected. Loss and leverage show negative significance at the 99% confidence level of significance with CR, which is supported by expectations. Profitability is significant and positively associated with CR (at 5% significance). Concerning the ownership structure category, institution and governmental ownership are negatively associated with CR at a level of 10% and 1% significance, respectively, while family and foreign ownership are related positively to CR at the 5% and 1% level, respectively. In respect of the corporate governance category, CR is associated positively with board expertise at the 10% level of significance, while CR is associated negatively with board stock at the 1% level of significance.

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The classification table reveals an overall correct classification rate of (241+243)/ (241+43+50+243) = 83.9%. Of those predicted to be of lower rating 241/ (241+43) = 84.9% were correctly classified.

Similarly, the model is virtually equally accurate at predicating higher credit, with a correct classification rate of 243/ (50+243) = 82.9%. For the purpose of the classification matrix a cutoff rate of 50% is used. This means that where a firms profile has a predicted higher category greater than 50% probability it is treated as being allocated to category 1, whilst an implied probability of less than 50% results in an allocation to category 0 for predictive purposes. There are two types of error: prediction higher rating when it is of lower rating, and predicting lower rating when it is actually of higher rating. There errors are 100% - 84.9% = 15.1% and 100% - 82.9% = 17.1%, respectively, which are relatively low error rates. However, the prime purpose of the modelling is to assess the relevance of ownership, transparency and governance to firm CR.

8.5.2 Ordinal Logit Regression (OLR)

8.5.2.1 The results of the Ordered Logit Regression (OLR)

Model 1 in Table 8-26 represents the control variables models which do not relate to ownership structure, financial transparency and disclosure, and corporate governance, but which should have an impact on credit rating and thus need to be accommodated. Indeed the Wald statistics from Model 1 indicate very significant coefficients for each control variables, namely, leverage, size and Tobin's q. Capital intensity is not included as a control variable because it is not significant.

Models 2, 3 and 4 include ownership, financial transparency and corporate governance variables, respectively. The control variables have the same signs as their benchmark model.

They were indicated in the subsequent Models 2, 3, and 4 but excluded from the tables which summarise the results. Model 5 looks at the impact, of all the groups' variables together, on the credit rating of the firm.

Table 8-27, 8-28, 8-29, and 8-30 present the results from an ordered logit regression for the each groups variables sample firms. The coefficients obtained from ordered logit regressions are interpreted as follows: a positive (negative) sign means that the dependent variable will move into a higher (lower) category when there is a one unit increase in the independent variable controlling for the other variables in the model. For models 2, 3, 4 and 5, the adjusted R-square are 45.9%, 42.8% 43.3% and 48%, respectively. All these adjusted R-squares are reasonably acceptable.

Table 8- 26: Ordered Logit Model 1 for Control Variables

variables	Estimated Coefficient	Wald
LEV	-1.347***	9.951
SIZE	3.626***	203.650
TSQ	0.644***	25.621

According to all models (2, 3, 4 and 5) the control variables are significantly associated with CR at the 1% level of significance. For presentational purposes, the control variables are excluded from the associated tables for each category, namely, ownership structure, financial transparency including disclosure, and corporate governance. The use of these control variables follows the same strategy as earlier for the basic logistic models.

8.5.2.1.1 The results of the OLR model 2 (ownership structure category)

Table 8- 27: Ordered Logit Model for Ownership Variables

Variables	Estimated Coefficient		Wald
BLOCK_OWN		0.747	1.641
INST_OWN		-1.082**	4.095
INSID_OWN		2.031**	4.979
GOV_OWN		-0.900	0.393
FAML_OWN		1.234*	3.439
FOREN_OWN		1.986***	12.328
Chi-square (Model)	354.406***		
-2Log likelihood	790.334***		
R-square	45.9		

Note: control variables not shown.

The second model for the ownership structure category reveals an adjusted R-square of 45.9%. Many variables have been found to explain significantly the variability in CR in each ownership category; indeed four variables have been revealed to have a significant association with CR. The results show block holder and governmental ownerships have insignificant associations with CR. Institution ownership is significantly negatively associated with CR at the 5% level. Insider ownership indicates a positive relationship to CR at the level 5%, while family ownership is associated is positively and significantly with CR at the 10% level. Further, foreign ownership is positively associated, at the 1% level of significance with CR.

8.5.2.1.2 The Results of the OLR Model 3 (Financial Transparency and Disclosure Category)

Table 8- 28: Ordered Logit Model for Financial Transparency and Disclosure Variables

Variables	Estimated Coefficient		Wald
WCAQ		0.516	0.983
TIMELINESS		-0.089	0.367
Chi-square (Model)	321.874***		
-2Log likelihood	822.566***		
R-square	42.8		

Note: control variables not shown.

Model 3, dealing with financial transparency, reveals that both working capital accruals and timeliness are associated insignificantly with CR. Nevertheless, the Cox and Snell R-square is 42, 8%, but it needs to be mentioned that the control variables are significant and included in the model.

8.5.2.1.3 The Results of the OLR model 4 (Corporate Governance Category)

Table 8- 29: Ordered Logit Model for Corporate Governance variables

Variables	Estimated Coefficient		Wald
BRD_IND		-0.871	. 2.017
R_D		0.098	0.198
BRD_EXPERT		0.361	0.758
BRD_STOCK		-0.375	0.818
BRD_SIZE		0.084*	3.542
Chi-square (Model)	326.906***		
-2Log likelihood	817.834***		
R-square	43.3		

Note: control variables not shown.

In respect to model 4, the corporate governance dimension, CR is associated positively with only board size at the 10% level of significance. With regard to the previous models, it can be noticed that the ownership model had the highest R^2, which underlines the power of ownership structures variables in explaining CR.

8.5.2.1.4 The Results of the Full OLR Model 5 (All Categories' Variables)

Table 8- 30: Full Ordered Logit Model for all Categories Variables

variables	Estimated Coefficient		Wald
Control Variables			
LEV		-1.665***	12.606
SIZE		3.657***	146.107
TSQ		0.559***	17.712
Firm Characteristics Variables			
PM		0.358**	5.771
CAP_INTEN		1.124	0.679
TYP_SECT		0.088	0.117
AUD_BIG		0.052	0.062
LOSS		-0.441*	2.832
Ownership Structure Variables			
BLOCK_OWN		0.872	1.992
INST_OWN		-1.5290***	7.071
INSID_OWN		2.342**	5.776
GOV_OWN		0.003	.000
FAML_OWN		0.938	1.862
FOREN_OWN		2.403***	14.294
Financial Transparency Variables			
WCAQ		0.582	1.098
TIMELINESS		-0.025	0.028
Corporate Governance Variables			
BRD_IND		-1.238*	3.422
R_D		-0.021	0.008
BRD_EXPERT		0.613	1.876
BRD_STOCK		-0.693	2.290
BRD_SIZE		0.123***	6.597
Chi-square (Model)	377.132***		
-2Log likelihood	767.607***		
R-square	48.00		

As indicated from Table 8.30 the adjusted R-square is 48% for the full logit model and higher than the 42% of the previous binary model logistic. According to full logit model, all control variables have been revealed to have a significant association with CR at the 1% level. There are many variables which have been found to explain significantly the variability in CR and each category. According to the firm characteristic variables, two variables have been revealed to have a significant association with CR. Profitability is the only variable that is associated with the CR positively and significantly at the 5% level with the CR, while loss has a significant negative relationship with CR at the 10% level of significance.

Regarding the firm characteristic category, which encapsulates firm characteristics not already accommodated by control variables, the findings provide evidence for the influence of these variables on CR. Two variables significant associated with CR (profit margin and loss propensity). Firm size and growth opportunity (Tobin's q) are positively associated with CR at a significance level of 1%. The other control variable (leverage) is highly significant (at 1%), but negative as expected and attract the correct signs, namely positive and negative.

With respect to the ownership structure category, three variables out of six are significantly associated with CR namely, institution (at 1%), insider (at 5%) and foreign ownership (at 1%), while three variable are insignificantly associated with CR, namely, blockholders, governmental and family ownership. Insider and foreign ownership have a positive impact on the CR, whilst institutional ownership has a negative effect. Institutional ownership bears a negative significant relationship with CR at the 1% level. However, insider ownership reveals a positive relationship with CR at the 5% level. In addition, foreign ownership is related positively to CR at the 1% level of significance.

According to the financial transparency category, all financial transparency related variables are associated insignificantly with CR namely, working capital accruals and timeliness.

Regarding the corporate governance category, only two variables are associated with CR, namely board independence and the board size. While the board independence is negatively associated with CR at the level of 10% significance, board size is positively related to CR at the 1% level.

8.5.3 Discussion of the results of LR and OLR models for CR

The results of the advanced multivariate regression analyses for both the logit and logistic analysis models of CR in association with their different corporate governance categories explanatory variables will be discussed in this section. Each models of this analysis. Next point presents the second model, namely ownership structure model for LR, and OLR.

8.5.3.1 Discussion of the Results of LR, and OLR (Model 2): Ownership Structure Category

Table 8- 31: Model 2 (Ownership structure category)

Variables	Advanced Multivariate Regression analysis	
	LR	OLR
BLOCK_OWN		
INSTIT_OWN		(**)
INSID_OWN		**
GOV_OWN	(***)	
FAM_OWN	**	*
FOREN_OWN	***	***
R-square	39.4	45.9

This point tests the governance practices related to ownership variables in the study and the CR. Six ownership variables are used to investigate their relationship with the CR. The

likelihood ratio tests for LR and OLR analysis for model 2 yield significant results, which indicates that key ownership variables add value to the benchmark case, and R-square are 39.4, and 45.9, respectively. Only one variable namely, blockholders has insignificant association with CR regarding to LR, and OLR models, while institution and insider ownership have insignificant association with CR regarding to the OLR model, only governmental ownership has insignificant with CR regarding to LR.

Regarding institutional ownership, we find negative significant effect on the CR at the 95% confidence level for OLR. Jordanian listed companies with low percentage of institutional ownership led to a higher CR. From a creditor's point of view an increase in institutional investors can be undesirable as institutional investors tend to push shareholder-oriented causes with management. This negative association can be attributed to agency theory. A low proportion of institutional investor ownership may be representative of a small number of members on the companies' board of directors. That small number of institutional investor representatives may have limited opportunity to obtain their required information about the future cash flows to the firm. Therefore, Jordanian listed companies with a low percentage of institutional investor ownership tend to attain a lower CR. Therefore, firms are already a heavy treated as a threat to creditor interests.

OLR analysis indicates that insider ownership has a positive significant effect on CR at the 95% of confidence. It is quite surprising to see that an increase in insider ownership will push a firm into a higher credit rating category. This is in contrast to what shareholders expect. However, we are looking at this from a creditor's point of view. Such a finding implies that Jordanian listed companies with a high proportion of insider ownership improve their chances of attaining a higher CR. The Jordanian firms prefer to maintain good relations with all stake-holders, especially creditors of the firm. Firm management may prefer to raise further capital

using debt instead of diluting the existing ownership structure. According to stewardship theory, management of the Jordanian listed companies with a large insider ownership structure monitor the interests of the shareholders due to a meeting of interests between them.

Agency theory would suggest that managers within the public sector may be less efficient and create greater agency costs, so that greater governmental ownership would tend to be associated with a lower credit rating. This is confirmed by the LR analysis which indicates that governmental ownership is negatively significant at the 99% level of confidence. Increases in governmental shareholders are generally against creditor interests. Regarding the family ownership, I find a positive significant effect on CR at a level of 95% confidence, for LR, while family ownership has a positive significant effect on CR at the 90% level of confidence for OLR. This implies that Jordanian listed companies with family ownership are more likely to attaining a higher CR. This result can be explained by stakeholder theory. Stakeholders of the Jordanian listed companies that have family ownership may expect greater cash flows from these companies due to the good financial position in these companies, and a higher CR to the satisfaction of stakeholders. In general, family owners try to maintain good relations with all stake-holders especially creditors of the firm.

According to foreign ownership, I find a strong positively significant effect on CR at the 99% level of confidence for LR, and OLR, which reveals that Jordanian listed companies with foreign ownership increase their chances of attaining a higher CR. Such a result can be justified by legitimacy theory. Jordanian listed companies with foreign ownership may want to legitimize themselves to present their good position as holding foreign ownership which represents a good sign for the market. As investors like to allocate more in companies that have a high foreign ownership, Jordanian listed companies tend to attain a higher CR through

their response to their investors. Consequently, increased foreign ownership has led to an increased push for firms to attain a higher CR.

8.5.3.2 Discussion of the results of LR, and OLR (Model 3): Financial transparency and disclosure category

Table 8- 32: Model 3 (Financial Transparency and Disclosure Category)

Variables	Advanced Multivariate Regression Analysis	
	LR	OLR
WCAQ		
TIMELENISS		
R-square	35.6	42.8

This part deals with the governance practices related to financial transparency and its impact on credit ratings of the firm. The results relating to this category of variables are presented in Model 3 of Tables for LR and, OLR. The R-square for Model 3 are 35.6, and 42.8 respectively. However, the individual indices show the likelihood ratio test reveals that for the sample firms the financial transparency and disclosure variables do not add value to the credit ratings of the firm. This means that the financial transparency of firms taken in isolation on this real index is of no interest to the creditors of the firm.

8.5.3.3 Discussion of the results of LR, and OLR (Model 4): Corporate governance category

Table 8- 33: Model 4 (Corporate Governance Category)

Variables	Advanced Multivariate Regression Analysis	
	LR	OLR
BRD_IND		
R_D		
BRD_EXP	**	
BRD_STOCK	(**)	
BRD_SIZE		*
R-square	36.4	43.3

Under LR board expertise is positively significant at the 95% level of confidence and thus beneficially impact upon CR. However, at the same confidence level board stock impacts negatively, which is counter-intuitive. Five variables are used to examine the relationship between corporate governance and the CR. Board size variable has a significantly positive effect on CR at a level of 10% significance level for OLR. This implies that Jordanian listed companies with a larger number of boards of directors' members attain a higher CR. This finding may attribute to the management disciplining hypothesis which assumes that increasing the level of CR mitigates the conflict that may occur between the management and the shareholders. Therefore, Jordanian listed companies with a larger board of directors' members may tend to attain a higher CR to reduce the agency costs that can arise from the

information asymmetry between management and shareholders. Board independence and role duality are not significant at the prescribed levels perhaps other corporate governance factors are more impact in the Jordanian environment.

For LR, board stock is negatively significantly associated with CR at the 95% level of confidence; such a finding implies that Jordanian listed companies with a lower proportion of board stock increase the level of their CR. Contrary to agency stewardship theory, management of the Jordanian listed companies with a larger board stock do not necessarily monitor the interests of the shareholders better despite the meeting of interests between them.

8.5.4 Discussion of the Results of Full Analysis Models for LR and OLR for CR

The results of different advanced multivariate regression models, including binary logistic and ordinal logit analyses for CR, in association with their explanatory variables, will be discussed in this section. The R-square for models are 42.4, and 48, respectively for LR and OLR. Each group of variables will be examined to determine the influence of the explanatory variables on the CR as a dependent variable. Table 8.34 summarises the results of these associations. The next sub-section presents the first explanatory variables' category.

8.5.4.1 Accounting and Financial Category

Four accounting and financial variables are used to investigate their relationship with the CR. The findings of these relationships for all models analysed are summarised in Table 8.34.

Table 8- 34: Full Analysis Results of Accounting and Financial Category Variables

Variables	LEV	PM	CAP_INTEN	LOSS
Bivariate Analysis				
Fisher's Test				
(BB3-BB)-(B3-B)				**
(BB3-BB)-(C3-C)				**
(BB3-BB)-(D)			(**)	
(B3-B)-(C3-C)				
(B3-B)-(D)			(**)	(**)
(C3-C)-(D)			(**)	(**)
Test of Means				
ANOVA F-Ratio			*	***
Test of Variances				
Cochran's C Test	***		***	
Bartlett's Test	**	***	***	
Levene's Test				***
Kruskal-Wallis Median Test Statistic				
Test Statistic		***	***	***
Advanced Multivariate Regression Analysis				
Logistic Model	(***)	**		(***)
Logit Model	(***)	**		(*)

Note: *, ** and *** denote significance at the 99%, 95% and 90% level of confidence, respectively.

Consistent with the results of the bivariate full model analyses, the results reveal that the variance of leverage differs between CR categories under the Cochran C test at the 99% level of confidence, and at the 95% level of confidence with Bartlett's test, while loss propensity only bears different variance under the Levene's test at the 99% level of confidence. However, only loss as to mean values, for F is significant Fisher's test for (BB3-BB)-(B3-B), (BB3-BB)-(C3-C), (B3-B)-(D) and (C3-C)-(D) categories, and as well significant at the 99% level of confidence as revealed by the ANOVA F-Ratio. As for the medians, profit margin, capital intensity and loss are significant at the 99% level of confidence as evidenced by the K-W statistical tests.

