A STUDY OF THE IMPACT OF PLURALISM OF THE BOARD OF DIRECTORS ON CORPORATE SOCIAL RESPONSIBILITY

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Abstract

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The purpose of this study is to understand the evolution of the notion of responsibility of the corporation and to analyze its operationalization in the organizational context. The relationship between board of directors' composition and Corporate Social Responsibility (CSR) is the key element of the study. Its originality resides in the introduction of the firm's financial performance (measured by Tobin's q and ROE) as a moderator of the relationship. The theory of pluralism (Molz, 1988; 1995) is used in this study to classify different board typologies into two general board types: managerial dominated and pluralistic boards. The sample for this study is drawn from a population of Canadian firms listed on the Toronto, Montreal or Alberta Stock Exchange. 42 firms were selected for the study on the basis of two sub-samples. The first sub-sample consisted of socially responsible firms taken from the list of the Top 50 Canadian Corporate Citizens first published in the May 1997 edition of the *Financial Post*. The second sub-sample, a matched-paired sub-sample, consisted of firms considered as less socially responsible and selected according to an industry matching criteria. The positive relationship between pluralism and CSR implied but not proved in past research (Molz, 1995) was supported in this study. However, the moderating effect of financial performance on the relationship between pluralism and CSR was not supported. Possible causes for the rejection of the hypothesis are presented and discussed as well as propositions for further research.

This is for my parents, for their unconditional love and support, I will always be grateful.

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<u>THE FIRST STAGE</u> : A LIMITED RESPONSIBILITY

With the birth of the modern corporation, its increasing size and its growing power, new concepts have taken place and new ways of understanding the role of the firm have been developed in management research. The notion of responsibility as applied to an economic body such as the modern corporation was first perceived as very limited in scope. The basic idea of responsibility of the firm was towards its owners and their increased satisfaction with its performance. This relatively "limited" responsibility solely to the owners , illustrates what is called the stockholder theory.

1-The stockholder theory

The separation between ownership and control of a corporation is at the core of management research. Berle and Means (1932) were the first to direct attention to how the separation of ownership from control constituted a fundamentally new economic structure and a source of different, and sometimes conflicting, interests. Their work shed a new light on the responsibilities pertaining to both managers and shareholders and to the extent to which these responsibilities were conflicting. According to the stockholder theory, the ultimate control of the corporation rests in the hands of the owners of stock. The main concern of a firm is therefore purely economic in the sense that the only responsibility that a corporation has is to increase its performance and returns for the satisfaction of its owners. The corporation's responsibility is therefore restricted to a "financial duty" towards its shareholders and cannot be broadly extended. Not surprisingly, this conception of a corporation's "limited" responsibility, fundamentally opposed to an expanded accountability of the firm other than the one it has toward its owners, found its strongest advocate in the economist and Nobel Prize winner Milton Friedman. In his famous 1970 article, Friedman encapsulated the essence of the stockholder theory in corporate governance by stating that "the social responsibility of business is to increase its profits". The notion of social responsibility as intended by Friedman is at the core of the traditional model of corporate governance in which the perception of responsibility is restricted to the one managers have toward the owners of a corporation. In the traditional model, the shareholders evaluate management's report on corporate performance and elect their representatives, the board of directors.

1.1 The board of directors and its role

The first function of the board of directors is to elect the management and the officers of the corporation to run the business on a daily basis. The board's responsibility is to meet periodically with management to decide on issues that need stockholder approval, it also insures that the interests of the stockholders are looked after (Alkhafaji, 1989). However, this monitoring role of the board over shareholders' interests has been challenged in practice. Buchholz (1986) questions the board of directors' efficiency in protecting stockholders' rights and interests because of the constitution and structure of the board itself. In that line of thought, it is the concept of a board responsibility that is questioned and its extent that is subject to interrogations. Is a corporation responsible, through the decisions and acts that it takes on a day-to-day basis, solely to its shareholders or is there a broader set of entities to which it is accountable ? Does the social responsibility of a corporation exist in a traditional framework or is it limited to a simple obligation of result?

These questions have constituted the basis of corporate governance research and various answers have been proposed depending on the researchers' ideological assumptions. Part of the answer however, lies in the two basic principles that interrogate the existence and the purpose of corporate social responsibility. These two principles are: the principle of property rights and institutional function and the principle of self interest.

1.2 The principle of property rights and institutional function

The case against social responsibility is strongly based on concepts of property rights and institutional function (Jones, 1996). The property rights argument (Friedman, 1970) states that management, as an agent of the shareholders, has no right to do anything other than that which (within the limits of the law) serves to increase shareholders value. To act otherwise would constitute a violation of management's moral, legal, and institutional obligations (Jones, 1996). The institutional function argument (Leavitt, 1958) further insists on that by implying that there are other institutions such as government, churches, or labor unions that exist to perform the functions required by social responsibility. In addition to the lack of skills or time suffered by managers to endorse socially responsible actions, they are not accountable for their actions as are democratically elected politicians. Therefore, according to this principle, management cannot change its institutional role in that it would give it tremendous power without accountability and would thus undermine the foundation of the political system in place (Jones, 1996).

An interesting challenge to this principle was presented by Donaldson and Preston (1995). In their study, they tried to demonstrate, using a thorough analysis of the theory of property, that property rights themselves can be used to undermine shareholder primacy and promote stakeholder management (Jones, 1996). In their analysis, they rely on various theoretical definitions of property rights, emphasizing especially on the definition given by Pejovich (1990, p. 27) stating that "property rights are relations between individuals and it is wrong to separate human rights from property rights". The notion that property rights are embedded in human rights and that restrictions against harmful uses are intrinsic to the property rights concept, brings the interests of non-owners into the picture (Donaldson & Preston, 1995). This large conception of stakeholders does not justify arguments that assign managerial responsibilities toward specific groups, however, the contemporary theoretical concept of private property does not give unlimited rights to owners, and hence, does not support the traditional claim that the responsibility of managers is to act solely as agents for shareholders (Donaldson & Preston, 1995).