As seen from Table 8-34, under the multivariate models leverage, profitability and loss variables have an impact on the CR but not capital intensity in any of the analyses. According to the multivariate analyses, leverage is significantly associated negatively with CR at the 99 per cent level of confidence for Jordanian listed firms for both models. Loss propensity is significant at 90% (Logit), and 99% (logistic) level of confidence, as expected. Thus, there is a clear inverse relationship between financial risk, as evidenced by the leverage, i e. relative debt level, and the firm's credit rating, and lower leverage and loss propensity has led to a decreased debt servicing ability has an which effect on credit rating by increasing their level CR. This suggests that lower leverage listed companies with lower loss ratio increase the attaining of higher CR. A negative effect supports agency theory, which assumes that these companies should seek a higher credit rating as a requirement from both debt-holders and shareholders to lessen the disagreement between them, and for satisfy the bondholders' needs for this higher CR. This in turn should lead to an increase in the confidence of those bondholders pertaining to the ability of Jordanian companies to repay debt capital in a timely manner. This finding shows consistency with some of the previous studies (Blume et al. 1998; Doumpos and Patsiouras 2005; Skaife et al., 2006). Agency theory has supported the

relationship between both leverage and loss, and CR. Jordanian companies with a reduced loss propensity and a lower leverage ratio demonstrate that they want to fulfil the different needs of bondholders by providing greater financial reliability. Jordanian listed companies aim to signal their strong financial capabilities to their bondholders to make them more confident about the ability of companies to pay their liabilities.

Regarding profitability, for bivariate analysis, there are significantly different variances between the CR categories at the 99% level of confidence as revealed by a Bartlett's test. There are also significant differences in their median CR as show by the kruskal-wallistest, which is significant at the 99% level of confidence. Under multivariate analysis reflecting is positively significant in its impact on CR at the 95 per cent confidence for both models. So, high profitability firms have good credit ratings firms reflecting a ability to create future cash flows to cover debt interest and capital repayments, for which signalling theory can support the strong association of probability with CR. Thus, Jordanian companies with higher profitability can also expect greater and stronger future cash flows to the firms, which can signal their ability to meet debt financing obligations as they fall due, and expect a higher CR. This finding is similar to other studies (Galil 2003; Pettit et al., 2004; Skaife 2006), which find a positive association between corporate profitability and CR.

Finally, bivariate analysis indicates that capital intensity is significant related to CR as revealed by Fisher's test for comparing means between categories (BB3-BB)-(D), (B3-B)-(D) and (C3-C)-(D), while significant at 99% level of confidence with Cochran's C and Levene's variance tests and K-W median tests and at the 90% level of confidence for the ANOVA F-Ratio indicating different mean capital intensities between CR categories. According to multivariate analysis the results show that greater tangibility of the firm's assets structure for Jordanian listed companies in our sample is not an important criterion in determining financing policy nor in achieving a higher CR.

8.5.4.2 Market and Regulatory Category

Four market and regulator variables were investigated in the current study. Table 8-45 summarises the results of these variables.

Table 8- 35: Full Analysis Results of Market and Regulatory Category Variables

Variables	SIZE	TSQ	TYP_SECT	BIG_AUD
Bivariate Analysis				
Fisher's test				
(BB3-BB)-(B3-B)	**	**		(**)
(BB3-BB)-(C3-C)	**	**		(**)
(BB3-BB)-(D)	**	**		(**)
(B3-B)-(C3-C)	**			(**)
(B3-B)-(D)	**	**		
(C3-C)-(D)	**	**	(**)	
Test of Means				
ANOVA F-Ratio	***	***	*	***
Test of Variances				
Cochran's C T		***		
Bartlett's T		**		
Levence's T	*		*	***
Kruskal-Wallis Median Test Statistic				
Test statistic	***	***	*	
Advanced Multivariate Regression Analysis				
Logistic Model	***	***		
Logit Model	***	***		

Note: *, ** and *** denote significance at the 99%, 95% and 90% level of confidence, respectively.

Consistent with the results of all models, the result of bivariate tests indicate that firm size and Tobin's q are significantly related to CR as revealed by Fisher's test for (BB3-BB)-(B3-B), (BB3-BB)-(C3-C), (BB3-BB)-(D), (B3-B)-(D) and (C3-C)-(D) [except (BB3-BB)-(D)

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only for size, not Tobin's q], while the ANOVA F-Ratio is significant at the 99% level of confidence for both. As to differences between variances amongst CR categories, Tobin's q is significant under Cochran's C and Barlett's test at the 99% and 95% level of confidence, respectively and size at the 90% level of confidence Levene's test. Both variables are significant at the 99% level of confidence with the K-W statistic tests to investigate different medians amongst categories.

Multivariate results reveal that both firm size and growth opportunity (Tobin's q) are positively and significantly impacting on CR at the 99 % level of confidence. This suggests that large Jordanian listed companies with higher growth opportunities can increase their chance of attaining higher CR. According to legitimacy theory, large companies with growth opportunities want to legitimate themselves to signal their good performance. To achieve this, large Jordanian listed companies attempt to increase their CR. This significant positive result is consistent with other studies (Potter and Sommer 1999; Adams at al 2003; Altman and Rijken, 2004; Skaife et al., 2006; Demirovic and Thomas, 2007). Larger firms with higher growth are less susceptible to default risk due to their market position, and consequently have better credit ratings and try to provide good signals to their investors to illustrate their higher performance measured, for instance, which resulted from their higher profits. This can be attributed to signalling theory which states that large companies signal their creditworthiness to their investors to show their ability to meet their financial obligations. Therefore, large companies with growth opportunities an attain high credit ratings, and thus provide evidence of their ability to generate greater future cash flows to the firm that should enable them to convey the required information about repayments of debt to bondholders in a timely manner.

There is evidence of significance between type of sector and CR and between audit and CR, under the bivariate analysis. Fisher's T is significant for audit type between categories (BB3-

BB)-(B3-B), (BB3-BB)-(C3-C), (BB3-BB)-(D) and (B3-B)-(C3-C), but only the category comparison (C3-C)-(D) is significant for sector type. Audit type is significant at the 99% level of confidence for the ANOVA F-Ratio, while sector type a 90% level of confidence. Finally, sector type is significant with Levene's variance and K-W median tests at the 90% level of confidence, while audit type is significant at the 99% level of confidence with Levene's test. Thus, there are same notable differences in medians and variances among CR categories for sector type, and notable differences between variances of audit type amongst CR categories.

8.5.4.3 Ownership Structure Category

This point tests the relationship between ownership structure variables in the study and the CR. The findings of these relationships summarise in table 8.36.

Table 8- 36: Full Analysis Results of Ownership Structure Category Variables

Variables	BLOCK_ OWN	INST_ OWN	INSID_ OWN	GOV_ OWN	FAMILY_ OWN	FOREN_ OWN
Bivariate Analysis						
Fisher's Test						
(BB3-BB)-(B3-B)				**		**
(BB3-BB)-(C3-C)		(**)				**
(BB3-BB)-(D)	(**)	(**)		(**)		**
(B3-B)-(C3-C)				(**)		**
(B3-B)-(D)	(**)	(**)		(**)		**
(C3-C)-(D)	(**)	(**)		(**)		**
Test of Means						
ANOVA F-Ratio	**	***		***	*	***
Test of variances						
Cochran's C T	***	***		***		***
Bartlett's T	***	**		***		***
Levene's T	**	*		**	*	***
Kruskal-Wallis Median Test Statistic						
Test statistic	**	***	***		***	***
Advanced Multivariate Regression Analysis						
Logistic Model		(*)		(***)	**	***
Logit Model		(***)	**			***

Note: *, ** and *** denote significance at the 99%, 95% and 90% level of confidence, respectively.

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As seen from Table 8-36, an analysis of paired comparisons indicates an associated with all ownership categories. However, multivariate analysis indicates two variables namely, institution and foreign ownership has a significant association for both the models of the CR analysis, namely, LR, and OLR, while the other variables are associated with CR for some of the models of CR.

Therefore, bivartiate analysis indicates that Fisher's test is significant at the 95% level of confidence for paired comparisons (BB3-BB)-(B3-B) for institution, governmental and foreign ownership; while it is significant at the same level of confidence for (BB3-BB)-(C3-C) for blockholders, and institutional and foreign ownership, for (BB3-BB)-(D) and (C3-C)-(D) only for governmental and foreign ownership. Finally, for (B3-B) - (C3-C) and (B3-B) - (D) all ownership variables are significantly associated at the 95% level of confidence, except insider and family ownership which are insignificant.

Regarding the ANOVA F-test, all variables are significant at the 99% level of confidence except blockholders and family ownership which are significant at the 95% and 90% level of confidence, respectively, and except for insider ownership, which is insignificant. All variables are significant at the 99% level of confidence under Cochran's C test, except insider, and family ownership. Bartlett's test is similarly significant at the 99% level of confidence for the same variables, except institutional ownership, which is significant at the 95% level of confidence. Under Levene's test blockholders and governmental ownership are significant at the 95%, and institutional and family ownership at the 90% level of confidence, while foreign ownership is significant at the 99% level of confidence. Regarding the K-W statistic test all variables are significant at the 99% level of confidence, except blockholders at the 95% level of confidence, and insider ownership which bears an insignificant

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relationship. From all this, it can be seen that there are some fundamental differences in ownership attributes between different CR categories.

Regarding the multivariate analysis blockholders have insignificant impacts on CR in the Jordanian context. So, Jordanian listed companies that have shareholders who own 5% of the companies' shares have no impact on CR.

According to governmental ownership, the logistic model result reveals a negatively significant effect on CR at the 99% level of confidence, and so the findings demonstrate that Jordanian listed companies with a larger proportion of governmental ownership depress the CR to a lower level. Legitimacy theory should have provided evidence for supporting the obtained result. In Jordan, listed companies with a large proportion of governmental ownership may want to legitimate themselves to show benefits of a higher level of control by government in their ownership, which ought to have been confirmed by good performance and confidence from the investors as these companies are financially supported by government.

The analysis pertaining to the OLR model indicates that insider ownership has a positively significant effect on CR at the level 95% level of confidence. Such a finding means that Jordanian listed companies with a high proportion of insider ownership push firms to attain a higher level of CR. According to stewardship theory, management of the Jordanian listed companies with a large insider ownership structure monitor the interests of the shareholders due to meeting of interests between them. This drives management to increase the level of CR to a higher level. Management in the Jordanian listed companies may need to attract many investors and as such, they need to attain a higher CR.

The management try to shed light upon the firm's ability to cover interest debt and repayments in a timely way through strong current and future cash flows to the firm by

attaining an investment grade of CR which should enable them to access more easily international financial markets and enhance their ability to provide the required information instantly to attract international investors to the capital market, namely, Jordan.

With higher managerial ownership the management are arguably more strongly motivated to increase the firm's profit and performance which in turn should be reflected in a higher CR, as indeed indicated by these findings.

Regarding institutional ownership, both models had a negatively significant effect on CR at the 99% level and 90% level of confidence for the ordinal logit model and the binary logistic model, respectively. This indicates that Jordanian listed companies with a higher proportion of institutional ownership are less likely to attain higher CR. According to management disciplining hypothesis, there may be no conflict between management and their institutional investors who have access to the required information which would affect the CR. Consequently, it can be a threat to creditor interests as this class of shareholder can expend enormous energy on blocking debtholder benefits, and so an increase in the value of this variable could lead to reduced credit ratings of the firm. Thus, ideally creditors would like to use the monitoring powers of institutional investors while ensuring their own interests are not undermined.

Regarding the family ownership, only the binary logistic regression model demonstrates a significantly positive effect on CR at the 95% level of confidence. This implies that Jordanian listed companies with greater family ownership are more likely to push firm to attain a higher CR. According to stakeholder theory, the Jordanian listed companies that have greater family ownership may want to provide their stakeholders with a good financial position which reflects their ability to meet their financial obligations. Consequently, Jordanian listed companies may achieve a higher CR for their family stakeholders to increase their shares in

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the companies. Legitimacy theory can explain this finding, for a Jordanian listed company with family ownership would want to legitimate itself to the market by indicating their sound financial performance. Therefore, these companies should enhance their communication with society and legitimise themselves by attaining a high CR. From a creditor's point of view, increases family shareholding in means that this class of shareholder will be inclined towards promoting debt holder's interests, and provide greater financial security.

According to foreign ownership, this has had a strong positive significantly effect on CR at the 99% level of confidence for both models. Therefore, high foreign ownership firms will tend to attract a higher CR. According to legitimacy theory, foreign ownership companies may push firms to attain a higher CR, as high foreign ownership represents a good sign including a market a high anticipated performance of these companies. Foreign owners, looking to the credit rated categories of these firms through big international rating agencies, assess as good or bad signal of the extent of the financial capabilities of firms to create current and future cash flows to the firm. Of course, foreign ownership can push a firm to help enable big international rating agencies to award a higher CR.

According to innovation diffusion theory, companies with greater foreign ownership may press their clients to obtain higher credit ratings and so provide information to indicate financial safety regarding the service of debt by future cash flows. Additionally, innovative firms may be more likely to apply internet-based technology for the diffusion of financial information, and so these results would also support innovation theory.

8.5.4.4 Financial Transparency and Disclosure Category

Two variables are used to examine the relationship between financial transparency and CR. Table 8-37 summarises the findings of these variables. As indicated from Table 8-37, all

models reveal that working capital accruals and timeliness, as proxies for financial transparency, produce insignificant effects on CR.

Table 8- 37: Full Analysis Results of Financial Transparency and Disclosure Category Variables

Variables	WCAQ	TIMEILINESS
Bivariate Analysis		
Fisher's Test		
(BB3-BB)-(B3-B)		
(BB3-BB)-(C3-C)		
(BB3-BB)-(D)		
(B3-B)-(C3-C)		
(B3-B)-(D)		**
(C3-C)-(D)		**
Test of Means		
ANOVA F-Ratio		**
Test of Variances		
Cochran's C T	***	***
Bartlett's T		
Levene's T	**	**
Kruskal-Wallis Median Test Statistic		
Test statistic		
Advanced Multivariate Regression Analysis		
Logistic Model		
Logit Model		

Note: *, ** and *** denote significance at the 99%, 95% and 90% level of confidence, respectively.

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As indicated in Table 8.37, the only variable under the bivariate analysis to reveal significant paired comparison is timeliness according to Fisher's test, and indicates significant relationship for (B3-B)-(D) and (C3-C)-(D) and CR a. The ANOVA F-Ratio is significant at the 95% level of confidence for timeliness. Levene's test is significant at the 95% level of confidence for both financial transparency variables. The K-W statistic's shows that there are difference in the medians of working capital accruals at the 95% level of confidence amongst the CR categories, and again regarding the medians of timeliness at the 99% level of confidence.

8.5.4.5 Corporate Governance Category

Five variables are used to examine the relationship between corporate governance and CR.

Table 8- 38: Full Analysis Result of Corporate Governance Variables

Variables	BRD_IND	R_D	BRD_EXPERT	BRD_STOCK	BRD_SIZE
Bivariate Analysis					
Fisher's Test					
(BB3-BB)-(B3-B)			(**)		**
(BB3-BB)-(C3-C)	**		(**)	**	**
(BB3-BB)-(D)	**	(**)			(**)
(B3-B)-(C3-C)				**	**
(B3-B)-(D)					(**)
(C3-C)-(D)					
Test of Means					
ANOVA F-Ratio	*	*	***	***	***
Test of Variances					
Cochran's C Test	***	***	***	***	***
Bartlett's Test	**		***	***	
Levene's Test	**		*		
Kruskal-Wallis Median Test Statistic					
Statistic Test	*	*	***	***	
Advanced Multivariate Regression Analysis					
Logistic Model			*	(***)	
Logit Model	(*)				***

Note: *, ** and *** denote significance at the 99%, 95% and 90% level of confidence, respectively.

As indicated from Table 8-38, the bivariate analysis under Fisher's test reveals all at the 95% level of confidence significant differences means between categories: (BB3-BB)-(B3-B) for board expertise and board size, and between (BB3-BB)-(C3-C) for all variables except role duality, while there is a significant association between CR and board independence, role duality and board size for the (BB3-BB)-(D) category, paired categories; (B3-B)-(C3-C) are significant for board stock and board size, but only board size is significant associated with CR for the (B3-B)-(D) paired categories.

The ANOVA F-Ratio is significant at the 99% level of confidence for board stock, board expertise and board size, while significant at the 90% level of confidence for board independence and role duality. Cochran's C test is significant at the 99% level of confidence for all corporate governance variables, while Bartlett's test is significant at the 99% level of confidence for board expertise and board stock, and at the 95% level for board independence. Only board independence is significant, at the 95% level of confidence, under Levene's test. However, role duality, board expertise and board size are significant at the 99% level of confidence for the K-W statistic tests, while board independence is significant at the 95% level of confidence.

According to the multivariate analysis at varying levels of confidence two variables, namely board independence and board size, are significant to the OLR model analysis, and board expertise and board stock are significant for the LR model. Regarding the board size variable, the OLR model indicates a significant positive effect on CR at a level of confidence of 99%. This shows that Jordanian listed companies with a large number of board of directors membership can attain a higher CR. This finding may be attributed the management disciplining hypothesis which assumes that increasing the level of CR can mitigate the conflict which can occur between the management and the shareholders. Therefore, Jordanian

listed companies with a larger board of directors' membership may attain a higher CR to reduce the agency costs that can arise from the information asymmetry between management and shareholders.

Consistent with the OLR model there are negatively significant values for the board independence effects on CR at the 90% level of confidence. Interpretation of the result is that if there is an additional independent director on the board it will tend to push the firm into a lower credit rating category, and would seem that the independence of directors will require a combination of executive and non-executive. Contrary to agency theory, which posits a positive relationship suggesting more effective control over agent-managers by independent directors, the Jordanian evidence reveals that independent directors have not been able to exert such influence. Thus, it appears that instead, supporting stewardship theory executive directors of Jordanian companies are performing an effective stewardship role on behalf of their stakeholders.

Regarding board expertise, this has a positively significant effect on CR at the 90% of confidence for the LR model, so board expertise is beneficial from a creditor's point view. Therefore, if a firm has at least one director, who has experience on boards of other firms, then this will tend to push the firm into a higher credit rating category. This negates an agency theoretic perspective of conflicts arising from memberships of different boards in favour of net benefits arising from external knowledge and experience (Klein, 1998; Skaife et al., 2006). This supports the recommendation by Mallin (2007), that at least one member of the board should an independent director, who has relevant and recent financial expertise at the level. It is recommend that board members should have a range of skills in areas of finance, marketing, operations, law, technology and public policy (Moore, 2002).

Incidentally, theory might also be to deal more effectively with the remuneration of management.

Finally, only the LR model indicates that board stock has a significant negative effect on CR at the 99% level of confidence. This demonstrates that a greater propensity to hold board stock may have caused the directors to be engaged in wealth transfer activities beneficial to shareholders at the expense of bondholders, and duly reflected in a lower CR, according to the wealth-transfer hypothesis.

8.6 Classifying Credit Risk Assessments as BB Category or Below

For practical purposes it is important for a firm not to attract a low CR. Furthermore, many bond portfolio managers are restricted from owning lower rated bonds (Grinblatt and Titman, 2002), and as such, firms themselves incur significant costs if they receive a lower bond rating.

CRs convey ordinal risk assessments. Because of the difficulty in quantifying the marginal effects of changes in each governance variable on CRs with multiple categories, I use an alternative classification scheme that partitions CRs into two categories—BB or below. Furthermore, using a dichotomous CR classification allows me to more readily assess the economic impact of corporate governance on the firms' ratings.

8.6.1 Logistic Regressions

The results presented before are based on ordered logit regressions which take into account the ordinal risk characteristic of credit ratings. It is difficult to understand the economic impact of these corporate governance variables on the CR of firms as ordered logit regressions have multiple categories for the dependent variable. Following the methodology

set out by Skaife *et al.*, (2006) the sample is divided into two alternative classifications and this splits the firms into two distinct groups based on their WVB score.

Firms in the default risk categories BB3 to BB are given the value '1' and '0' if of lower category. It is obvious that firms with a score of '1' are more desirable and can be considered to be of higher credit worthiness.

This type of division will help us calculate the marginal effects of changes in the governance variables on the CR of firms. The new dependent variable is known as 'higher ratings' and I use logistic regressions to analyse the following model:

Grade of CR = f (corporate governance variables, ownership variables, financial transparency, control variables denoting firm characteristics).

Table 8.39 presents the results of a logistic regression on the full sample of firms based on the new binary dependent variable ('0', '1'). The interpretation of the results will be simplified if we take the exponential value of the coefficients, i. e. the odds ratio. For example, if the value of the odds ratio coefficient of variable X_k is 2, it will mean that a unit change in the variable X_k will make the event, Y, twice as likely to occur or for each unit increase in X_k there will be a 100% increase in event Y. If the coefficient is negative it will mean the odds ratio will be below one which will make the event less likely.

Table 8- 39: Logistic regression results of the effects of ownership structure, financial transparency/ disclosure and corporate governance on firm credit risk assessments (dependent variable = BB category of WVB_CR or below)

Variables	Estimated Coefficient
Ownership Structure Variables	
BLOCK_OWN	0.724
INST_OWN	-1.303*
INSID_OWN	-0.638
GOV_OWN	-12.506***
FAML_OWN	1.658**
FOREN_OWN	2.225***
Financial Transparency Variables	
WCAQ	0.560
TIMELINESS	1.452
Corporate Governance Variables	
BRD_IND	-0.746
R_D	0.238
BRD_EXPERT	0.906*
BRD_STOCK	-1.579***
BRD_SIZE	0.058

The result show from this table family ownership, foreign ownership and board expert are significant positive determinants of higher CRs. Institution ownership, governmental

ownership and board stock are negatively significantly related to higher CRs. In contrast, the coefficients for block holders, insider ownership, working capital accruals, timeliness, board independent, role duality and board size are insignificantly related to the higher CRs category for Jordanian firms.

According to the ownership structure group variables, family and foreign ownership are positively significant for a higher CR at the level 95% of confidence. An increase of family and foreign ownership will tend to push a firm to a higher CR, with odds of 5.249 and 9.257, respectively, given zero parameter values for other variables. We find that a unit increase in the percentage of institution and governmental ownership will make it less likely for a firm to move into a lower rating CR category. In addition, the coefficient for blockholders and an insider's ownership are no longer significant when using BB grade of CR as the proxy for higher credit risk.

The coefficients for the financial transparency and disclosure group, namely, working capital accruals and timeliness are no longer significant when using the BB category CR as the credit risk proxy.

Finally, according to the corporate governance group of variables, the coefficients of board expertise is significantly positively related to the BB category of CR at 90 % confidence level, for an increase in board expertise will generate an odds of 2.474 times for a firm moving into the higher CR. Board stock is significantly and negatively related to the BB category of CR at 99% confidence level. We can see that the coefficients on board independence, role duality and board size are no longer significant when using BB grade as the proxy for higher credit risk. However, it will be more prudent for firms seeking debt financing to reduce the independence of their directors.

8.6.2 Marginal Effects

Table 8.40 presents the marginal effects of the logistic regression model. We can see that the blockholders, family and foreign ownership variables are positively associated with a higher CR, whilst on other hand, the institution, insider and governmental ownership variables are associated with lower ratings.

Table 8- 40: Assessment of marginal effect of ownership structure, financial transparency/ disclosure and corporate governance on probabilities of BB WVB_CR

Variables	Predicted sign	Marginal effects standardized variables
Ownership Structure Variables		
BLOCK_OWN	?	0.145
INST_OWN	?	-0.261
INSID_OWN	?	-0.128
GOV_OWN	?	-0.502
FAML_OWN	?	0.332
FOREN_OWN	?	0.446
Financial Transparency Variables		
WCAQ	?	0.112
TIMELINESS	?	0.291
Corporate Governance Variables		
BRD_IND	?	-0.149
R_D	?	0.048
BRD_EXPERT	?	0.182
BRD_STOCK	?	-0.316
BRD_SIZE	?	0.012

Note 1: *** significant at 1%, ** significant at 5%, and * significant at 10%.
Note 2: The Marginal effects column shows the effects of receiving BB category of CR due to a one unit change in the variable of interest after standardizing the independent variables.

The probability of the firm achieving a BB category of CR is increased by 0.145 per unit increase in blockholder-ownership around its mean (57%). As the probability is low it shows that firms are close to the optimum blockholders required. Meanwhile, unit increases in family and foreign ownership can the probability of the firm's rating to BB grade by 0.332 and 0.446, respectively, i.e. from the lower to the higher CR.

According to institutional ownership we find that an increase of a unit in the percentage of institutional ownership around its mean (33%) decreases the probability of receiving BB category by 0.261, while a shift in governmental ownership would push the firm's rating BB category of CR to lower CR with an increase in probability of 0.502. I find that the probability of receiving an investment grade decreases by 0.128 for insider ownership. Therefore, insider ownership will push the firm from the BB category to the lower category of CR with a low probability.

Financial transparency group variables can push a firm from lower to higher CR , and the probability of the firm attaining a BB category of CR increases by 0.112, 0.291, respectively, per unit around the financial transparency mean for WCAQ and timeliness of earnings of 0.16 and 0.43, respectively.

The probability of the firm achieving an investment grade is increased by 0.012 per unit as there is an addition to the board near its mean board size (8.27). As the probability is quite low it shows that firms are close to the optimum board size required.

When the CEO of a firm fulfils a dual role by also being the chair of the board of directors, the probability of receiving an investment grade increases by 0.048. The data indicate that, an average, only around 33% of firms have board independence of directors. I can see that if firms adopt this stance there will be a slight tendency to decrease their CR from to higher grade lower grade. Marginal effects of the governance related variables for the percentage of

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board independence reveal that an increase of a unit in the percentage of board independence around its mean (33%) decreases the probability of receiving BB grade by 0.149. This may be because the board independent directors do not properly exercise their fiduciary duties and ensure that the management is serving the best interests of all shareholders. Thus, an increase in the value of this variable will lead to a low marginal effect. Thus, despite the corporate governance practice/codes, the degree of director independence through higher shareholdings does such produce the desired effect.

The probability of the higher credit rating decreases when there is a 100% shift in board independence by owning the stock. I find that an upward shift in board stock pushes the firm to a lower CR by 0.316 per unit shift as there is an addition to its board stock around its mean of 0.85.

Yet, it also shows that though creditors should prefer board independence the optimum is reached around the mean and in addition the will be a very low probability of pushing the firm into an investment grade rating. However, in attaining a higher CR, namely, a BB grade there is a positive change in probability associated with an increase in the board expertise for the firm. FOr the average firm, the average degree of board expertise is around 52%. We can see that if firms adopt this tactic, there will be tendency to increase their CR from a lower to a higher grade.

8.7 Results of Hypotheses for all Models

The former section presents the various models for the five relationship groups assigned in this study. Based on these models, this section draws together the results for discussion, and testing of the study hypotheses. This section starts with discussions and testing of the first group hypotheses according to the results of bivariate and multivariate analyses. Some

differences in the results between logit models versus OLS may be due to the nature of CR (as the dependent variable), which is measured by log of the odds-ratio (rating categories) in the logit model, whereas there is a numerical score (continuous) dependent variable in the OLS model. In the Tables that follow, an asterisk (*, **, ***) with brockets identities a positive (negative) significant relationship at a prescribed level of confidence, whilst a tick (√, √√, √√√) identifies a significant difference (not necessarily positive or negative) at a prescribed level of confidence.

8.7.1 First Category Hypotheses (H1)

The first category of hypothesis deal with whether there is a relationship between accounting and financial variables and CR. All variables have been found to have a relationship with CR.

Table 8- 41: Bivariate and One-way Findings of Accounting and Financial Category Variables

Variables	Bivariate/ one way Analysis												
	P	NP	FT						T of V			AF	K_W
			1	2	3	4	5	6	CT	BT	LT		
LEVE									√√√	√√			
PM		***							√√√				√√√
CAP_INT					(**)		(**)	(**)	√√√	√√√		√	√√√
LOSS		(***)	**	**			(**)	(**)			√√√	√√√	√√√

Note: P= parametric analysis, NP= non parametric.FT= Fisher's least significant difference test, 1=(BB3-BB) to (B3-B), 2=(BB3-BB) to (C3-C), 3=(BB3-BB) to (D), 4=(B3-B) to (C3-C), 5=(B3-B) to (D), 6=(C3-C) to (D). T of V= Test of Variances, CT= Cochran's C Test, BT= Bartlett's Test, LT= Levene's Test. AF= ANOVA F-Ratio (Test of Means), K_W= Kruskal-Wallis test statistic.

Table 8- 42: Multivariate Findings of Accounting and Financial Category Variables

Variables	Multivariate Analysis			
	U_OLS	T_OLS	LR	OLR
LEV	(***)	(***)	(***)	(***)
PM	**	**	**	**
CAP_INTEN				
LOSS		(*)	(***)	(*)

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
U_OLS= untransformed ordinary least square, T_OLS= transformed ordinary least square, LR= logistic regression, OLR= ordinal logit regression.

8.7.1.1 Leverage

Hypothesis H1-1 suggests a negative relationship between leverage and CR. The results of the multivariate (but not bivariate) models confidence a strong negative relationship at the 99 per cent level of confidence for Jordanian listed companies. Thus, H1-1 is not only supported by this analysis, but the results of this study shows consistency with some of the previous studies (Blume et al. 1998; Doumpos and Patsiouras 2005; Skaife et al., 2006).

8.7.1.2 Profitability

Hypothesis H1-2 suggests a positive relationship between PM and CR. The results of the bivariate (non-parametric) models, supports this hypothesis, as there is a highly significantly positive result at the 99% level of confidence, and the multivariate analysis supports this hypothesis at the 95 per cent level of confidence for all models. These findings which support H1-2 are consistent with many previous studies (Galil 2003; Pettit et al., 2004; Skaife et al 2006).

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8.7.1.3 Capital Intensity

Hypothesis H1-3 suggests a positive relationship between capital intensity and CR. Instead, the results of the bivariate analysis reveal a negative association between capital intensity and CR for three pairs of CR categories at the 95% level of confidence. No empirical evidence based on four of the multivariate models (U-OLS, T_OLS, LR and OLR) in the current study supports the relationship between the Jordanian listed company's capital intensity and CR. The result reveals that the capital intensity of Jordanian listed companies in the ASE has not an impact on WVB_CR, Hence, H1-3 is rejected in the current study.

8.7.1.4 Loss

Hypothesis H1-4 suggests a negative relationship between loss and CR. The results of the bivariate analysis support this hypothesis for the non-parametric models and for the Fisher tests for pairs 5 and 6, which distinguish the lower D rating from others categories, although there are some wrong signs for higher category pairs, 1 and 2 not including the D rating. So, there is a highly significant negative relationship between loss and the CR score with the non-parametric test 99% level of confidence and at the 95% level of confidence for several of the Fisher tests. According to the multivariate analysis there is a significantly negative affect on CR for three out four models, namely, at the 90% level of confidence for T_OLS and OLR, and at the 99% level of confidence for LR. Thus, it can be stated that H1-4 is in the current study, a finding which is consistent with (Skaife *et al.*, 2006).

To sum up the previous section, which deals only with the accounting and financial category of determinants of CR, they generally have a strong significant relationship with CR. These supports the first hypothesis for the categories of variables of the Jordanian listed companies, and demonstrate a significant influence on CR. This confirms a role for accounting and financial variables in credit rating determination.

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8.7.2 Second Category Hypotheses (H2)

The H2 group of hypothesis suggests a relationship between market and regulatory factors and CR. The following discussion represents all models for all independent variables for this category.

Table 8- 43: Bivariate and One-way Findings of Market and Regulatory Category Variables

Variables	Bivariate/ one way Analysis													
	P	NP	FT						T of V			AF	K_W
			1	2	3	4	5	6	CT	BT	LT		
SIZE	***	***	**	**	**	**	**	**			√	√√√	√√√
TSQ	***	***	**	**	**		**	**	√√√	√√		√√√	√√√
FIN_TYP	***	(**)						(**)			√	√	√
AUD_TYP	***	(***)	(**)	(**)	(**)	(**)						√√	√√√

Note: P= parametric analysis, NP= non parametric. FT= Fisher's least significant difference test, 1=(BB3-BB) to (B3-B), 2=(BB3-BB) to (C3-C), 3=(BB3-BB) to (D), 4=(B3-B) to (C3-C), 5=(B3-B) to (D), 6=(C3-C) to (D). T of V= Test of Variances, CT= Cochran's C Test, BT= Bartlett's Test, LT= Levene's Test. AF= ANOVA F-Ratio (Test of Means), K_W= Kruskal-Wallis test statistic.

Table 8- 44: Multivariate Findings of Market and Regulatory Category Variables

Variables	Multivariate Analysis			
	U_OLS	T_OLS	LR	OLR
SIZE	***	***	***	***
TSQ	**	***	***	***
FIN_TYP				
AUD_TYP				

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance. U_OLS= untransformed ordinary least square, T_OLS= transformed ordinary least square, LR= logistic regression, OLR= logit ordinal regression.

8.7.2.1 Firm Size

Hypothesis H2-1 suggests a positive relationship between firm size and CR. The results of the bivariate and multivariate analyses clearly demonstrate that firm size (log assets) is highly significantly positively related to the CR score. The positive relationship between firm size and CR for the multivariate models in the current study is consistent with many prior studies, (for example: Horrigan, 1966; Kaplan and Urwitz, 1979; Altman and Rijken, 2004; Skaife *et al.*, 2006; Demirovic and Thomas, 2007). Consequently, H2-1, proposing a positive association between the size of Jordanian listed companies and CR, can be supported in the current study.