1.3 The principle of self interest

Friedman's (1970) conception of the responsibility of a corporation to act in the sole interest of its owners is directly based on the classical theory of the invisible hand as developed by Adam Smith (1776). The theory states that, each economic actor pursuing its own self interest, is guided by an invisible hand that leads to a greater general outcome at the society level. According to Friedman, in being responsible for the best interests of its shareholders and in pursuing its self interest, a corporation automatically triggers benefits for the whole society, and could be defined as "socially responsible".

The theory of self interest is further extended by Peter Drucker (1989) who uses it to define what he intends by social responsibility. He defines a principle called the "doctrine of the wild animal" stating that if a lion gets out of its cage, its keeper is responsible. Whether the lion's keeper was careless and left open the door of the cage, or whether an earthquake released the lock, is irrelevant. (pp. 87-88) This "doctrine of the wild animal" proves that "the institution has a duty –but also a self interest- to limit its impact to what is actually needed for the discharge of its social function." (p. 88)

The various definitions of a corporation's responsibility illustrate the multiple perceptions and understandings of the notion of responsibility itself. In a traditional framework, social responsibility as a wider concept, does not exist. The only existing responsibility stands between the managers and the owners. Moreover, the potential divergent interests between the two parties can have a significant influence on a broad range of decisions and performance outcomes (Gedajlovic, 1993) thus questioning again the nature of the responsibility existing in that case.

2- Agency theory

According to the traditional model of corporate governance, owners have the ultimate control of the corporation and managers run the business to accomplish corporate goals and objectives (Alkhafaji, 1989). However, in real practice, most of the corporate powers are vested in the hands of management rather than the board of directors, triggering consequently what has been defined as agency problems (Jensen & Meckling, 1976).

An agency relationship is defined as one in which one or more persons (the principal(s)) engages another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. The cornerstone of agency theory is the assumption that the interest of principals and agents diverge and create agency costs for the firm (Hill & Jones, 1992). Although agency theory was mainly studied in the field of finance (Fama, 1980), it has been considered as one of the most important paradigms that shapes the intrinsic functioning of an organization and consequently, the concepts around which it is articulated, one of these concepts being the role of the different actors and their responsibility towards each other. The basic agency problem stems from the fact that possessors of decision rights (managers) can adopt strategies or policies that can negatively impact upon the wealth of shareholders (Gedajlovic, 1993).

Agency theory attempts to describe the relationship between the principal and the agent using the idea of a contract (Jensen & Meckling, 1976; Eisenhardt, 1989). Because the unit of analysis is the contract governing the relationship between the principal and the agent, the focus of the theory is on determining the most efficient contract governing the relationship given assumptions about people (self interest, risk aversion), organizations (goal conflict among members), and information (as a commodity that can be purchased) (Eisenhardt, 1989). Table 1 provides an overview of agency theory.

Table 1

Agency Theory Overview

Key idea	Principal-agent relationships should reflect efficient organization of Information and risk-bearing costs.
Unit of analysis	Contract between principal and agent
Human assumptions	Self interest, bounded rationality, risk aversion
Organizational Assumptions	Partial goal conflict among participants Efficiency as the effectiveness criterion Information asymmetry between principal and agent
Information Assumptions	Information as a purchase commodity
Contracting Problems	Agency (moral hazard and adverse selection) Risk sharing
Problem Domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g., compensation, regulation, leadership)

From: Eisenhardt (1989) *Agency Theory: An Assessment and Review*. Academy of Management Review, Vol. 14, No. 1, 57-74.

In their early work on agency theory, Jensen and Meckling (1976) view the relationship between stockholders and managers as an implicit contract which is part of the nexus of contracts that form the modern corporation. This idea has been further developed by Hill and Jones (1992) who assumed that, if there was an implicit contract between managers and shareholders, there must be other implicit contracts between management and other interest groups, implying by this that the responsibility of the firm could be expanded to a broader set of contractors. Their research constituted the first bridge between foundations of the traditional thought and ideas of what is called the stakeholder theory.

3- Evolution of the traditional model and factors of change

Although the precise origin of stakeholder theory is impossible to determine (Sturdivant, 1979), the development of the notion evolved around basic principles that are summarized by Igor Ansoff in the classic *Corporate Strategy: An Analytic Approach to Business Policy for Growth and Expansion* (1965):

> While as we shall see later, "responsibilities" and "objectives" are not synonymous, they have been made one in a "stakeholder theory" of objectives. This theory maintains that the objectives of the firm should be derived by balancing the conflicting claims of the various "stakeholders" in the firm: managers, workers, stockholders, suppliers, vendors.

In his view that was still influenced by the traditional line of thought, he rejected the stakeholder theory in favor of a view which separated objectives into "economic" and "social" with the latter being a "secondary modifying and constraining influence" on the former (Freeman & Reed, 1983). Although Ansoff refuted the idea of stakeholder management in the broader sense it is intended today, he set the basis of this theory by clearly separating the objectives of the firm into the economic and social categories. This separation is crucial to the understanding of the shift in nature of the responsibility concept through the years. In the United States where most of the research on corporate governance was made, changes at the societal and organizational level contributed to the development of a broader sense of corporate responsibility.

3.1 Changes at the societal level

By the end of the 1950s, several significant factors occurred and triggered interests in business ethics and corporate social responsibility among business and academic leaders. Epstein (1998) listed the most important factors as the following:

- The increase growth in size and market concentration of larger economic units resulting from corporate mergers and acquisitions aroused concerns about the affect of this trend on market competition.
- The Civil Rights Movement of the 1960s was to have a profound impact on the American society, including the business sector, by altering the expectations and role of minorities of color and women.
- The Cold War and the Space Race with the Russians led to intimate interactions between American government and business and gave rise to popular concerns about the emergence of a concentration of power and the proliferation of nuclear arms.
- The advent of automation and the computer era was beginning to change the American mind-set.

According to Epstein (1998), "the cumulative effects of these developments was a better informed and more sophisticated citizenry that was becoming increasingly socially and politically aware and active and less inclined to accept economic, social, and political conditions simply because it was the way things had always been."(p. 13) Aside from the larger societal changes, significant developments were made concerning the role and functioning of the modern large business corporation in the society.