8.7.2.2 Growth opportunity

Hypothesis H2-2 suggests a positive relationship between growth potential and CR. The results of all models namely, bivariate and multivariate analysis support this hypothesis and these results are highly significant positively. Jordanian listed companies with high growth potential have a higher credit rating than those with lower level of growth. This finding is supported by others (Potter and Sommer, 1999; Adams *et al.*, 2003). Consequently, the significant association between growth potential of the Jordanian listed companies and CR supports H2-2 in the current study.

8.7.2.3/ 8.7.2.4 Type of Sector / Type of Audit

Type of sector and big audit firm propensity show mixed results for the parametric and non-parametric bivariate models. Only bivariate parametric analysis indicates a significant positive association between both type sector and / big audit and the CR of Jordanian listed companies, for which the parametric and non-parametric bivariate analyses indicate a significance at the 99%, and 95% level of confidence, respectively but with different signs. It can be shown that under the multivariate analyses sector type and audit type have insignificant impacts on CR in the Jordanian context. Consequently, the current study fails to

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find evidence for the theories that explain the relationship between both the type of audit and type of sector of the Jordanian listed companies and CR. Therefore, H2-3 and H2-4 are rejected in the current study.

This result suggests that it is the quality of the companies, rather the quality of the auditing firm that is important to the CR, although the bivariate (parametric) test reveals that there is some CR benefit in attracting a big 4 audit company. The binary classification for sector type, was one for the financials and zero for the non-financials, the latter covering the service and industrial subsectors. An earlier table (Table 8-1) revealed that for each sector (financials, service and industrials) the typical classification was C3-C. Although the proportion of firms in higher credit categories was greater for financials than non-financials, the difference was not strong enough to be statistically significant.

According to the above discussion, the market and regulatory factors have some significant relationships with CR, for there are two (firm size and growth opportunities) out of four variables with a strong positive significant association with CR in the Jordanian context in all models. This confirms a role for market and regulatory factors impinging on credit ratings.

8.7.3 Third Category Hypotheses (H3)

The H3 group of hypothesis address the relation between ownership structure and CR. The following discussions represent the all models for all variables.

Table 8-45: Bivariate and One-way Findings of Ownership Structure Category Variables

Variables	Bivariate Analysis/ one way Analysis													
	P	NP	FT						T of V			AF	K_W
			1	2	3	4	5	6	CT	BT	LT		
BLOCK_OWN					(**)		(**)	(**)	√√√	√√√	√√	√√	√√
INSTIT_OWN	***	***		(**)	(**)		(**)	(**)	√√√	√√	√	√√√	√√√
INSID_OWN	(**)												√√√
GOV_OWN			**		(**)	(**)	(**)	(**)	√√√	√√√	√√	√√√	
FAM_OWN											√	√	√√√
FOR_OWN	***	***	**	**	**	**	**	**	√√√	√√√	√√√	√√√	√√√

Note: P= parametric analysis, NP= non parametric. FT= Fisher's least significant difference test, 1=(BB3-BB) to (B3-B), 2=(BB3-BB) to (C3-C), 3=(BB3-BB) to (D), 4=(B3-B) to (C3-C), 5=(B3-B) to (D), 6=(C3-C) to (D). T of V= Test of Variances, CT= Cochran's C Test, BT= Bartlett's Test, LT= Levene's Test. AF= ANOVA F-Ratio (Test of Means), K_W= Kruskal-Wallis test statistic.

Table 8-46: Multivariate Findings of Ownership Structure Category Variables

Variables	Multivariate Analysis			
	U_OLS	T_OLS	LR	OLR
BLOCK_OWN				
INST_OWN	(**)		(*)	(***)
INSID_OWN		***		**
GOV_OWN			(***)	
FAMILY_OWN	**	***	**	
FOREN_OWN	**	***	***	***

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
U_OLS= untransformed ordinary least square, T_OLS= transformed ordinary least square, LR= logistic regression, OLR= ordinal logit regression.

8.7.3.1 Blockholders

Hypothesis H3-1 suggests a significant relationship between blockolder ownership and CR. Bivariate analysis indicates a significant negative association between blockholder ownership and CR for three pairs of CR categories at the 95% level of confidence. No empirical evidence based on all of the multivariate models in the current study supports the relationship between the Jordanian listed company's blockholders and CR. Consequently, the current study fails to find evidence for the theories that explain the relationship between both the blockholders of the Jordanian listed companies and CR. Therefore, H3-1is rejected in the current study.

This means that Jordanian listed companies with a lower proportion of blockholder ownership do not necessarily decrease their level of CR. Skaife *et al.,* (2006) hypothesized neither a positive nor negative effect for blockholders although they reported a negative effect for their sample of US firms. Therefore, Jordanian listed companies with a higher proportion of blockholder ownership do not sufficiently reduce conflict between the shareholders and management, which otherwise would reduce the agency problem in this case. However, earlier (Table 8-17) it was fourd that the category D rating had a higher level of blockholder value, although the other categories were similar to each other. So, if there is negative blockholder effect it is not strong enough.

8.7.3.2 Institutional Ownership

Hypothesis H3-2 suggests a significant relationship between institutional ownership and CR. The results of bivariate and multivariate analysis support this hypothesis. Bivariate parametric and non-parametric analysis indicates a significant positive association between institutional ownership and CR at the 99% level of confidence, and a negative relationship for four pairs of CR categories at the 95% level of confidence. According to multivariate analysis there is a significantly negative effect on CR for three out of four models: at the 95% level of

confidence for U_OLS, and at the 90% level of confidence for LR, and at the 99% level of confidence for OLR. Thus, it can be stated that H3-2 is supported in the current study, a finding which is consistent with other studies firm performance is linked to institutional ownership (Zeitun, R, 2009).

8.7.3.3 Insider Ownership.

Hypothesis H3-3 suggests a significant relationship between insider ownership and CR. The results of bivariate and multivariate analysis support this hypothesis. Bivariate parametric analysis indicates a significant negative relationship at the 95% level of confidence. According to the multivariate analysis there is a significantly positive effect on CR for two out of four models, namely, at the 99% level of confidence for T_OLS, and at the 95% level of confidence for OLR. These results which support H3-3 are confirmed by other to the extent that in their studies firm performance is linked to insider ownership (Chung and Pruitt, 1996).

8.7.3.4 Governmental Ownership

Hypothesis H3-4 suggests a significant relation between governmental ownership and CR. Fisher's analysis indicates a significant association between governmental ownership and CR at the 95% level of confidence for four pairs of CR categories, namely, 3, 4, 5 and 6, and at the 95% level of confidence for one pair. No empirical evidence based on three of the multivariate models (U_OLS, T_OLS, and OLR) the current study supports the relationship between the Jordanian listed company's governmental ownership and CR. Only LR supports a significant relationship at the 99% level of confidence a negative sign. This result is confirmed by others to the extent that in their studies firm performance is linked to governmental ownership (Zeitun, R, 2009). Hence, H3-4 is supported.

8.7.3.4 Family Ownership.

Hypothesis H3-5 suggests a significant relationship between family ownership and CR. The results of bivariate analysis show no support for this hypothesis although the one-way ANOVA and Kruskal-Wallis tests provide support. At this level of analysis the relationship is not clear. However, the multivariate analysis indicates a significantly positive association between family ownership and CR at the 99% level of confidence for T_OLS, and at the 95% level of confidence for U_OLS and LR respectively. This result is confirmed by others to the extent that in their studies firm performance is linked to family ownership (Aziz and Mahmoud 2009). Hence, H3-5 is supported.

8.7.3.5 Foreign Ownership

Hypothesis H3-6 suggests a significant relationship between foreign ownership and CR. The results of the bivariate (and one way tests) and multivariate analyses reveal a highly significant positive relationship with CR. Bivariate parametric and non-parametric analysis indicate a significant positive association between foreign ownership and CR at the 99% level of confidence, and at the 95% level of confidence for all pairs of rating using the Fisher tests. The positive relationship between foreign ownership and CR for the multivariate models in the current study is consistent with other study (Zeitun and Tian, 2007), although they discover a positive relationship between foreign ownership and firm performance. Consequently, H4-5, proposing a significant association between the foreign ownership of Jordanian listed companies and CR can be supported in the current study.

To sum up the previous section, for the ownership structure group-determinants of CR there is a strong significant relationship with CRs of the Jordanian listed companies for all variables except blockholders. This supports a role for ownership structure in CR determination.

8.7.4 Fourth Category Hypotheses (H4)

The H4 group of hypothesis suggests that there is a relationship between financial transparency and CR. The following discussions represent all the models for working capital accruals and timeliness.

Table 8-47: Bivariate and One-way Findings of Financial Transparency and Disclosure Category Variables

Variables	Bivariate/ one way Analysis												
	P	NP	FT						T of V			AF	K_W
			1	2	3	4	5	6	CT	BT	LT		
WCAQ	**								√√		√√√		
TIMELINESS							**	**	√√		√√√	√√	

Note: P= parametric analysis, NP= non parametric.
FT= Fisher's least significant difference test, 1=(BB3-BB) to (B3-B), 2=(BB3-BB) to (C3-C), 3=(BB3-BB) to (D), 4=(B3-B) to (C3-C), 5=(B3-B) to (D), 6=(C3-C) to (D).
T of V= Test of Variances, CT= Cochran's C Test, BT= Bartlett's Test, LT= Levene's Test.
AF= ANOVA F-Ratio (Test of Means), K_W= Kruskal-Wallis test statistic.

Table 8- 48: Multivariate Findings of Financial Transparency and Disclosure Category Variables

Variables	Multivariate Analysis			
	U_OLS	T_OLS	LR	OLR
WCAQ	**	*		
TIMELINESS		*		

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance.
U_OLS= untransformed ordinary least square, T_OLS= transformed ordinary least square, LR= logistic regression, OLR= ordinal logit regression.

8.7.4.1 Working Capital Accruals

Hypothesis H4-1 suggests a significant relationship between WCAQ and CR. The results of the bivariate and multivariate lend some support for this hypothesis, for the bivariate parametric test indicates a significant positive association at the 95% level of confidence. Multivariate analysis indicates a positive significant relationship at the 95%, and 90% level of confidence for U_OLS and T_OLS, respectively. This reveals that the existence of the WCAQ as measure of financial transparency of Jordanian listed companies has an influence on the level of CR. This finding is supported by Skaife *et al.*, (2006). Consequently, the significant association between working capital accruals of the Jordanian listed companies and CR, which was postulated in H4-1, is supported in the current study, although not by all multivariate models. This suggests that internal (numerical) scoring by WVB reflects working capital accruals but these effects are not strong enough to show up in the (non-numerical) rating levels.

8.7.4.2 Timeliness

Hypothesis H4-2 suggests a significant relationship between timeliness and CR. The results of the Fisher tests for pairs of categories including the D credit rating category support this hypothesis, since they reveal a significant positive association at the 95% level of confidence. Multivariate indicates a significant positive relationship between timeliness and CR at the 90 per cent of confidence but only for the T_OLS model. Timeliness will lend credence to the financial and accounting operations of the firm and for a creditor it will be important for Jordanian listed companies, a finding supported by others (Skaife *et al.*, 2006). Consequently, the significant association between timeliness of the Jordanian listed companies and CR which is postulated in H4-2 is supported in the current study. Again this reveals a role for timeliness in the numerical data internally provided by WVB.

According to the above findings, it can be noticed that financial transparency category shows a significant association with CR of the Jordanian listed companies in both variables. This leads us to suggest support for financial transparency (including disclosure) having a role in CR determination.

8.7.5 Fifth Category Hypotheses (H5)

The H5 group of hypotheses suggest that a relationship between corporate governance and CR. The following discussions represent all the models for all variables in this category.

Table 8- 49: Bivariate and One-way Findings of Corporate Governance Category Variables

Variables	Bivariate/ on way Analysis													
	P	NP	FT						T of V			AF	K-W
			1	2	3	4	5	6	CT	BT	LT		
BRD_IND	***			**	**				√√√	√√	√√	√	√
R_D				(**)					√√√			√	√
BRD_EXP	***	***	(**)	(**)					√√√	√√√	√	√√√	√√√
BRD_STOCK	***	***		**		**			√√√	√√√			√√√
BRD_SIZE	***	***	**	**	(**)	**	(**)		√√√			√√√	

Note: P= parametric analysis, NP= non parametric. FT= Fisher's least significant difference test, 1=(BB3-BB) to (B3-B), 2=(BB3-BB) to (C3-C), 3=(BB3-BB) to (D), 4=(B3-B) to (C3-C), 5=(B3-B) to (D), 6=(C3-C) to (D). T of V= Test of Variances, CT= Cochran's C Test, BT= Bartlett's Test, LT= Levene's Test. AF= ANOVA F-Ratio (Test of Means), K_W= Kruskal-Wallis test statistic.

Table 8- 50: Multivariate Findings of Corporate Governance CategoryVariables

Variables	Multivariate Analysis			
	U_OLS	T_OLS	LR	OLR
BRD_IND		*		(*)
R_D		(**)		
BRD_EXPERT			*	
BRD_STOCK		**	(***)	
BRD_SIZE	(**)	**		***

Note: *** significant at 1%, ** significant at 5%, * significant at 10% level of significance. U_OLS= untransformed ordinary least square, T_OLS= transformed ordinary least square, LR= logistic regression, OLR= ordinal logit regression.

8.7.5.1 Independence of Board of Directors

Hypothesis H5-1 suggests a significant relationship between board independence and CR. The preliminary analysis indicates some significant positive association between board independence and CR at the 99% level of confidence, while at the 95% level of confidence for Fisher tests of category pairs labelled 2 and 3. For the OLR model in the multivariate analysis the results interestingly reveal a negative association between the number of the independent directors and CR at the 90% levels of confidence. The T_OLS model finds this relationship to be positive at the 90% level of confidence. This result is consistent with other studies (Bhajarj and Segnupta, 2003; Skaife el al., 2006). It follows that the internal scoring systems used by WVB are consistent with earlier findings about rating levels of other agencies.

However, the other multivariate models results are either not significant or negative. Consequently, hypothesis H5-1 which suggests a positive association between independence

on the board of directors and CR of the Jordanian listed companies is not fully supported in the current study.

8.7.5.2 Role Duality

Hypothesis H5-2 suggests a significant relationship between role duality and CR. Fisher's analysis indicates a negatively significant association between role duality and CR at the 95% level of confidence for the paired CR categories (BB3-BB) to (D) only. The role duality has been found to have a significant negative relationship with CR in the multivariate analysis only for the T_OLS model. T_OLS model found this relationship to be highly significant negative at the 95 per cent level of confidence. This result is confirmed by others to the extent that in their studies firm performance is linked to role duality (Aziz and Mahmoud 2009). This means that the separation between the chairman and CEO roles in the Jordanian listed companies have a negative impact on the level of CR, but only for one of the multivariate models.

Consequently, H5-2 testing for a significant negative association between role duality and CR of the Jordanian listed companies is not fully supported in the current study.

8.7.5.3 Board Expertise

Hypothesis H5-3 suggests a significant relationship between board expertise and CR. Preliminary and multivariate analyses (to some extent) have supported this hypothesis. Bivariate parametric and non-parametric analysis indicates a significant positive association at the 99% level of confidence; while Fisher's tests indicate a significant negative association between board expertise and CR at the 95% level of confidence. Board expertise has been found to have a positively significant association in the multivariate analysis, but only for the LR model at a level of 90 % confidence. Multivariate analysis fails to provide much empirical evidence for the significant influence of board expertise on CR in the Jordanian

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context. But the extent of limited support (by LR) is consistent with Skaife *et al.*, (2006). The empirical findings of the current study find mixed support for the relationship between the board expertise and CR. Hence, H5-3 is supported current study

8.7.5.4 Board Stock

Hypothesis H5-4 suggests a significant relationship between board stock and CR. With regard to board stock, the bivariate analysis indicates a significant positive association between board stock and CR at the 99% level of confidence for parametric and non-parametric tests, and at the 95% level of confidence for some of the Fisher tests. Multivariate analysis, namely for the T_OLS model only, indicates a positive significant association with CR at level 95% of confidence, yet the LR model indicates this result to be negatively significant at the 99 % of confidence. Other studies found a positive association between the board stock and firm performance CR (Skaife *et al.*, 2006). It follows that the internal scoring systems used by WVB are consistent with earlier findings about rating levels of other agencies. However, overall H5-4, which purports to show a significant association between the board stock and CR of the Jordanian listed companies, is not fully supported in the current study.

8.7.5.5 Board Size

Hypothesis H5-5 suggests a significant relationship between board size and CR. With regard to board size, bivariate parametric and non-parametric analysis indicates a significant positive association between board size and CR at the 99% level of confidence, although the Fisher analysis indicates a significant positive relationship at the 95% level of confidence for parties 1, 2, and 4, and negatively for parties 3 and 5. According to the multivariate analysis all models, except the LR model, indicate a significant association between board size and CR; U_OLS indicates a negative significant relationship at a level 95% of confidence, while a positive significant relationship is found at the 99% of confidence for OLR, and at the 95%

level of confidence for T_OLS. Although other studies have not considered the link between board size and CR, they have found a positive association between the board size and firm performance (Aziz and Mahmoud 2009). According to this study, H5-5 of a significant positive association between board size and CR of the Jordanian listed companies is supported.

To sum up this section which focuses on the corporate governance category determinants of CR there is generally a strong significant relationship between corporate governance and CR of the Jordanian listed companies in some variables. This leads us to support the role of corporate governance in the determination of CR in Jordan.

8.8 Summary:

Based on bivariate and other preliminary tests, and multivariate regression analyses, it is found that there is a significant relationship between CR and many variables in different categories. Both parametric and non parametric tests are performed in the bivariate analysis to examine the relationship between CR and each explanatory variable either continuous or nominal. Pearson correlation and t-test as a parametric test are used for continuous and dummy variables, respectively, while Spearman's rank correlation and Mann Whitney's test as non parametric tests are used for continuous and dummy variables, respectively. In the multivariate analysis, the study runs various models. Fisher tests of category pairs Kruskall-Wallis tests of medians, ANOVA tests of means and Cochran/ Barlett/ Levene tests of variances are also employed. The first one is an un-transformed OLS model. After checking the assumptions of this model, it was discovered that the normality assumption was not met. Therefore, it was decided to transform the model by using the log method. The transformed OLS model is the second model which is adopted in the current study. The third model is an

ordinal logistic regression model for levels of CR. The fourth model, the binary logistic regression model is conducted for two levels (high and low) of CR.

This thesis investigates the impact of key factors upon the CRs of Jordanian firms under five categories: accounting and financial aspects, market and regulatory factors, influence of ownership structure, financial transparency and information disclosure, and corporate governance factors. The use of several models enables the researcher to obtain a more comprehensive understanding of the key determinants of CR. for a higher propensity of a significant variable across several models should provide a stronger indication of its importance to the determination of CRs.

The strength of importance of a variable to the determination of CR can be labelled 1 (low strength) to '4' (high strength), such that the numbers '1' to '4' represent for how many models be significant at any one of the prescribed levels of confidence, whether at 90, 95 or 99 per cent. Thus, a score of '1' indicates that a variable significant in only '1' of the '4' multivariate models, whereas a score of 4 reveals that it was significant in all 4 models. As to the accounting and financial variables there is strong support for a higher CR being associated with: lower leverage (score 4), higher profit margin (score 4) and lower loss propensity (score 3). Capital intensity is not an important factors (score 0).

Within the category of market and regulatory variables, two factors are particularly important to the CR of a Jordanian firm. These factors are size (score 4) and Tobin's q (score 4). Thus greater size and higher Tobin's q are linked to a higher rating. However, the classification into financial and non-financial firm's (score 0) and audit type (score 0) are not important.

We next consider ownership structure and find that foreign ownership (score 4), institutional and family ownership (score 3) are very important to a firm's CR. Greater foreign ownership, and lower institutional ownership are associated with a higher CR. Insider ownership is

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moderately important (score 2) and bears a positive relationship with CR. Governmental ownership (score 1) is not critical to the CR, and, finally, blockholders ownership (score 0) is not important.

The next category for consideration is financial transparency and disclosure. In their association with CR, namely, WCAQ (score 2) is moderately impact, but not timeliness (score 1).

The final category for consideration was corporate governance variables. Within this category board size (score 2 positive, score 1 negative) is important to the CR. Generally, a larger board of directors is associated with a higher CR. The other corporate governance variables showed less clear associations with CR: board expertise (score 1), board independence (score 1 positive, score 1 negative), board stock (score 1 positive, score 1 negative) and role duality (score 1). Thus, it is clear than 9 out of the 21 selected variables have a strong role in the determination of the CR of Jordanian listed companies. These variables are: leverage, profit margin, loss propensity, size, Tobin's q, institutional ownership, family ownership, foreign ownership, and board size.

CHAPTER NINE: SUMMARY AND CONCLUSIONS

9.1 Introduction

This thesis investigates the impact of key factors upon the CRs of Jordanian firms under five categories: accounting and financial factors, market and regulatory perspectives, ownership structure, financial transparency including disclosure, and corporate governance. Jordanian firms have been selected because the developments in the last few years in the Jordanian capital market have been considerable and significant. Among these steps are the economic reforms and privatisation program, which began around 1990. Such steps required a strong financial regulatory framework and the availability of trustworthy corporate information. These regulations and procedures which have more recently been introduced to the Jordanian capital market have attracted attention in terms of evaluating the compliance of Jordanian corporations with international corporate governance principles, such as those issued by the Organization for Economic Co-operation and Development (OECD). Indeed, the OECD with the World Bank completed a survey for the first time in the Middle East in 2001. This survey assessed the application of corporate governance standards on the Jordanian capital market and in the Jordanian economy, and was last updated in 2006.

At the same time, the underlying aim of various accounting and financial regulatory modifications in Jordan is to create an attractive investment climate to encourage both domestic and foreign investors. In addition, due to the Jordanian government's commitment to the WTO in 2000, the Jordanian government has commenced a process of comprehensive economic reform. Consequently, Jordanian listed companies are required to supply various types of timely and accurate information to aid the different needs of their investors.

Based on the above discussion, this chapter summarises the main results of the current study revealing the importance and motivation to conduct it. This chapter is structured in four sections. Section 9.2 is devoted to discussing the findings and wider implications and is where some of the significant empirical findingsare briefly discussed. Section 9.3 the contribution of this thesis to knowledge is presented. Section 9.4 the limitations of the study are discussed and suggestions for further research directions are made.

9.2 Focus of research and Main Findings

9.2.1 Focus of research

The primary focus of this research is a study of the impact of corporate governance, ownership structure, financial transparency and disclosure on CR in the context of Jordanian firms. The research aims to achieve five objectives.

The first objective was to evaluate the impact of market and regulatory factors upon the CR of Jordanian firms, after allowing for firm specific factors. The second objective was to examine the extent to which the varied dimensions pertaining to ownership structure, particularly under-researched aspects, such as family and foreign ownership, impact on the CRs of Jordanian firms. The third objective was to evaluate the role of financial transparency and disclosure for the CRs of these Jordanian listed companies. The fourth objective was to investigate the effects of good corporate governance practices and procedures which other researchers have demonstrated to impact upon firm performance and firm value (but not necessarily investigated the impact on CR), in order to determine whether they also have a strong influence on CR. The fifth and final objective was to explore the determinants of both internal (unpublished) and external (published) WVB scores in the Jordanian context.

To fulfil these objectives, certain key questions needed to be answered. The main research question was: what factors determine the internal and external WVB credit ratings in Jordan?

The subsidiary research questions flow from this main question:

1) What are the general features of WVB CRs? How prevalent are they in Jordan? Which sector has the highest propensity of WVB ratings?

2) Which accounting and financial aspects are important to CRs? Is financial leverage a key factor?

3) Is there a strong link between CRs and market and regulatory factors?

4) What are the effects of ownership structure? Are there specific factors, such as family ownership, which influence CRs?

5) What is the association between financial transparency including disclosure and CR? Is the attribute of better timeliness of reporting linked to higher CRs?

6) How do corporate governance factors impinge upon credit ratings? Does good corporate governance practice improve ratings?

7) Finally, do the internal WVB scores, vis-à-vis their externally published ratings, provide deeper insights into the determinants of CR through the identification of differences in variable impact that are otherwise hidden beneath the external CRs?

9.2.2 Main findings

To answer the first question and its sub-questions, a descriptive analysis was conducted of the Jordanian listed CR companies from 2005 to 2007. The study finds that the CRs of this agency are spread from a minimum of D to a maximum of BB. The percentage of Jordanian firms which have WVB_CR is 85% for 2005, 82% for 2006 and 79% for 2007. The percentage of Jordanian firms with CRs scores from BB3 to BB is just under 10%, whilst for firms with CRs from B3 to B it is just over 10%, on the other hand just over 56% have CRs from C3 to C but namely 24% have a D credit rating. The mean for all Jordanian firm CRs is C2. It can be observed that a significant minority has a very low rating.

It can be seen that as to the CR in the BB3-BB category there are more in the finance sector, compared with service sectors. It is quite interesting to note that at the D credit rating a significant minority has a very low rating, namely 23.75% for all sectors, comprising financial 7.45%, service 5.55% and industry 10.75%. We find that the financial sector has a greater representation for category C3-C for all sectors. Finally, within the B3-B category the financial sector also has a greater representation. This answers research question (1).

This thesis draws upon a number of theoretical perspectives: agency, signalling, stakeholder, stewardship, diffusion of innovation and legitimacy theory. These theories can be applicable in the Jordanian context and help cast light upon the relationship between WVB credit risk assessments and inter alia corporate governance factors, ownership structure, financial transparency and disclosure.

The results of this research have been confirmed by different techniques using WVB_CR (internal and external) data models for U_OLS, T_OLS, OLR and LR analysis.

9.2.2.1 Accounting and financial aspects

The first relationship represents the relationship between the determinants of accounting and financial aspects and WVB credit risk assessments. This study uses four indicators for accounting and financial aspects as independent variables, namely, LEV, PM, CAP_INTEN, and LOSS.

The results in summary confirm that accounting and financial aspects have a significant impact on CR. Profitability is positively associated with CR for all models, while leverage and loss propensity are associated negatively with CR for all (or nearly all regarding loss propesity) models, in the Jordanian context. However, capital intensity is not important. Such findings answer research question (2). A summary is shown in the following table and details in depth have been discussed in chapter eight.

Table 9- 1: Summary of Results for Accounting and Financial Aspects and Credit Risk Assessments (Relationship 1)

Variables	Research result	Explained theories	Hypothesis	Hypothesis prediction	Approved
LEV	(-) all models	Agency and signalling theory	H1.1	(-)	Yes
PM	+ all models	Signalling, stewardship, and legitimacy theories	H1.2	(+)	Yes
CAP_INTEN	?	Agency, signalling and stakeholder theories	H1.3	(+)	No
LOSS	(-) all models except U_OLS model	Agency and signalling theories	H1.4	(-)	Yes

Note: + = positive significant, - = negative significant, U_OLS = untransformed ordinary least squares, T_OLS = transformed ordinary least squares, LR = logistic regression, OLR = ordered logit regression.

9.2.2.2 Market and regulatory perspectives

The second relationship represents the relation between the market and regulatory factors and WVB credit risk assessments. The WVB_CRs are applied to both numerical and level ratings data with results for all four methods (U_OLS, T_OLS, LR and OLR models). The market and regulatory perspectives' results reveal only size and growth potential (Tobin's q) are very strongly positively associated with CR. By contrast, type of sector and audit are not related to CR. By revealing this, research question (3) is answered. The following table summarizes the results of the second relationship, and a full discussion has been presented in the previous chapters.

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Table 9- 2: Summary of Results for Market and Regulatory Perspectives and Credit Risk Assessments (Relationship 2)

Variables	Research result	Explained theories	Hypothesis	Hypothesis prediction	Approved
SIZE	+ all models	H2.1	Agency, signalling and legitimacy theories	(+)	Yes
TSQ	+ all models	H2.2	Agency, signalling and legitimacy theories	(+)	Yes
TYP_SECT	?	H2.3	Signalling theory	(+)	No
AUD_BIG	?	H2.4	Agency, signalling, stewardship diffusion of innovation and legitimacy theories	(+/-)	No

Note: + = positive significant, - = negative significant, U_OLS = un-transformed ordinary least squares, T_OLS = transformed ordinary least squares, LR = logistic regression, OLR = ordered logit regression.

9.2.2.3 Influence of ownership structure

The third relationship represents the association between ownership structure variables and WVB credit risk assessments. This relationship has been tested by the four methods of analysis. For the WVB_CR using both internally and externally determined data, this relationship has been analysed by six ownership structure variables (BLOCK-OWN, INST-OWN, INSID-OWN, GOV-OWN, FAML-OWN and FOR-OWN) as independent variables.

The results of the WVB_CR (internal and external) models confirm foreign ownership (+) to be very strongly related to CR, and institutional ownership (-) and family ownership (+) to be strongly related to CR. Also insider ownership (+) is moderately important. Governmental ownership is quite important but the percentage of blockholders is not a critical factor. These findings address research question (4). The following table summarizes results of relationship (3) which has been discussed in detail in the previous two chapters.

Table 9- 3: Summary of Results for Influence of Ownership Structure and Credit Risk Assessments (Relationship 3)

Variables	Research result	Explained theories	Hypothesis	Hypothesis prediction	Approved
BLOCK_OWN	?	H3.1	Agency theory	(+/-)	No
INST_OWN	(-)all models except T_OLS model	H3.2	Agency, signalling, diffusion of innovation and legitimacy theories	(+/-)	Yes
INSID_OWN	+ all models except U_OLS and LR models	H3.3	Agency theory, signalling and stewardship theories	(+/-)	Yes
GOV_OWN	(-) LR model	H3.4	Agency and legitimacy theories	(+/-)	Yes
FAML_OWN	+ all models except OLR model	H3.5	Agency, signalling, stakeholder legitimacy, diffusion of innovation and Stewardship theories	(+/-)	Yes
FOREN_OWN	+ all models	H3.6	Signalling, diffusion of innovation and legitimacy theories	(+/-)	Yes

Note: + = positive significant, - = negative significant, U_OLS = un-transformed ordinary least squares, T_OLS = transformed ordinary least squares, LR = logistic regression, OLR = ordered logit regression.

9.2.2.4 Financial transparency and information disclosure

The fourth relationship tests the association between financial transparency and disclosure variables and the firm's numerical and level of WVB credit risk assessments. All of these regressions are summarized in Chapter Eight. These regressions use four models for analysis. This identifies to the researcher a clear role for the internal WVB scores, vis-à-vis their

externally published ratings through the identification of differences in variable impact that are otherwise hidden beneath the external WVB_CRs. The results in general reveal that financial transparency and disclosure are moderately important to CR assessments, as far as WCAQ is concerned, and timeliness is quite important. These issues address research question (5) which is answered.

Table 9- 4: Summary of Results for Financial Transparency and Information Disclosure and Credit Risk Assessments (Relationship 4)

Variables	Research result	Explained theories	Hypothesis	Hypothesis prediction	Approved
WCAQ	+ U_OLS and T_OLS models	H4.1	Agency theory	(+/-)	Yes
TIMELINESS	+ T_OLS model	H4.2	Agency and diffusion of innovation theories	(+/-)	Yes

Note: + = positive significant, - = negative significant, U_OLS = un-transformed ordinary least squares, T_OLS = transformed ordinary least squares, LR = logistic regression, OLR = ordered logit regression.

9.2.2.5 Corporate governance factors

The fifth relationship represents the relation between corporate governance factors and WVB credit risk assessments. Summaries for the fifth relationship using different models for analysis for the fifth group of corporate governance variables, namely, BRD-IND, R-D, BRD-EXPERT, BRD-STOCK and BRD-SIZE, reveal a significant impact on credit rating. According to corporate governance factors, the study finds empirical evidence for a degree of association between corporate governance and CR. Board size is an important determinant of CR in a multivariate framework. Board stock and board independence are moderately important, whilst role duality and board expertise are quite important to CR. These findings shed light upon research question (6).

Table 9- 5: Summary of Results for Corporate Governance Factors and Credit Risk Assessments (Relationship 5)

Variables	Research result	Explained theories	Hypothesis	Hypothesis prediction	Approved
BRD_IND	+ T_OLS model. (-) OLR model	H5.1	Agency, signalling and stewardship theories	(+/-)	Yes
R_D	(-) T_OLS model	H5.2	Agency and stewardship theories	(+/-)	Yes
BRD_EXPERT	+ LR model	H5.3	Agency theory	(+/-)	Yes
BRD_STOCK	+ T_OLS model. (-)LR model	H5.4	Agency theory	(+/-)	Yes
BRD_SIZE	+ T_OLS and OLR models.(-) U_OLS model	H5.5	Agency and legitimacy theories	(+/-)	Yes

Note: + = positive significant, - = negative significant, **U_OLS** = un-transformed ordinary least squares, **T_OLS** = transformed ordinary least squares, **LR** = logistic regression, **OLR** = ordered logit regression.

Overall, CR in Jordan is determined primarily by accounting and financial perspectives (leverage, profit margin and loss propensity), market and regulatory aspects (size, Tobin's q), ownership structure (foreign, institutional, family and insider ownership), financial transparency and disclosure (WCAQ) and corporate governance factors (board size, board stock and board independence).