3.2 Changes at the organizational level

Mason's (1959) pioneering work *The Corporation in Modern Society* was a first step in underlying concerns with regard to the new nature of the corporation in the modern age. The first concern was related to the notion of control. Mason was concerned that the modern corporation with its huge success, "seems to be running without any discernible control." (p. 4) The lack of control (and, reversibly, of accountability), posed fundamental questions on the role and the nature of the corporation in the modern society. The following points are exposed by Epstein (1998) as being the most important questions posed by the corporation's changes. (p. 18)

The problem of legitimacy. Corporate leaders constitute a self-perpetuating oligarchy virtually responsible for no one other than themselves.

The problem of power. The ineffectiveness of societal constraints-including the legal system- on corporate power is contrary to the American belief that a prerequisite of a democratic society is that all institutions be limited and accountable in their exercise of power.

The managerial revolution. If there is indeed a separation between ownership and control, serious questions arise concerning the qualifications and responsibilities of the new class of professional managers.

The changing character of private property. Again, if managers have power without property and corporate shareholders have property without power in terms of their effective capacity to determine the use of that property, these developments have important implications for the traditional understanding of the rights associated with property ownership.

The corporation and the state. The emergence of large corporations that exceed some governmental entities in terms of assets, employees, and scope of operations poses questions about the distinction between public and private institutions. This development also raises concerns about the roles and relationships among governments and businesses in a mixed economy (Mason, pp. 5-19).

These important changes on both the societal and organizational levels constituted the bases for a shift in the corporate governance and corporate responsibility research. The most important illustration of this shift is the development of the stakeholder theory and its enlarged conception of the responsibility of the modern corporation.

THE NEXT STAGE: THE STAKEHOLDER THEORY

The stakeholder theory is at the core of the notion of Corporate Social Responsibility (CSR). This theory has provided the basis for understanding the functioning of the firm as a set of interactions with multiple constituents who have a legitimate claim on it. The stakeholder concept is the result of years of study and research (Barnard, 1938; Ansoff, 1965; Sturdivant, 1979; Freeman, 1983, Carroll, 1989; Wood, 1995). As a theory, the stakeholder idea has found its sources in a broadening of the responsibility concept and in the realization that the firm as an entity is formed by a nexus of contracts (Hill & Jones, 1992) that have to be taken into consideration by management. In this optic, Hill and Jones (1992) developed their stakeholder-agency theory that constituted the link between agency's conception of the corporation's responsibility and the new stakeholder concept. Ironically in their study, it is a purely economic concept (agency) that implies that the firm should be responsible on a broader scale, when in the beginning, the first opponents of social responsibility were basing their arguments on economic motives.

1- Definition of the stakeholder concept

Pioneering work in the area of stakeholder management was provided by Freeman (1984), who outlined and developed the basic features of the concept in a book entitled *Strategic Management: A Stakeholder Approach*. Freeman, individually and with various colleagues (Freeman & Gilbert, 1987; Evan & Freeman, 1993), has expanded on the idea of interactions existing between the firm and the groups of constituents who have a legitimate claim on it or what he called a *stake*. The term stakeholder thus refers to groups of constituents who have a legitimate claim on the firm, this legitimacy being established through the existence of an exchange relationship. Stakeholders include shareholders, creditors, managers, employees, customers, suppliers, local communities, and eventually, the society as a whole (Hill & Jones, 1992). The fundamental proposition of the stakeholder theory is that business corporations can and should serve the interests of multiple stakeholders, rather than simply those of shareholders (Preston & Sapienza, 1990).

Freeman and Reed (1983) proposed two definitions of stakeholder: a wide sense, which includes groups who are friendly or hostile, and a narrow sense, which is more specific (It is interesting to note that the authors mentioned that they "do not believe definitions can be constructed and justified in isolation. They should be descriptive of current use, and in emerging theories, prescriptive of linguistic change. While we offer two definitions in order to ease the linguistic change, we are ultimately wedded to the wide inclusive sense of stakeholder." (p. 105))

- *The wide sense of stakeholder*: Any identifiable group or individual who can affect the achievement of an organization's objectives or who is affected by the achievements of an organization's objectives. (Public interest groups, protest groups, government agencies, trade associations, competitors, employees, shareowners) (p. 91)
- *The narrow sense of stakeholder*: Any identifiable group or individual on which the organization is dependent for its continued survival. (Employees, certain suppliers, key government agencies, certain financial institution, shareowners) (p. 91)

Depending on the standpoint, some stakeholders could be included in the wider or narrower sense of the word. From the standpoint of corporate strategy however, stakeholder must be understood in the wide sense: strategies need to account for the groups who can affect the achievements of the firm's objectives (Freeman & Reed, 1983).

2- Justification for the stakeholder theory

The stakeholder concept could seem intuitively appealing to some researchers but its legitimacy and justification have nevertheless been subject to intense scrutiny (Donaldson & Preston, 1995). Aside from asking questions, Donaldson and Preston in their 1995 article, try to provide some clear answers on this matter by basing their reasoning on three levels: the descriptive, the instrumental, and the normative.

- First, on a descriptive basis, managers who may not make explicit references to stakeholder theory, adhere in practice to one of the central tenets of the theory, namely, that their role is to satisfy a wider set of stakeholders. Moreover, the theory is also an implicit basis for existing practices and institutions, including the legal system (at least in the Unites States. For a full description, see Donaldson and Preston, 1995).
- Second, even if the stakeholder model cannot be fully justified by instrumental considerations, various studies have found that stakeholder management had a favorable impact on financial performance (Brummer, 1991; Savage, Nix, Whitehead, & Blair, 1991).

- Finally, as argued by Donaldson and Preston (1995), it is the normative argument that best supports the stakeholder theory. According to this argument, corporations have a moral obligation towards the groups with which they are interdependent. The absence of legal obligation to follow ethical principles does not mean that corporate decisionmakers are not subject to the same ethical considerations as other members of society (American Law Institute, 1992, pp. 80-82). The ultimate justification for the stakeholder theory according to Donaldson and Preston (1995), is that its most prominent alternative (i.e., the "management serving the shareowners" theory) is morally untenable.