The access to numerical data scores generously allowed by the WVB agency which are not otherwise available to the public has enabled this research to make finer distinctions between CR categories than would otherwise be possible. However, it is reasonable to say that generally for most category groups the OLS regressions produced broadly similar results to the multivariate LR and OLR models. However, there are three aspects whereby the enriched data have provided some key insights. Firstly, role duality is evidently more important to

WVB's internal (numerical) rating assessments than is evidenced by the WVB external (credit level) assessments. Yet, the significance of role duality is missed by the other multivariate models that use less refined data inputs. Secondly, financial transparency and disclosure variables also reveal more support for the more refined internal scores of WVB than for the less refined external rating levels evaluated under the LR and OLR multivariate models. Thirdly, family ownership has been shown to be important in the internal WVB score than generally is the case in the external rating evaluation in the OLR analysis. Hence, research question (7), and the fifth research objective are directly addressed.

In general, all regressions models using internal and external WVB_CR measures are significant overall, and it has been confirmed that each category of independent variables has some impact on credit risk rating. Thus, these results lend support to the selected theories (discussed below). Therefore, I conclude that ownership structure, financial transparency including disclosure and corporate governance each impacts upon credit rating in Jordan.

9.3 Research Contribution to Knowledge

The contribution of the current study has many dimensions. Firstly, according to the theory dimension, the current study extends the extant literature on CR by focusing on how important theories, such as those pertaining to corporate governance and ownership structure, impact on CR. However, only two studies (Bhojraj and Sengupta, 2003 and Skaife *et al.*, 2006) discuss the application of such theories to CR in a developed country context. These theories enrich the research in the area of CR by adding supportive power to the explanation of using factors which have an influence on the CR. Such a power can increase the awareness of the current situation of CR as a subject in one of the developing countries that has unique political and economic characteristics.

Legitimacy and innovation theories have not had widespread use in this branch of literature neither in the developed or developing countries' context. The inference of legitimacy theory is that Jordanian companies try to legitimize themselves to different investors distinguishing themselves from those companies that do not have a CR to present their good financial position and the future cash generating which can potentially affect their growth and performance. In this research the link between family ownership and CR lends support to legitimacy theory.

The inference of innovation theory is that certain investors /auditors are more likely to apply internet and other technologies in collecting information on firm credit ratings. But it is this group of investors and advisors, namely large international audit firms, institutional and foreign investors, and their demand for timeliness of earnings which are more likely to pressurize firms to obtain higher CRs. It could also be suggested that rating agencies may look to the big audit firms to be assured more confidently of a firm's creditworthiness. The research has found some support for innovation theory through the role of foreign investors, whose presence has a positive impact on CR. However, innovation theory finds less support in terms of big 4 auditing firms, institutional ownership and timeliness of earnings.

The investigation of corporate governance in the Jordanian environment is another contribution of this current study on CR. Most of the studies focus on the corporate governance topic in general without seeking to link this topic within the CR area. Only two studies have forged a link between corporate governance and CR (Bhojrajand Sengupta, 2003 and Ashbough-Skaife, *et al.*, 2006).

Further, as to the application, the current study makes a contribution by investigating some new variables not used before in this context of CR. These variables relate both to company ownership structure, namely, governmental ownership, family ownership and foreign

ownership, and to corporate governance variables, such as, role duality and board size, which together represent the main contribution of the current study. Role duality negatively impact on internal WVB credit rating scores, whilst board size impacts positively on credit risk assessments internal and external levels under the T_OLS and OLR models, respectively.

The current study has drawn upon data pertaining to Jordanian corporations listed on the Amman Stock Exchange (ASE) as an emerging capital market. Most of the studies which address CR are applied to developed countries. By contrast, the current study has sought to investigate the CR topic in a developing country, namely, Jordan by using an array of models (U_OLS, T_OLS, LR and OLR). In addition control variables were used to reflect key market/ regulatory and accounting/ financial aspects, ownership structure, financial transparency and corporate governance. Marginal effects were also investigated for dichotomous CR categories. All the results of these models add to the value of the study and enrich our understanding of CR in Jordan.

Finally, this research has demonstrated that there are differences in variable impact on CR that are evident from the analysis of internal WVB scores that are otherwise hidden beneath the broader externally published WVB_CRs. Thus, this research has enabled deeper insights to be gained into CR determinants within the Jordanian context.

9.4 Study Limitations and Future Research Directions

The current study is limited to an investigation of the CRs of Jordanian companies listed in the Jordanian Stock Market. The current study is obviously restricted to examining the credit worthiness of listed corporations which only have a CR since the scope of the study is to investigate the key factors which determine whether the corporations have a higher or lower CR.

The period for this study is not longitudinal as it only covers years from 2005-2007. In addition, the study relies on secondary data as a main source for collecting it. There were some difficulties in obtaining primary data due to the nature of the CR data. Therefore, the study indirectly depends heavily on the annual report.

Quantitative methods have been used in collecting and analysing data to fulfil the objectives of the current study. Qualitative methods may add some power to the current research, but again due to the subjective application of such methods, the current study depends on quantitative methods.

Considering to the above, it would be useful to demonstrate some recommendations for future research. Many research opportunities in CR studies could be raised from the findings of the current study. These opportunities are:

Firstly, the current study is applied to Jordanian firms. Future research may be conducted comparing Jordan will other countries either developed or developing, examining the importance of current practices of CR and cultural differences.

Secondly, future research could consider a comparison between firms with a CR and those without a CR, and perhaps differentiate between CRs from different agencies.

Thirdly, and finally, regarding corporate governance in the Jordanian context, there is a need for more research in this area. Future research into CR could examine the effect of applying the corporate governance code, especially in a new area such as the banking sector.

والحمد لله الذي بنعمته تتم الصالحات

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Appendices

Appendix 3-1: Rating Definitions

Appendix 3-1 (A): Standard and Poor's Ratings Group - Long term credit rating scale

AAA	The highest rating assigned by Standard and Poor's. Capacity to pay interest and repay principal is extremely strong.
AA	A very strong capacity to pay interest and repay principal and differs from the highest rated issues only in small degree.
A	A strong capacity to pay interest and repay principal although it is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than debt in higher rated categories.
BBB	Regarded as having an adequate capacity to pay interest and repay principal. Whereas it normally exhibits adequate protection parameters, adverse economic conditions, or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal for debt in this category than in higher rated categories.
Speculative grade Debt	Debt rated 'BB, B, CCC, CC and C' is regarded as having predominantly speculative characteristics with respect to, capacity to pay interest and repay principal. 'BB' indicates the least degree of speculation and 'C' the highest. While such debt will likely have some quality and protective characteristics, these are outweighed by large uncertainties or major exposures to adverse conditions.
BB	Less near-term vulnerability to default than other speculative issues. However, it faces major ongoing uncertainties or exposure to adverse business, financial, or economic conditions which could lead to inadequate capacity to meet timely interest and principal payments. This category is also used for debt subordinated to senior debt that is assigned an actual or implied 'BBB-' rating.
B	A greater vulnerability to default but currently has the capacity to meet interest payments and principal repayments. Adverse business, financial, or economic conditions will likely impair capacity or willingness to pay interest and repay principal. The 'B' rating category is also used for debt subordinated to senior debt that is assigned an actual or implied 'BB or BB-' rating.
CCC	A currently identifiable vulnerability to default, and is dependent upon favourable business, financial, and economic conditions to

	meet timely payment of interest and repayment of principal. In the event of adverse business, financial, or economic conditions, it is not likely to have the capacity to pay interest and repay principal. The 'CCC' rating category is also used for debt subordinated to senior debt that is assigned an actual or implied 'B or B-' rating.
CC	Typically applied to debt subordinated to senior debt that is assigned an actual or implied 'CCC'.
C	Typically applied to debt subordinated to senior debt which is assigned an actual or implied 'CCC-' rating. The 'C' rating may be used to cover a situation where a bankruptcy petition has been filed, but debt service payments are continued.
CI	Reserved for income bonds on which no interest is being paid
D	In payment default. The '0' rating category is used when interest payments or principal payments are not made on the date due even if the applicable grace period has not expired, unless S&P believes that such payments will be made during such grace period. The 'D' rating also will be used upon the filing of a bankruptcy petition if debt service payments are jeopardized.
R	An obligor rated 'R' is under regulatory supervision owing to its financial condition. During the pendency of the regulatory supervision, the regulators may have the power to favour one class of obligations over others or pay some obligations and not others.
SD	An obligor rated 'SD' (Selective Default) has failed to pay one or more of its financial obligations (rated or unrated) when it became due. An 'SD' rating is assigned when Standard & Poor's believes that the obligor has selectively defaulted on a specific issue or class of obligations but it will continue to meet its payment obligations on other issues or classes of obligations in a timely manner.
Intermediate Categories	Plus'+' or minus'-': The ratings from' AA to CCC' may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.

Appendix 3-1 (B): Moody's Investors Service - Long term credit rating scale

Moody's 'Aaa-C' long-term ratings are applied to bonds and other obligations with an original maturity in excess of one year.	
Aaa	Obligations are judged to be of the best quality. They carry the smallest degree of investment risk are generally referred to as 'gilt edged'. Interest payments are protected by a large or by an exceptionally stable margin and principal is secure. While the various protective elements are likely to change, such changes as can be visualized are most unlikely to impair the fundamentally strong position of such issues.
Aa	Obligations are judged to be of high quality by all standards. Together with the' Aaa' group they what are generally known as high-grade bonds. They are rated lower than the best bonds because margins of protection may not be as large as in 'Aaa' securities or fluctuation of protective elements may be of greater amplitude or there may be other elements present which make the long-term risk appear somewhat larger than the 'Aaa' securities.
A	Obligations possess many favourable investment attributes and are to be considered as upper- medium-grade obligations. Factors giving security to principal and interest are considered adequate, but elements may be present which suggest a susceptibility to impairment some time in the future.
Baa	Obligations are considered as medium-grade obligations (i. e., they are neither highly protected nor poorly secured). Interest payments and principal security appear adequate for the present but certain protective elements may be lacking or may be characteristically unreliable over any great length of time. Such bonds lack outstanding investment characteristics and in fact have speculative characteristics as well.
Ba	Obligations are judged to have speculative elements; their future cannot be considered as well- assured. Often the protection of interest and principal payments may be very moderate and thereby not well safeguarded during both good and bad times over the future. Uncertainty of position characterises bonds in this class.
B	Obligations generally lack characteristics of the desirable investment. Assurance of interest and principal payments or of maintenance of other terms of the contract over any long period of time may be small.
Caa	Obligations are of poor standing. Such issues may be in default or there may be present elements of danger with respect to principal or interest.
Ca	Obligations are speculative in a high degree. Such issues are often in default or have other marked shortcomings.
C	Obligations are the lowest rated class, and issues so rated can be regarded as having extremely poor prospects of ever attaining any real investment standing.

Appendix 3-1 (C): Fitch - Long term credit rating scale

AAA	Highest credit quality. 'AAA' ratings denote the lowest expectation of credit risk. They are assigned only in case of exceptionally strong capacity for timely payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.
AA	Very high credit quality. 'AA' ratings denote a very low expectation of credit risk. They indicate very strong capacity for timely payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.
A	High credit quality. 'A' ratings denote a low expectation of credit risk. The capacity for timely payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to changes in circumstances or in economic conditions than is the case for higher ratings.
BBB	Good credit quality. 'BBB' ratings indicate that there is currently a low expectation of credit risk. The capacity for timely payment of financial commitments is considerd adequate, but adverse change in circumstances and in economic conditions is more likely to impair this capacity. This is the lowest investment grade category.
BB	Speculative. 'BB' ratings indicate that there is a possibility of credit risk developing, particularly as the result of adverse economic change over time; however, business or financial alternatives may be available to allow financial commitments to be met. Securities rated in this category are not investment grade.
B	Highly speculative. 'B' ratings indicate that significant credit risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is contingent upon a sustained, favourable business and economic environment.
ccc, cc, c	Default. Securities are extremely speculative, and their worth cannot exceed their recovery value in any liquidation or reorganization of the obligor. 'DDD' designates the highest potential for recovery of amounts outstanding on any securities involved. For U. S. corporates, for example, 'DD' indicates expected recovery of 50% - 90% of such outstandings, and 'D' the lowest recovery potential, i. e. below 50%.
DDD, DD, D	Default. Securities are extremely speculative, and their worth cannot exceed their recovery value in any liquidation or reorganization of the obligor. 'DDD' designates the highest potential for recovery of amounts outstanding on any securities involved. For U. S. corporates, for example, 'DD' indicates expected recovery of 50% - 90% of such outstandings, and 'D' the lowest recovery potential, i. e. below 50%.
Intermediate Categories	'+' (plus) or -' (minus) may be appended to ratings to denote relative status within major rating categories. Such suffixes are not added to the 'AAA' long -term rating category or to categories below 'CCC'.

Appendix 3-1 (D): Capital Intelligence - Long term credit rating scale

AAA	The highest credit quality. Exceptional capacity for timely fulfillment of financial obligations and most unlikely to be affected by any foreseeable adversity. Extremely strong financial condition and very positive non-financial factors. Very strong and stable operating environment.
AA	Very high credit quality. Very strong capacity for timely fulfilment of financial obligations. Unlikely to have repayment problems over the long term and unquestioned over the short and medium terms. Strong operating environment. Adverse changes in business, economic and financial conditions unlikely to affect the institution significantly.
A	High credit quality. Strong capacity for timely fulfillment of financial obligations. Possesses many favourable credit characteristics, but may be slightly vulnerable to adverse changes in business, economic and financial conditions. However, operating environment is solid.
BBB	Good credit quality. Satisfactory capacity for timely fulfillment of financial obligations. Acceptable credit characteristics, but some vulnerability to adverse changes in business, economic and financial conditions. Medium grade credit characteristics and the lowest investment grade category.
BB	Speculative credit quality. Capacity for timely fulfillment of financial obligations is vulnerable to adverse changes in internal or external circumstances. Financial and/or non financial factors do not provide significant safeguard and the possibility of investment risk may develop. Unstable operating environment.
B	Significant credit risk. Capacity for timely fulfillment of financial obligations is very vulnerable to adverse changes in internal or external circumstances. Financial and/or non financial factors provide weak protection; high probability for investment risk exists. Weak operating environment.
C	Substantial credit risk is apparent and the likelihood of default is high. Considerable uncertainty as to timely repayment of financial obligations. Credit is of poor standing with financial and/or non financial factors providing little protection.
D	Obligations are currently in default.
Intermediate Categories	Long term ratings from AAA to C may be modified by the addition of a plus '+' or minus =` sign to indicate that the strength of a particular institution is respectively, slightly greater or less than that of similarly rated peers.

Appendix 3-1 (E): WVB Credit risk rating

The WVB Credit Risk ratings are represented by letters going from **AAA** (the best rating) to
D. There are 20 classes in total:

*   AAA
*   AA1, AA2, AA3
*   A1, A2, A3
*   BBB1, BBB2, BBB3
*   BB1, BB2, BB3
*   B1, B2, B3
*   C1, C2, C3
*   D

WVB Ratings	Comment
AAA	The company has both a extremely strong capacity to pay interest and repayment of principal and is of the highest quality.
AA1	The company has a very strong capacity to pay interest and repayment of principal and difference only in a small degree from the higher rated companies.
AA2	The company has a very strong capacity to pay interest and repayment of principal and difference only in a small degree from the higher rated companies.
AA3	The company has a very strong capacity to pay interest and repayment of principal and difference only in a small degree from the higher rated companies.
A1	The company has a strong capacity to pay interest and repayment of principal, although it is somewhat more susceptible to adverse effects of changes in circumstances and economic conditions than debt of higher rated categories.
A2	The company has a strong capacity to pay interest and repayment of principal, although it is somewhat more susceptible to adverse effects of changes in circumstances and economic conditions than debt of higher rated categories.
A3	The company has a strong capacity to pay interest and repayment of principal, although it is somewhat more susceptible to adverse effects of changes in circumstances and economic conditions than debt of higher rated categories.
BBB1	The company indicates an adequate and medium grade capacity to pay interest and repayment of principal. Although it normally exhibits

	adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than debt in higher rated categories.
BBB2	The company indicates an adequate and medium grade capacity to pay interest and repayment of principal. Although it normally exhibits adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than debt in higher rated categories.
BBB3	The company indicates an adequate and medium capacity to pay and interest and repayment of principal. Although it normally exhibits adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal than debt in higher rated categories.
BB1	The company indicates less near-term vulnerability to default than other speculative issues. However, it faces ongoing uncertainties or exposure to adverse business, financial or economic conditions which could lead to inadequate capacity to meet timely interest and/or principal payments
BB2	The company indicates less near-term vulnerability to default than other speculative issues. However, it faces ongoing uncertainties or exposure to adverse business, financial or economic conditions which could lead to inadequate capacity to meet timely interest and/or principal payments
BB3	The company indicates less near-term vulnerability to default than other speculative issues. However, it faces ongoing uncertainties or exposure to adverse business, financial or economic conditions which could lead to inadequate capacity to meet timely interest and/or principal payments
B1	The company indicates greater vulnerability to default, but currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the capacity or willingness to pay interest and repay principal. Speculative.
B2	The company indicates greater vulnerability to default, but currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the capacity or willingness to pay interest and repay principal. Speculative at best.
B3	The company indicates greater vulnerability to default, but currently has the capacity to meet interest and principal repayments. Adverse business, financial or economic conditions will likely impair the

	capacity or willingness to pay interest and repay principal. Speculative, ranging on very speculative.
C1	The company indicates a current identifiable vulnerability to default and is dependent upon favourable business, financial and economic conditions to meet timely payment of interest ad repayment of principal. In the event of adverse business, financial or economic conditions, it is not likely to have the capacity to pay interest and repay principal. Highly speculative.
C2	The company indicates a current identifiable vulnerability to default and is dependent upon favourable business, financial and economic conditions to meet timely payment of interest ad repayment of principal. In the event of adverse business, financial or economic conditions, it is probable the company will not likely have the capacity to pay interest and/or repay principal. Highly speculative.
C3	The company indicates a current identifiable vulnerability to default and is dependent upon favourable business, financial and economic conditions to meet timely payment of interest ad repayment of principal. In the event of adverse business, financial or economic conditions, it is very likely that the company will not have the capacity to pay interest and repay principal. Highly speculative.
D	Indicates that payment is in default, is technically or actually in bankruptcy