The last argument made in favor to stakeholder theory by Donaldson and Preston (1995) in terms of its "moral" justification is an interesting addition to the economic, financial, managerial or organizational constraints facing the modern corporation. The question of morals or ethics in business is vast and has been the subject of numerous studies, books, as well as the main purpose of various academic journals. The emphasis here will be put on the role of the corporation as a moral agent in the society, its nature and its legitimacy.

3- Corporate moral agency

Corporations are nowadays considered as persons under the law and have some of the same rights as persons. They can sue and be sued, they own property, conclude contracts, enter into agreements and they are considered citizens of the state in which they are chartered. Since the law treats corporations the same as individuals in many respects, does this mean that corporations are moral agents with moral responsibility? With the expanded view of responsibility implied by the stakeholder theory, this question is definitely legitimate to ask. While the corporation may not be a moral person, it may, however, be a moral agent in the sense that it was created for specific functions (Buchholz & Rosenthal, 1998). Corporations can be seen as created by society for special purposes and accountable to society for their decisions.

The notion of corporate moral agency and its articulation around the stakeholder theory could be illustrated by a definition of stakeholders as entities that could experience or anticipate experiencing actual or potential harms or benefits from the firm's actions or inactions (Donaldson & Preston, 1995). Even if they do not give the moral foundations of the stakeholder theory in their study, Donaldson and Preston (1995) argue that its most prominent alternative (i.e., the "management serving the shareowners" theory) is morally untenable. However, their argument has been vigorously criticized by Hasnas (1998) who defends that "much work remains to be done before this argument can serve as an adequate basis for the stakeholder theory." (p. 29)

Another normative theory of business ethics has been developed to give an additional explanation of the constructs underlying business ethics in terms of its definition of the nature of the responsibility that businesses have towards the people or groups it affects or by which it is affected. This theory, called the social contract theory, constitutes another angle through which the evolution of the corporate responsibility concept can be examined.

4- The social contract theory

In its widely accepted form, the social contract theory asserts that all businesses are ethically obligated to enhance the welfare of society by satisfying consumer and employee interests without violating the general canons of justice (Donaldson, 1982; Hasnas, 1998, p. 29). The social contract theory is based on the traditional concept of a social contract, between the members of society and businesses, in which the members of society grant businesses the right to exist in return for certain specified benefits (Hasnas, 1998, p. 29). As a normative theory of business ethics, the social contract theory is explicitly modeled on the political social contract theories of thinkers such as Thomas Hobbes, John Locke, and Jean Jacques Rousseau.

According to Hasnas (1998), the social contract theory has two terms: a social welfare term and a justice term. The social welfare term recognizes that the members of society will be willing to authorize the existence of businesses only if they gain by doing so (p. 30), whereas, the justice term recognizes that the members of society will be willing to authorize the existence of businesses only if businesses agree to remain within the bounds of the general canons of justice (p. 30). Therefore, these terms impose significant social responsibilities on the managers of business enterprises. Despite the critiques that this theory faces in terms of the legalistic definitions of the word contract and its implications in the business sense, this theory is still in its early stages in the business sphere and is somewhat presented in a skeletal form (Hasnas, 1998). Interestingly however, this theory provides an additional insight into the evolution of business ethics and responsibility through the years.

<u>THE LAST STAGE</u>: OPERATIONALIZATION OF THE RESPONSIBILITY CONCEPT: A STUDY OF THE IMPACT OF PLURALISM OF THE BOARD OF DIRECTORS ON CSR

Corporate Social Responsibility (CSR) is the result of an evolution and development in the management literature that reflect the broadened perception of corporate responsibility prevailing nowadays. CSR could be defined as the obligation of the firm towards certain groups in society other than stockholders and beyond that prescribed by law or union contracts (Jones, 1980). This simple definition does not illustrate the multidimensionality of the concept, yet, it exposes the basic idea upon which the notion was further developed.

1- The Corporate Social Performance (CSP) Model

Although the term CSP has been used in the management literature for many years, its exact definition has not been provided. First, this term comprised social responsibility itself, corporate social responsiveness, as well as many other interactions between business and society. With the help of Carroll (1979), the CSP took on a more precise meaning and started to be viewed as a three dimensional integration of corporate social responsibility, corporate social responsiveness, and social issues. The CSP model relies on a principle/process/policy approach of social issues to illustrate the corporation's efforts towards satisfying its obligation to the society (Wartick & Cochran, 1985). The CSP thus reflects an underlying interaction among the principles of social responsibility, the process of social responsiveness, and the policies developed to address social issues. The basic lines of the model drawn by Carroll (1979) were further polished by Strand (1983) who argued that the corporation's social involvement should be *systematic* in the sense that the three dimensions: responsibility, responsiveness, and responses are linked to form a system of corporate social involvement. The CSP model is therefore a good indicator of the place and meaning of social responsibility in a global corporate social involvement, CSR being one dimension of the CSP model. In 1991 however, Wood developed a study that became a milestone in Social Issue Management (SIM). The article provided an additional insight into the CSR literature by presenting its basic principles and outcomes.

In her extension of the definition of CSP, Wood (1991) also describes CSP as being comprised of three major components. The first component is the level of corporate responsibility, CSR being based on legitimacy within society, public responsibility within the organization, and the managerial discretion by each individual within the organization. The second component of CSP is corporate social responsiveness which includes environmental assessment, stakeholder management, and issue management. The third component relates to the outcomes of corporate behavior and includes factors such as social impacts, social programs, and social policies (Stanwick & Stanwick, 1998). Through this study, the three key levels of relevance for CSP scholars were determined: the institutional, the organizational, and the individual (Jones, 1996). Additionally, Wood (1991) presented social responsibility in terms of its structural principles and outcomes. She identified three structural principles: legitimacy, public responsibility, and managerial discretion that reflect the three key levels of relevance of CSR. The legitimacy operates at the institutional level and refers to the nature of the relationship between business and society. Public responsibility focuses on the outcomes of a business activity as constraining its responsibility, and finally, managerial discretion is oriented to individual managers and emphasizes their responsibility to behave as moral actors and promote socially responsible outcomes. These outcomes, are categorized by Wood (1991) as: social impacts, social programs, and social policies.

Table 2
The Corporate Social Performance Model

Levels of relevance	**Principles of corporate social responsibility**
Institutional Organizational Individual	Legitimacy Public responsibility Managerial discretion
	Processes of corporate social responsiveness Environmental assessment Stakeholder management Issues management
	Outcomes of corporate behavior Social impacts Social programs Social policies

From: Wood (1991). Corporate Social Performance Revisited. *Academy of Management Review*. 16, pp. 691-718.

The concern of this study is to analyze the notion of CSR in a broader sense than the one presented in the CSP model. A precise definition of CSR is not possible, however, in developing the theoretical framework for this research, it appeared important to understand CSR on a dual basis by studying the difference between socially responsible and less socially responsible firms. The inclusion of a firm in one group or the other constitutes in itself a way of defining CSR and will be addressed in the methodology section.

2- The theory of pluralism in corporate governance

There are many perspectives under which to study CSR and one of them is to look at the relationship that might exist between the board of directors, i.e., the responsible body for shaping corporate outcomes in terms of performance and management processes, and CSR as one of theses outcomes. The function of the board having shifted with the development of the stakeholder theory, it is legitimate to wonder on the effect that its composition and structure could have on the social responsiveness of the firm. Although board composition and structure have been widely studied (Zahra and Pearce, 1989; Hermalin and Weisbach, 1991; Ibrahim and Angelidis, 1995), it appeared original to understand this variable in a different way through the use of the theory of pluralism in corporate governance (Molz. 1988). This theory will be developed here as a theoretical support over which the relationship between boards and CSR will be addressed.

2.1 Definition of the theory

According to the literature, there are four basic models of corporate governance. These models have been described by Lynch (1979), Vance (1983), Bazerman and Schoorman (1983) and Molz (1988). Each of these models describes a variety of typologies of corporate governance that are understood to represent either descriptors of real existing boards of directors, or descriptors of theoretical archetypes (Molz, 1995). Among the conceptual descriptors for boards of directors, Vance (1983) identified constitutional boards, consultive boards, collegial boards, and communal boards. Bazerman and Schoorman (1983) identified managerial boards, class hegemony boards, reciprocity boards, and multilevel limited rationality boards. Molz (1985) suggested that boards can be viewed as instruments of control between the stakeholder and the organization, whereas Lynch (1979) identified the process of moving a board from managerial dominated toward activist and thus highlighted two more features of the wide board spectrum.

The theory of pluralism is based on two extreme forms of board structures. The first one can be characterized as managerial dominated and the second and opposed form as pluralistic. A managerial dominated board is primarily composed of inside directors (officers of the firm), whereas a pluralistic board is composed of more diverse directors, the managers of the corporation not being the dominant group. Managerial dominated boards are usually captive of management and they are believed to be the current state of corporate governance (Molz, 1995). On the other hand, many view the pluralistic board as the governance answer to improving social responsibility and stakeholder awareness (Green et al., 1982) because pluralistic boards are usually composed of a majority of outside members to the corporation and are perceived as more sensitive and responsive to societal issues.

Table 3: Characteristics of managerial dominated and pluralist board (Molz, 1995)

Managerial Dominated	Pluralist
Infrequent board meetings	Frequent board meetings
Few boards committees	Many active board committees
Many inside directors	Many outside directors
"Old boy" network	Diversity in directors
CEO is chairman	CEO is not chairman

These two extremes are theoretical models, generated from management research, they are intended to describe two archetypes of board configurations, not existing boards. Experienced board members could probably see attributes of each in any given board, and not cast a board as one type or the other (Molz, 1995). The relevance of this differentiation is however an important theoretical base for research.

The theory of pluralism in corporate governance is an illustration of the need for corporations to be responsive to stakeholders having a legitimate interest in their actions, by including representatives of the society within which it operates, and the stakeholders to whom it has obligations in their action-shaping body. The theory of pluralism is a proposed answer to the problems of responsibility of the corporation.

2.2 Pluralism and CSR

In an attempt to operationalize the theory of pluralism, Molz (1988) developed a scale to measure the degree of pluralism or domination in a board based on various theoretical attributes such as the percentage of outside directors on the board, the percentage of women and minorities, or the stock holdings of both insiders and outsiders. The study of these attributes as well as past research on the impact of outside directors on a board (Zahra et al., 1993), implies that a positive relationship should exist between pluralism and CSR. Concerning the relationship between board structure, and especially outsiders representation, studies like Zahra and Stanton (1988), Ibrahim and Angelidis (1995), or Greening and Johnson (1993) have all yielded to a positive association between the composition of a board in terms of outside members and CSR. Additionally, other studies have led to a similar positive association concerning CSR and women or minority representation on the board (Siciliano, 1996; Ibrahim and Angelidis, 1994).

A more diverse board with representatives of a broader set of stakeholders is therefore logically expected to be more responsive to the firm's stakeholders and by thus, to trigger greater social awareness and lead to enhanced social responsibility. Nowadays, a large number of directors come from different industries, have different backgrounds, and sometimes conflicting interests, therefore, a pluralistic board should be expected to shape more socially responsible outcomes making the following assumption the first hypothesis to test in this study.

Hypothesis 1: Pluralistic boards will be positively correlated with CSR. Inversely, Managerial dominated boards will be negatively correlated with CSR

3- CSR and Corporate Financial performance

The relationship between the social performance and the financial performance of business corporations has been a topic of interest and controversy for many years. Serious empirical research on the association between social and financial performance indicators include Aupperle, Carroll, and Hatfield (1985) and Ullman (1985). Proponents of the stakeholder theory argue that favorable social performance is a requirement for the legitimacy of business and that therefore, social and financial performance tend to be positively associated over the long run (Freeman, 1984). Critics of this theory counterargue that managerial attention to interests other than those of investors reduces the welfare of shareowners and that consequently, there should be a negative association between social and financial performance. Some of the most comprehensive recent empirical studies have reported conflicting results. Cochran and Wood (1984) as well as Spencer and Taylor (1987), Preston and O' Bannon (1997), and Stanwick and Stanwick (1998) found a positive association between social and financial performance. However, Aupperle et al. (1985), McGuire et al. (1988), and Freedman and Jaggi (1986) yielded mixed results (For an extensive survey of the CFP/CSP findings, see Griffin and Mahon (1997)).