Appendix 4-1: Summary of previous studies of the determinants of credit ratings

Study	Methodology	Independent variables/ratios selected
Adams _et al._, (2003)	Ordered Probit models, multinomial logit model, 335 insurers firms from Standards and Poor's;	Leverage, profitability, liquidity, growth, company size (natural logarithm of total admitted assets), reinsurance and business activity;
Altman (1968)	Multiple discriminant analysis, 66 corporations that went bankrupt;	Working capital/ total assets, retained earnings/total assets market value equity/book value of total debt, sales/total assets;
Altman and Katz (1967)	Quadratic discriminant/multivariate analysis;	Financial ratios: Interest coverage, standard error of interest coverage and cash flow;
Ang and Patel (1975)	Regression, Moody's, 424 industrial bonds;	Financial ratios and non- accounting data, compared models of Horrigan, West, Pogue and Soldifsky and Pinches and Mingo;
Badue _et al._, (2002)	Ordinal probit model, Moody's, 136 municipalitities of Commonwealth of Virginia;	17 variables: population size, population change, ratio of long-term debt/total debt, real estate taxes, per capital income, organisation from of government, credit risk premium, net interest cost;
Baran _et al._, (1980)	MDA, S and P, 202 industrial bonds;	Financial ratios and beta variables: cash/sales, total earnings, current asset/ current liabilities, standard deviation of accounting rate of return, cash/ total assets, net working capital/ total assets, payout ratio, long term debt/ total assets, beta;
Barnive _et al._, (2002)	Logistic regression, 62% for entire sample, 49% for hold out sample, 237 firms filed in bankruptcy;	Net income/total assets, log total assets/GDP deflator, intangible assets/ net sale, interest bearing debt/total liabilities, secured interest bearing debt/total liabilities, fraudulent activities, resignation by top management, number of major classes of bondholders, price weighted and special index of competition;

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Belkaoui (1980)	MDA,	Financial and market data and subordination status: total assets, total debt, long term debt/ total invested capital, short term debt/ total invested capital, current assets/ current liabilities, (net income + total interest expense)/ (interest expenses+ preferred dividend requirement), stock price/ common equity per share, and subordination statue;
Blume et al., (1998)	Modified ordered probit model, S and P, 7324 firm;	Ten variables as published by S and P: five measuring interest coverage, two profitability and three leverage;
Cantor and Packer (1996)	OLS, economic variables, consistent between rating and these variables, 49 sovereign bonds from Moody's and Standard and Poor;	Income per capital, GDP growth, inflation rate, fiscal balance, external balance, external debt, indicators for economic developments and FX debt;
Carleton and Lerner (1969)	Multiple discriminant analysis, Moody's, 700 municipal bonds rated Ba and above;	School district, debt/assessed value, debt/population, log debt, average collection ratio;
Demirguc and Detragiache (1998)	Multivariate logit econometric model, 31 annual macroeconomic variables;	GDP growth, real interest rates, inflation rate, trade shocks, credit growth;
Ederington (1985)	Linear regression, ordered probit, linear discriminant, unordered logit;	Financial ratio and subordination data: subordination, average total assets, long term debt/ total capitalisation, forecast interest coverage;
Gentry and Newbold (1988)	Ordered probit model, Moody's, 206 industrial bonds;	Subordination statue, issues size, cumulative years of dividends, net income/total assets, funds flow data; inventories, other current liabilities, dividends, long term financing, fixed coverage charges;
Gray et al., (2006)	Modified ordered probit models, S&P, 362 firms from Standards and Poor's;	Eight financial variables: EBIT interst coverage, EBITDA interest coverage, operating funds/ total debt, operating cash flows/total debt, return on capital, operating margin, LT debt leverage,

		total debt leverage, and two industry variables: industry beta and industry concentration;
Hardy and Pazarbasioglu (1999)	Multinomial logit model, different macroeconomic variables;	GDP, inflation, adverse trade shock;
Horrigan (1966)	3 samples: 1) 201 firms with stable Moody's ratings, 151 firms with stable S&P ratings; 2) 70 firms newly rated by Moody's and 60 newly rated by Standard and Poor; 3) 27 firms with changed by Moody's, 568 by Standard andPoor; regression model;	Total assets, working capital/Sales, net worth/total debt, sales/net worth, net operating profit /sales, long term solvency ratio, short term capital turnover ratio, long term capital turnover ratio, profit margin ratio;
Kamstra et al., (2001)	Ordered logit, Moody's, 354 industrial bonds;	Interest coverage, debt ratio, return on assets, total firm assets, subordination status;
Kaplan and Urwitz (1976)	Ordered probit model, 120 industrial bonds with unchanged Moody's ratings and 207 new issues rated by Moody's;	Financial ratio and non- accounting data: interest coverage ratio, capitalisation ratios, profitability ratio, size variables, and stability variables;
Liu and Seyyed (1991)	Moody's, 92 municipal bond issues per year, per capital revenue, city's total revenue, issuer's total general obligation debt, city's debt burden, unemployment rate;	18 variables measuring debt burden, tax revenue sources, tax collection efficiency;
Mar-Molinero and Cinca (2001)	MDS, accounting ratios, 66 Spanish sample,29 of which failed;	Current assets/total assets, current assets-cash/total assets, current assets/loans, reserves/loans, net income/total assets, net income/total equity capital, net income/loans, cost of sales/sales, cash flow/loans;
Mar et al., (1996)	Multimensional scaling models, cluster analysis, property fitting and discriminant analysis, Standard andPoor, 10 short term foreign	24 financial ratios reflecting profitability, debts, capital structure and number of employees;

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	currency bonds;	
Martin (1977)	Logit and discriminant analysis, 58 banks that went bankrupt;	25 financial variables measuring asset risk, liquidity, capital adequacy, earnings;
Peavy and Edgar (1983)	MDA, Moody's, 83 bank holding companies with commercial paper ratings;	Net income, return on assets, shareholders' equity/ total assets, return on equity, reserve for loan losses/ loans, net charge-off/ loans, growth rate of assets over last 5 years;
Peavy and Edgar (1984)	MDA, Standard and Poor, 224 industrial companies with commercial paper ratings;	Total assets, long term debt/ investment capital, net sales/ cash, receivables/ total assets, net income/ total assets, sales/ total assets;
Perry *et al.*, (1985)	Moody's, 152 industrial bonds;	Ratio reflecting profitability, debt and capital structure, SIC codes for industry classification;
Pinches and Mingo (1973, 1975)	Factor analysis and MDA, 35, 180 firms from Moody's;	Issue size, year of consecutive dividend, net income / total assets, five years mean of net income, long term debt/total assets and subordination, net income + interest/interest.
Pogue and Soldofsky (1969)	Logistic regression model, Moody's;	20 industrials and 20 utilities rated Baa and above, five variables: leverage, profitability, earnings instability, size, earnings overages;
Poon *et al.*, (1999)	Ordinal logistic regression, Moody's,100 firms;	Financial ratios, long term bond ratings and country risk: three factors representing dimensions of risk, loan provision ratios, and profitability, STDR, LTDR, CRISK;
Reiter and Emery (1991)	OLS, ordered probit analysis, Moody's and Standard and Poor, 281 newly issue utilities bonds;	Cash flow/ construction expenditure, debt/ equity, property funding ratio, permanent capitalisation, coefficient of variation of return on equity, pretax interest coverage;
Skaife *et al.*, (2006)	Ordered logit model, Standard and Poor, 894 firms;	Total debt/total assets, net income before extraordinary items/total assets, operating income before depreciation/interest expense, natural log of total assets, gross property, plant

		and equipment /total assets.
Taffler (1983)	Multi- discriminant analysis, 46 failed and 46 sovent companies (predominantly manufacturing)	Four financial variables: profit before tax/average current liabilities, current assets/total liabilities, current liabilities /total assets, no-credit interval;
Trevino and Thomas (2000)	Ordered probit and OLS models;	Economic indicators, debt/borrowing, total borrowing / deposits;
West (1970)	Logistic regression, 48 bonds rated from Moody';	nine year earnings variability, period of solvency, debt equity/debt ratio, bonds outstanding;
West (1985)	Factor analysis/logit model1900 banks;	19 variables

Note: Discriminant Analysis, MDS: Multidimensional Scaling, FX: Foreign Exchange, OLS: Ordinary Least Square, BFSRs: Bank financial strength ratings, STDR: Moody's Short term debt rating, LTDR: Moody's long term debt rating, S&P: Standards and Poor's, CRISK: Country risk, MV: Market value, BV: Book value.

Appendix 4-2: The studies which relate to corporate governance

Study	Variables
Abdelsalam and Street, (2007), U.K.	Board composition, role duality, board experience, board cross-directorship, diffusion of ownership and type of equity ownership.
Abdel-shahid, (2003), Egypt	Ownership concentration.
Akimova and Schwodiauer, (2004), Ukraine	Ownership structure.
AL-Khori, (2005), Jordan	Concentration of block holders.
Aziz and Mahmoud (2009), Jordan	Ownership concentration and board characteristics
Dahya, et al., (1996), U.K.	Role duality.
Ghazali, (2004), Malaysia	Ownership concentration, director ownership, government ownership, foreign ownership, family members on the board, board composition, role duality and regulatory change.
Haniffa, and Cooke, (2002), Malaysia	Diffusion of ownership, foreign ownership, board composition, board dominated by family members, role duality, cross holdings of directorships, institutional investors' ownership and finance director on the board.
Haniffa, (1999), Malaysia	Diffusion of ownership, foreign ownership, board composition, board dominated by family members, role duality and cross holdings of directorships.
Kato, and long, (2005), China	CEO turnover, ownership structure and independent directors.
Kim, (2005), Korea	Board of directors'.
Kula, (2005), Turkey	Structure and role of board of directors and role duality.
Leng, (2004), Malaysia	Proportion of shares held by institutional investors.

Lins, (2003), Many countries	Managerial ownership, non-management and block-holder ownership.
Mangena, (2004), U.K.	Institutional investors, executive directors' ownership, board composition and presence of audit committee.
Shen, and Chen, (2006), Taiwan	Managerial ownership, institutional ownership and board of directors.
Tsamenyi, and Onumah, (2007), Ghana	Ownership structure.
Wong and Hu, (2004), China	Ownership structure.
Zeitun and Tian, (2007), Jordan	Ownership structure.
Zheka, (2004), Ukraine	Shareholder rights and role duality.

Appendix 5-1: Map of Jordan
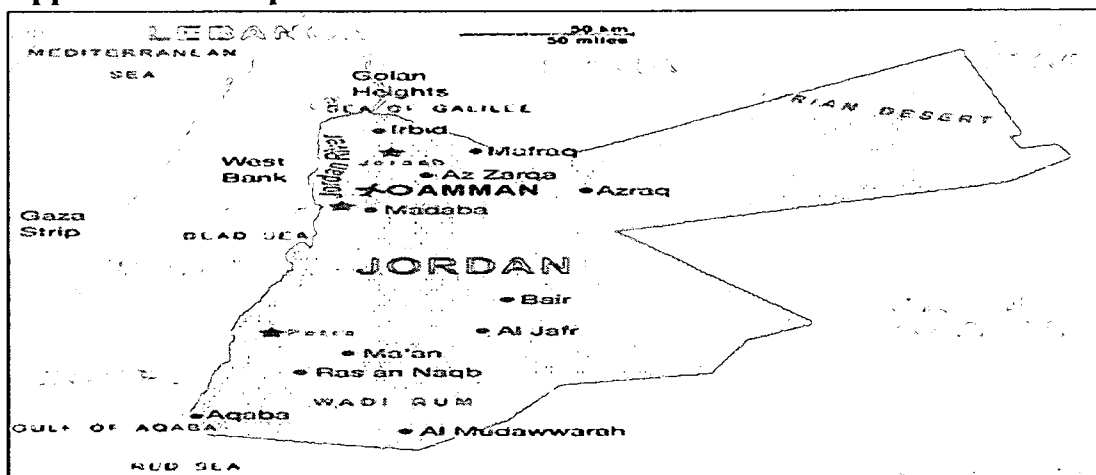
Source: The University of Texas At Austin, Library, Maps
http://www.lib.utexas.edu/maps/cia10/jordan_sm_2010.gif.

Appendix 5-2: Main Economic Indicators during the period 2001-2008 (JD Million)

Item	2001	2002	2003	2004	2005	2006	2007	2008
Population	4,940,000	5,070,000	5,200,000	5,350,000	5,485,000	5.600	5.723	5.850
Gross National Product (GNP) at current market prices	6491.1	6858.3	7287.5	8310.7	9334.2	10,932.6	12,293.	14,86
Gross Domestic Product (GDP) at current market prices	6363.3	6778.5	7203.6	8164.0	9118.1	10,520.9	11,721.	14,18
Growth rate of GDP at constant market prices (%)	5.3	5.7	4.1	7.7	7.2	8.0	6.6	5.6
Gross National Disposable Income (GNDI) at current prices	7955.9	8408.8	9556.4	10609.2	11219.7	13,017.1	14,263.	17,37
Growth rate of GNDI at constant market prices (%)	3.3	5.6	10.6	5.4	1.5	7.8	4.8	6.2
GDP per capital at current prices	1288	1337	1809	1534	1650			
Unemployment rate (%)	14.7	15.3	14.5	12.5	14.8	14.0	13.1	12.7
Change in the consumer price index (%) (Inflation rate)	1.8	1.8	1.6	3.4	3.5	8.8	4.5	14.6
Change in GDP deflator (%)	0.8	0.8	2.1	5.3	4.2			
Ratio of total consumption to GDP at current market prices (%)	104.0	100.9	101.3	102.3	106.8	102.5	N. A	N. A
Ratio of gross fixed investment to GDP at current market prices	19.4	19.0	20.6	24.8	30.5	28.3	N. A	N. A
Ratio of domestic saving to GDP at current market prices (%)	-4.0	-0.9	-1.3	-2.3	6.8	2.5	N. A	N. A
Average exchange rate against US dollar	1.410	1.410	1.410	1.410	1.410	1.410	1.410	1.410

Sources: 1- Central Bank of Jordan, Annual Report, 2009.
2- Ministry of Planning and International Corporation, Main Economic.

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Appendix 5-3: The Jordanian companies' law related to credit rating and corporate governance

Due to the orientation towards international markets, trade and agreements, and under a new reform programme, the Company Act of 1997 was recently amended by the temporary Securities Law No. 4 and No. 40 in 2002. We selected articles of the Jordanian companies law will be covered, the selection of the articles presented here is based on their relation to the firm's credit ratings and corporate governance.

Due to the orientation towards international markets, trade and agreements, and under a new reform programme, the Company Act of 1997 was recently amended by the temporary Securities Law No. 4 and No. 40 in 2002.

In this section, selected articles of the Jordanian companies law will be covered, the selection of the articles presented here is based on their relation to the firm's credit ratings and corporate governance. According to the most important point in the Act, Jordanian firms must follow the International Accounting Standards (IAS) as stated in Article (184-a)

"A public shareholding company shall organize its accounts and keep its registers and books in accordance with the recognized international accounting and auditing standards."

Firms have the right to have debt financing by issuing bonds, Articles (113-131) organize this procedure. Firms can issue converted bonds but there are a number of provisions. Article (125) sets these provisions:

"The company may issue corporate bonds convertible into shares in accordance with the following provisions:

- The decision of the board of directors shall include all rules and conditions on the basis of which bonds are converted into shares. This should be accomplished with the

written consent of the owners and in accordance with the conditions and in pursuance to the basis defined therefore;

- The corporate bondholder shall express his desire to convert at the dates stated in the prospectus. If the holder does not express his interest during that period he will lose his right to convert the said corporate bonds;

- The shares obtained by corporate bond owners shall have rights to divide proportional to the time period between the date of conversion and the end of the fiscal year; and

- At the end of each fiscal year, a statement shall be made of the number of shares issued during the year against corporate bonds whose owners exercised their option to convert the same into shares during such year.