It is interesting up to this point to question the previous use of CFP in management research. Either used as an antecedent or as an outcome in its relationship with social responsibility or board composition, it has not been studied as a contingent variable that could change the relationship when taking different levels. For this reason, CFP is included in this research as a moderator of the relationship between pluralism and CSR. The argument supporting this assumption stems from the idea that depending on the financial situation of the company , the pluralistic board will tend to "fine-tune" its social concerns. In a difficult financial position, the pluralistic board will tend to have more concerns over financial issues rather than social ones. Inversely, when the firm benefits from a strong financial situation, the board will be more open to social concerns. The "individualistic" behavior of the firm can be seen as the manifestation of its pure economic objective that in the end, enables it to stay in business.

The idea of the moderating effect of financial performance when studying its relationship with social performance has been addressed by Pava and Krausz (1996) in their study of the paradox of social cost. In this study, the authors presented five explanations to the paradox of social cost, this paradox being that "nearly all empirical studies have concluded that firms which are perceived as having met social responsibility criteria have either outperformed or performed as well as other firms which are not necessarily socially responsible"(p. 322). One of the explanations to this paradox can be found in the idea that only firms which perform better in terms of financial criteria can afford a conscious pursuit of CSR goals. CSR does not therefore, cause enhanced financial performance, but rather, financial performance allows for the implementation of social actions.

This view first articulated by Ullman (1985) suggests that social performance should be viewed as a result of a "strategy for dealing with stakeholders demands" (p. 552). Ullman further states that " when stakeholders control resources critical to the organization, the company is likely to respond in a way that satisfies the demands of the stakeholders". Furthermore, McGuire et al. (1988) concluded their study by noting that only firms with high performance can afford to act in a socially responsible manner. In that sense, they added that it could be "more fruitful to consider financial performance as a variable influencing social responsibility than the reverse" (p. 869).

Another proponent of this view is Roberts (1992) who argued again for the importance of financial performance to determine social actions. Economic performance directly affects the financial capability to institute social responsibility programs. Therefore, given certain levels of stakeholder power and strategic posture, the better the economic performance of a firm, the greater its social responsibility activity and disclosures (p. 599). Considering this literature and taking into account that financial performance has to be used as an independent variable in studying CSR (Ullman, 1985), the following hypothesis is to be tested in this study:

Hypothesis 2: Financial performance moderates the relationship between pluralism and CSR.

The purpose of the study is to analyze the impact of board composition in terms of pluralism or managerial domination on Corporate Social Responsibility with regards to the financial situation of the firm. Measurements used for the three main variables of interest, namely, CSR, CFP, and board pluralism will be detailed in the following section.

METHODOLOGY

The choice of a nominal dependent variable (CSR) for this study shapes the methodological process and limits the range of statistical analysis that could be used. The justification for that choice lies in the multi-dimensionality of the concept and in the lack of rigorous definitions of the notion (Wood, 1991). The choice of a nominal variable (namely, socially responsible: yes/no) appears to be a way of avoiding reliance on unsophisticated measures that have been largely discussed in the past (McGuire et al., 1988). The population of the study consists of publicly traded Canadian companies listed on the Toronto Stock Exchange (TSE), Montreal Stock Exchange, or Alberta Stock Exchanges. A purposeful theoretical sample was drawn from that population to test the hypotheses of the study.

1- Sample

A method of identifying firms as socially responsible, or as less socially responsible, was sought for the selection of the sample. The selection of the sample for this study was therefore based on two sources. The first source is a list of the top 50 Canadian corporate citizens from the 300 companies listed on the Toronto Stock Exchange (TSE) Index. First published in the May 1997 edition of *The Financial Post Magazine*, this list recognizes that some of Canada's largest and most actively traded companies are working to improve their social and environmental performance in at least one area of their operations (SIO Forum, 1997, p. 1). In order to compile this list, corporate citizenship was defined in terms of seven broad areas of social and environmental performance:

- Community commitment
- Employee relations
- Environmental practices
- Women in the workplace
- Corporate governance
- Products and practices
- International operations.

The SIO list was selected for the study in relation to its demanding criteria and its rigorous selection advisory panel consisting not only of professionals but also of academics, making it taking into account the criticism addressed to peer evaluation-based measures like reputation scales (McGuire et al., 1988).

Twenty one companies were selected from that list to form the first sub-sample of socially responsible companies. A second sub-sample was selected according to firm industry and stock listing matching criteria. The matched-paired design was used to obtain the same number of companies that were considered as less socially responsible. In order to form a pair of companies, the firms had to be from the same industry and had to be listed either on the Toronto Stock Exchange or the Montreal Stock Exchange.

The final sample was thus obtained by regrouping the two sub-samples and was composed of the 42 companies. It is important to note that banks and financial institutions were not considered in the building of the sample. This exclusion was made on the basis of the demands regarding the computation of one of the financial performance indicator used in this study, namely, Tobin's q. In this study, only simple Tobin's q was used. Because simple q was developed to study the performance of diverse non financial corporations, it is difficult to rely on the simple q to obtain a good indicator of financial performance for banks or other financial institutions (Lewellen & Badrinath, 1997). See Appendix 1 for a complete listing of the firms included in the sample.

2 Data

2.1 Measures

2.1.1 Measure of Pluralism

In this study, the notion of board composition is larger than the traditional dichotomy between inside and outside directors. Here, there is a basic assumption that one can describe boards by two broad categories. The first category of boards, called "managerial dominated", represent boards that are "captive" to management and the influence of the board is limited. The second category is "pluralistic", i.e., boards that are more active and participative in determining the objectives of the firm (Molz, 1988; 1995).

In his attempt to measure the degree of pluralism in a board, Molz constructed a scale to aggregate measurable attributes that he associated with pluralistic or managerial dominated boards. He developed nine theoretical attributes to construct a scale that has the capability of identifying managerial dominated or pluralistic boards. In his quest for an instrument that could aggregate measurable attributes into a single scale that would quantify the board in its degree of managerial domination or pluralism, Molz (1988) used a confirmatory factor analysis of 50 firms taken from the 1983 Fortune 500 industrial list. The nine attributes first developed by Molz, were drawn from theory and were considered to be equally important in the construction of the scale. These attributes are describe and explained below. The factor analysis, used as an aggregation tool, was constrained in the Molz study to one factor having a loading pattern consistent with the theoretical model. The factor scores, using a median split, were used to identify the degree of managerial domination and pluralism of each board. This was then used as an input for a discriminant analysis to classify a hold-out sample of boards as managerial dominated or pluralistic. In the standardized discriminant function, seven of the nine original attributes were included, with two dropped as non significant. This was used to generate a discriminant score that indicated the position of any board based on the scale. Positive discriminant scores would define pluralistic boards and negative scores as managerial dominated boards (See Table 4 p.34 for the final discriminant function used in this study).

Molz's scale was found to be highly reliable and have good face validity (See Appendix 2 for face validity of the discriminant model for his sample and Appendix 3 for the face validity of the Molz scale used in this study. The boards shown in the table were selected for the proximity of their discriminant scores to the centroids of the two groups). The centroids for the two groups in Molz's study were at 1.88794 for pluralistic boards and −1.74271 for managerial dominated boards. In this study, the centroids were at 0.88 for pluralistic boards and −0.88 for managerial dominated boards. When tested, this separation was significant at the 0.0001 level, with a Chi Square of 66.206 and a Wilk's Lambda of 0.2258.

The use of this scale to measure the degree of pluralism in a board facilitates the study of the relationship between board composition and CSR. Molz was the only researcher to use this scale with which he tested hypotheses investigating relationships between the degree of managerial domination/ pluralism with financial performance (1988) and social performance (1995).

A discussion of the theoretical attributes developed by Molz and their accuracy in measuring the degree of pluralism in a board is relevant in this research. Of the nine initial attributes taken into consideration by Molz, only seven were used in this study to classify the boards. These attributes are the following:

1- Joint Chairman/ CEO. Firms having one individual serving as both chairman and Chief Executive Officer are considered more managerial dominated (Brown, 1976; Spencer, 1983; Stone, 1975). This information was collected for this study through Corporate Annual Reports. Score 0 represents one person holding both positions and score 1 represents two persons holding the two positions.

2- Outside-Dominated Social Responsibility Committee. Pluralistic boards are associated with independent social responsibility committees, with higher percentage of outside members indicating their independence (Brown, 1976; Vance, 1983). This information was collected through Corporate Annual Reports and was scored 0-100, which represents the percentage of outside members serving on the social responsibility committee.

3- Inside Versus Outside Directors. Boards dominated by members of management are associated with managerial dominated boards, while boards with large numbers of outside directors are more pluralistic (Bazerman and Schoorman, 1983; Lynch, 1979; Schoorman et al., 1981). This information was also collected through

Corporate Annual Reports and was scored on a scale of 0-100, which represents the percentage of outside members serving on the board.

4- Frequency of Board Meetings. Boards that meet frequently are associated with greater pluralism, in that they are more active and more likely to be involved in the decision making process, unlike more managerial dominated boards (Brown, 1976; Stone, 1975). This information was collected through direct phone calls to the companies when it was not available from Corporate Annual Reports. It was scored 0-100, in proportion to the number of meetings held annually, relative to the other corporate boards in the sample.

5- Representation of Women. As boards become more pluralistic, they include more stakeholder representatives among the membership (Daly, 1983; Wayne, 1983). This information was available from biographical data in the Annual Report and was scored 0-100, proportional to the percentage of women serving on the board.

6- Tenure of the Chairman/CEO. Boards that are dominated by one powerful individual for a long period of time are associated with managerial control (Chandler, 1977; Herman, 1981). This variable was measured using the single person serving as chairman/CEO and was collected through phone calls to the companies when it did not figure on the Annual Reports. It was scored 100-0, proportional to the length of time the chairman/CEO has served, relative to the other boards in the sample. In the cases where the chairman was not CEO, the variable was measured using the chairman of the board. This variable was chosen since the tenure of the chairmen, who in 88 % of the total cases spent their careers in the management of the company, was a good indicator of power in the board.

7- Stockholding of Inside Directors. As the amount of stock held by inside directors increases, so does their ownership power (Berle and Means, 1932; Chandler, 1967; Herman, 1981). Large amounts of stock held by inside directors would be an indication of managerial control. Due to strict regulations pertaining to the disclosure of personal information in the Canadian context, this information could not be collected. Companies refused to disclose this type of data concerning directors stockholding. Therefore, this factor could not be included in the scale. The factor loading of this attribute was thus considered to be 0 in the Standardized Discriminant Function used as the Final Scale.

Six attributes were therefore used in the classification of the boards as pluralistic or managerial dominated using the following model drawn from the Standardized Discriminant Function developed by Molz (1988; 1995).

Table 4: The Scale: Molz's Standardized Discriminant Function

Attribute	Standardized Discriminant Function
OUT	0.85064
WOMEN	0.66485
INOWN	0
TNURE	0.56251
OUTSR	0.27364
NMTGS	0.19740
CHCEO	-0.24350

Key: OUT: % of outside members; WOMEN: % of women; INOWN: stockholding of inside directors; TNURE: Tenure of Chairman/CEO; OUTSR: % of outsiders on social responsibility committee; NMTGS: Frequency of meetings; CHCEO: Chairman is also CEO.

2.1.2 Measure of Financial Performance

In the study of the relationship between CSR and financial performance, scholars have found conflicting results that may derive, in part, from the differences in research methodologies and measures of performance (For a complete review, see McGuire et al., 1988; Ullmann, 1985; Stanwick and Stanwick, 1998).

There are mainly three categories of measures for corporate financial performance. The first category is composed of stock market based performance measures, the second, by accounting-based performance measures, and finally the third, composed of risk performance measures which have been introduced in a few studies (Spicer, 1978; McGuire et al, 1988). Generally, accounting-based measures like ROE, ROA, ROS are less sophisticated indicators of financial performance. Used alone, they could yield to unsatisfactory results in terms of the degree of confidence in the studied relationship. Combined to other measures like Beta (a measure of systematic risk), the accuracy of these indicators could be significantly improved (McGuire et al., 1988).