Firms also have the right to redeem their bonds. Article (131) gives firms such a right

"The prospectus may provide for the Company right to annually redeem the issued bonds by a lottery throughout the duration of the Corporate Bonds."

It is worth noting that Jordanian firms may buy back their shares in certain conditions, Article (114) protects this right. In addition, article (8) of the bylaws of the Jordanian Security Commission in 2006 organises this procedure. It reveals that Jordanian firms should hold their treasury stocks for a period between six and eight months.

The 1964 Companies Act is considered to be the first legislation regarding companies in Jordan. Before that, establishment and registration of companies were addressed by the Civil Law and Othman Commercial Law, which was replaced by the registration of Jordanian Companies Act in 1927 (Suwaidan, 1997). Economic development and the increase in the number of companies forced the regulators to revise the Companies Act of 1964. Several amendments of this Act and economic growth led to a newer version of the Companies Act in 1989.

The Companies Act No. 1 for the year of 1989 was more comprehensive than the Companies Act 1964. It provided different types of companies such as partnership, limited partnership, private limited, partnership limited by shares and public shareholding (Article 6). Shareholding companies must issue shares to the public according to the provision of this law. Therefore "Compared to other types of companies, public shareholding companies are of greater economic significance and as a sequence subject to more stringent disclosure requirements" (Suwaidan, 1997).

This Act covered different issues related to public shareholding companies. It included ten sections (Articles 90-219) explaining the essential issues of public shareholding companies, for example, formation of public shareholding companies, capital requirements and disclosure requirements. In addition, the law contains a section (Articles 220-231) illustrating the responsibility of the auditors, particularly towards the disclosure requirements. Therefore, the concern of this study is the disclosure requirements imposed by the law. These requirements are mentioned as follows:

Article 168: The board of directors of every public shareholding company must prepare, within the first three months of the end of the financial year, the following documents which together constitute the company's annual reports:

Article 170: The board of directors of the company has to file with the CC and AFM a half yearly report showing the financial position of the company and the results of operations for the interim period signed by the Board's Chairman.

Article 172: The documents in Article 168 (A, B and C) shall be presented to the shareholders' annual general meeting, and at least 14 days before the meeting, a copy of the annual report must be sent to each shareholder, accompanied by invitation to the annual general meeting.

Article 199: The auditor's report must be presented and discussed at the shareholder's annual general meeting.

Article 220: Every public shareholding company is obliged to appoint an auditor.

Article 221: The main responsibility of the auditor is to report to shareholders on the company's accounts.

Article 223: The auditor must address the following in his report:

- Whether he or she has obtained all the information and explanation necessary to perform the audit in accordance with generally accepted auditing standards;

- Whether the company's account and financial records are adequate and necessary for performing his or her duty in a satisfactory manner.

- Whether the balance sheet, profit and loss account and the statement of resources and application of funds present fairly the company's financial position and comply with generally accepted accounting principles;

- Whether the financial matters cited by the directors in their report are in agreement with the company's records;

- Whether there have been any violations by the company and its directors of the provisions of the Act, or the company's articles of association, and the extent to which the violation had an impact on the company's financial position and the results of its operations; and

- Any other information or remarks which the auditor considers important for the company's shareholders to know which are not covered by the above.

Article 225: The auditor should be independent from the company and its directors. Therefore, an auditor who is partner or an employee of any director should not be appointed.

The criticism of this law is that it did not include any provisions regards consolidated financial statements. "In practice, companies, which maintain branches, prepare and present a combined balance sheet and a combined profit and loss account" All-inter branch transactions are eliminated in the accounts" (Al-Shiab, 2003).

In addition, although public shareholding companies should prepare comparative audited financial statements, there are no legal requirements to the format and content of these statements (Suwaidan, 1997). For example, the Companies Act of 1989 did not provide any regulations for inventory and depreciation valuation (Al-Shiab, 2003). Therefore, the Companies Act of 1989 was limited in its scope and general in its content. The latest improvements in Jordan during the 1990s and the open-economy have attracted different investments to Jordan. Moreover, the free open market economy, the investments encouraging policy and the privatization strategy required a new regulation to manage, organize and create a stable regulatory environment in Jordan. Thus, a new Companies Act became essential. The Companies Act No. 22 of for the year of 1997 was enacted with other regulations (e. g. Investment Promotion Law 1995, Securities Law No. 23 for the year 1997) in order to deal with the deficiencies of the previous Laws.

The Companies Act 1997 introduced the following financial statements requirements:

Article 140: A- the board of directors of the public shareholding companies shall, within a maximum of three months from the end of the company's fiscal year, prepare the following accounts and statements to be presented to the annual general meeting:

- the annual balance sheet of the company and its profit and loss account, cash flows statements and notes compared with those of the last year's accounts, all duly certified by the company's auditor;

- the board of director annual report on the company's activities and performance and forecasts of activities for the following year; and

- the board of director is required to file copies of the above documents to the CC at least 21 days before the general meeting;

Article 141: The board of directors is required, within three days of the annual general meeting to publish the balance sheet and the profit and loss account along with the auditor's report in a daily newspaper.

Article 142: The board of directors of public shareholding companies have to file with the CC and AFM a half yearly report showing the financial position and the results of the operations for the company, signed by the Board's Chairman, within two months of its handing over to him.

Article 143: The board of directors of the public shareholding company shall annually place in the company's head office at the disposal of the shareholders, at least three days prior to the meeting of the company's annual general meeting a detailed report including the following statements copies shall be sent to the CC:

- The amounts received from the company during the fiscal year by the Chairman and each of the members of the board of directors, in the form of wages, fees, salaries, allowances, remuneration and others;

- Any benefits that the Chairman and the members of the board of directors enjoy such as free housing, cars and other benefits;

- Amounts that have been paid to the Chairman and members of the board of directors during the fiscal year such as travel and transport allowances in and outside Jordan; and

- Donations paid by the company during the fiscal year in details and parties who received them.

Article 144: The documents in Article 140 shall be presented to the shareholders annual general meeting, and a copy of the annual report shall be sent to each shareholder at least 14 days before this meeting, accompanied by an invitation to this meeting.

Article 145: The board of director of the public shareholding company shall announce the company's annual general meeting date in at least two local newspapers within a maximum fourteen days prior to the date provided that the meeting shall be held within the four months follow the end of the company's fiscal year.

Article 171: Every public shareholding company is obliged to appoint an auditor who has to report to the shareholders on the company's accounts. Moreover, the auditor's report must be presented and discussed at the shareholders' annual general meeting along with the company's accounts.

Article 184: Every public shareholding company shall organize its accounts and keep its registers and books in accordance with "generally accepted accounting principles ".

Article 185: The fiscal year of the public shareholding company shall start on the first of January each year and shall end on the thirty first of December of the same year, unless otherwise provided for in the company's memorandum of association.

Article 197: The auditor must be independent from the company and its directors. Therefore, an auditor who is a partner to any member of a company board of director, a member of its board of director, or works permanently in any technical, administrative or consultancy work should not be appointed for auditing the company's accounts.

Article 203: The Company's auditor and his employees shall not be permitted to speculate in the shares of a company whose accounts he audits, whether such a speculation is direct or indirect. Otherwise, the auditor shall be penalised by dismissal from his job as an auditor of the company and shall be requested to compensate for any damages he has caused by this speculation.

Appendix 5-4: Final conclusion of the World Bank and (OECD) report

Principle	O	LO	PO	MO	NO	Comment
1. The rights of shareholders						
1.1 Basic shareholder rights		X				Basic rights observed. Some compliance gaps in clearing and settlement
1.2 Rights to participate in fundamental decisions		X				Shareholders participate in most fundamental decisions with 66/75 percent supermajority.
1.3 Shareholders AGM rights		X				No major reported problems. Notice period 15 days.
1.4 Disproportionate control disclosure			X			Companies disclose at 5 percent level. Most ownership reportedly formally and informally well understood.
1.5 Control arrangements should be allowed to function.			X			Very limited takeover rules. CMA Enforcing informally mandatory bid rule.
1.6 Cost/benefit to voting			X			At present, uncommon for institutional investors to have voting policies and some do not vote.
2. Equitable treatment of shareholders						
2.1 All shareholders should be treated equally			X			Share voting information may be difficult to obtain. Slow court system. ASE has powerful redress mechanism.
2.2 Prohibit insider trading		X				Insider trading not specifically addressed in law, but is administratively enforced
2.3 Board/Mgrs. disclose interests		X				Accounting standards follow IAS 24. New listing rules add to RPT disclosure requirements
3. Role of stakeholders in corporate governance						
3.1 Stakeholder rights respected	X					Stakeholders have a number of legal protections. Employee board representation relatively rare.

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3.2 Redress for violation of rights	X					Stakeholders have access to legal process to obtain redress.
3.3 Performance enhancement	X					Company law grants employees automatic rights to 10 percent profit sharing. Employee share ownership in some privatized companies.
3.4 Access to information	X					Employees, bondholders, others have rights to information by law.
4. DISCLOSURE AND TRANSPARENCY						
4.1 Disclosure standards		X				Annual and quarterly reports. Some missing non-financial disclosure (forward-looking mergers, disposed and acquisitions, risk factors, governance).
4.2 Standards of accounting and audit	X					Standards generally close to IAS; compliance uncertain
4.3 Independent audit annually			X			No audit oversight of board (but included in draft accounting law). New listing rules require audit committee, but slow adoption.
4.4 Fair and timely dissemination		X				Many channels of information
5. RESPONSIBILITIES OF THE BOARD						
5.1 Acts with due diligence, care		X				Single tier boards. Frequently, Chairman and CEO are the same person. Two members can be appointed "experts."
5.2 Treat all shareholders fairly			X			Limited legislative guidance on duty of care and duty of loyalty, but some jurisprudence.
5.3 Ensure legal compliance		X				Company law requires board to take interests of employees into account.
5.4 The board should fulfil certain key functions		X				In practice, boards of most companies do not play central / strategic role, and are not clearly different from

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				X		management.
5.5 The board should be able to exercise objective judgment				X		No rules that govern independence. Few companies appoint independent directors.
5.6 Access to information	X					Most directors are insiders and have access to information. Can be more difficult for non-executives sometimes, because information is not available.

(**Source**: adopted, ROSC, February 3, 2005)

where:

Observed (O) means that all essential criteria are met without significant deficiencies. **Largely observed (LO)** means only minor shortcomings are observed, which do not raise questions about the authorities' ability and intent to achieve full observance in the short term. **Partially observed (PO)** means that while the legal and regulatory framework complies with the Principle, practices, and enforcement diverge. **Materially not observed (KO)** means that, despite progress, shortcomings are sufficient to raise doubts about the authorities' ability to achieve observance. **Not observed (NO)** means no substantive progress toward observance has been achieved.

Appendex 6-1: Summary of Research Methodology

Research Methodologies	Concepts	Methods
Research Philosophy	Positivistic Phenomenological	Positivistic
Research Method	Quantitative Qualitative	Quantitative
Research Types	Pure Applied Exploratory	Applied Research
Research Model	Dependent Variables Independent Variables	Credit Rating Accounting and financial, market and regulatory, ownership structure, financial transparency and disclosure and corporate governance categories.

(Source) adapted from Saunders et al., (2007).

Appendex 6-2: Summary of Research philosophy

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┌─────────────────────────────────────┐
│   The types of Research Philosophy   │
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┌──────────────────────────┬──────────────────────────┬──────────────────────────┐
│ **Epistemology (thetheory** │ **Ontology (the natureof** │ **Axiology (the value**   │
│ **of knowledge):** Starts │ **reality):** Seeks to   │ **system):** Depends on the │
│ with facts and seeks to   │ discover the reality of the │ values of the researcher as │
│ justify these facts,   │ facts and then provides   │ a basis for make   │
│ depending on the   │ links between this reality │ judgement about   │
│ knowledge developed   │ and the knowledge of   │ conducting the research. │
│ from the research process.│ these facts.   │   │
└──────────────────────────┴──────────────────────────┴──────────────────────────┘

┌──────────────────┬──────────────────┐   ┌──────────────────┬──────────────────┐
│ **Positivism:** Seeks │ **Interpretivism:** │   │ **Objectivism:** The │ **Subjectivism:** │
│ to understand   │ Interpretation of │   │ separation   │ Social   │
│ causality within │ the phenomena   │   │ between the   │ phenomena are   │
│ society, without │ depending on   │   │ researchers and   │ created from the │
│ direct reference to │ differences   │   │ the cases which   │ perceptions and   │
│ the opinions of   │ between humans-   │   │ are studied. So, │ consequent   │
│ actors within   │ as social actors- │   │ the researcher   │ actions of social │
│ society.   │ regarding their   │   │ will be value-free │ actors, who are │
│   │ opinions.   │   │ and view the   │ concerned with   │
│   │   │   │ problem   │ the existence of │
└──────────────────┴──────────────────┘   └──────────────────┴──────────────────┘

Source: Saunders *et al.*, (2007).

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Appendix 8-1 Normality of Residuals

Appendix 8-1 (A): Histogram

Histogram

Dependent Variable: WVB_RATING

Mean =-6.26E-15
Std. Dev. =0.982
N =576
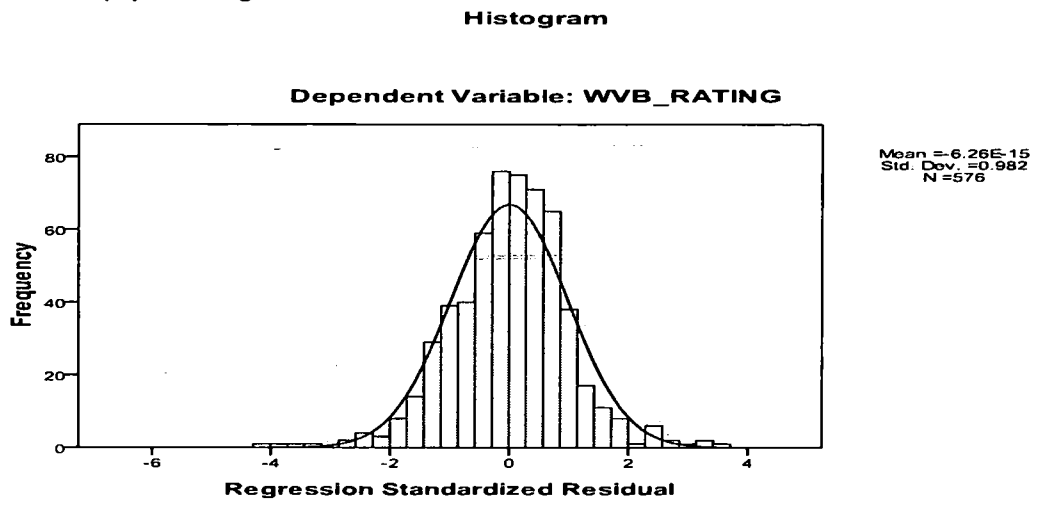
Appendix 8-1 (B): Normal P-P Plot

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: WVB_RATING
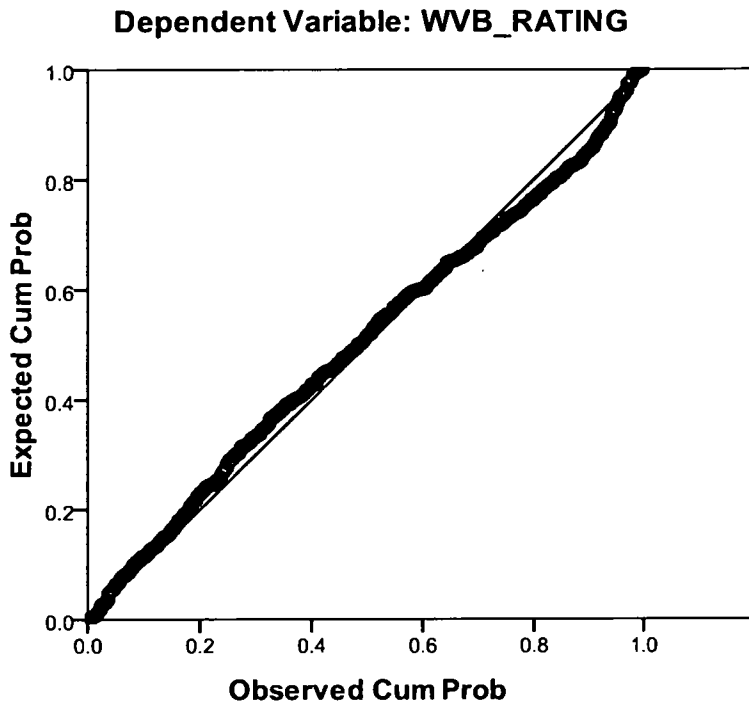
Appendix 8-2 Scatterplot of Dependent Variables: WVB_CR

Scatterplot

Dependent Variable: WVB_RATING