The first indicator used in this study is Tobin's q. Tobin's q is the ratio of a firm's market value to the year-end book value of the firm's total assets. It is widely used in the finance literature (Badrinath and Onesh, 1990; Chappell and Cheng, 1984; Chung and Pruitt, 1994; Doukas, 1995). Its use is still limited in management research. The most appealing aspect of Tobin's q is that it accounts for both market and accounting data. It responds to some of the criticism directed at both accounting and stock returns as performance measures. In their study, Landsman and Shapiro (1995) conclude that Tobin's q is a better measure of the firm's economic performance than accounting measures. Tobin's q has been used as a measure of profitability by a number of other studies (McConnell and Servaes, 1990; Lindenberg and Ross, 1981; Hermalin and Weisbach, 1991). There are different ways to calculate the q ratio but only the simple q developed by Lewellen and Badrinath (1997) is considered here. In their study, they concluded that their proposed computation of q should lead to improved estimates of q ratios in practice. To compute the simple q, the following equation was used:

$$Q = \frac{\text{Mkt Value + Preferred stock + debt}}{\text{Total assets}}$$

Where

Mkt value = year-end market value of the firm's common stock

Preferred stock = year-end book value of the firm's preferred stock

Debt = year-end book value of the firm's short term and long term debt

Total assets = year-end book value of the firm's total assets.

Data was collected through the COMPUSTAT database or from Corporate Annual Reports. To interpret the value of q, we relied on Hermalin and Weisbach's (1991) analysis: if q is greater than 1, the market views the firm's internal organization as exceptionally good or profitable. In other cases, the higher q, the better the performance.

Aside from Tobin's q, another common accounting-based measure of financial performance was used for this study. This measure, Return on Equity (ROE) was used as a complement to the analysis and as a another source of measurement of performance to which Tobin's q was compared. The use of both these indicators responds to the concern regarding the necessity of combining different type of indicators (McGuire et al., 1988), and enables us to study and analyze an eventual difference between these two measures of financial performance.

ROE has been broadly used in past study of the relationship between either ownership and performance (Zahra, Oviatt, & Minyard, 1993; Kesner, 1987), pluralism and performance (Molz, 1988), or CSR and performance (Johnson & Greening, 1994). This measure is therefore an established indicator of financial performance that has been extensively used in strategic management research.

2.2 Control variables

Control variables such as industry and firm size are introduced in this study to avoid problems pertaining to the potential industry effect or size effect on the studied relationship between pluralism and CSR. The industry is an important factor as far as social responsibility is concerned. Depending on the industries, firms social outcomes can be different. Strong-polluting industries are more exposed to environmental concerns and have a different perception of social responsibility (Bragdon & Marlin, 1972) whereas the service industry, for instance, could face different expectations. To avoid the industry effect, firms in the sample were classified as manufacturing or services and industry was included as a first control variable in the logistic regression analyses.

Firm size is also a concern in this case for various reasons. Size is an important factor in the assessment of firm performance. Large firms could have significantly higher returns than small firms. Size is also relevant in the study of pluralism; large firms could attract and keep diverse outside board members and might be able to actively manage their board composition by being more exposed to the public eye than small firms. Additionally, size could be a concern for CSR since large firms that are under the spotlight could be more likely to undertake social measures and could demonstrate higher

CSR. Consequently, firm size as measured by the firm's total assets was introduced as a second control variable.

2.3 Data Analysis

The data analysis for this study is to be done in three steps. These are first, to classify the boards into two categories: managerial dominated or pluralistic, second, to test the first hypothesis of the study and third, to evaluate the moderating effect of financial performance. The analysis three stages are the following:

2.2.1 Step 1

In classifying the boards as either managerial dominated or pluralistic using Molz's scale, the first step was to standardize the collected data in relation with the scores developed in the scale. To do so, the scores of each measured attribute was coded. Table 3 shows each variable's statistical information from the 42 boards used in the study. All information was taken from 1996 Corporate Annual Reports or collected through phone calls to the companies.

Table 5: Measured attributes, Ranges of raw data, and Coded Range of Managerial Dominated and Pluralistic Boards

Attribute	Range	Coded Range
CHCEO	Yes/No	0- 1
OUTSR	0- 100%	0- 100
OUT	41- 92%	0- 100
NMTGS	3- 18 yr.	0- 100
WOMEN	0- 25%	0- 100
TNURE	1- 43 yr.	100- 0

Key: OUT: % of outside members; WOMEN: % of women; INOWN: stockholding of inside directors; TNURE: Tenure of Chairman/CEO; OUTSR: % of outsiders on social responsibility committee; NMTGS: Frequency of meetings; CHCEO: Chairman is also CEO.

The final score for each board was then computed and through the use of a median split, the boards with positive scores were identified as pluralistic, while those having negative scores were identified as managerial dominated. Of the 42 boards, 20 were pluralistic, 22 managerial dominated. The following steps were taken to test the two main hypotheses of the study.

2.2.2 Step 2

In order to test the first hypothesis of the study pertaining to the relationship between pluralism and managerial domination with CSR, a crosstabulation of board category (pluralistic versus managerial dominated) by CSR was performed, correlation coefficients and chi-square tests were finally computed.

Board category being a categorical variable was coded 0 for managerial dominated boards and 1 for pluralistic boards. CSR was also coded as 1 for firms included in the socially responsible sub-sample and 0 for the ones that belonged to the match-paired sub-sample. Industry and size (measured by the year-end book value of the firm's total assets) control variables were introduced. Results of this analysis will be presented in the next section.

2.2.3 Step 3

The last step of the analysis was to test the moderating effect of financial performance on the relationship between pluralism and CSR. In order to test if a variable is a moderator, different methods can be used. In this study, and considering the nature of the dependent variable (CSR), logistic regression analysis was chosen. The choice of logistic regression is contingent on the dichotomous nature of the study's dependent variable (either socially responsible or less socially responsible). Discriminant analysis can also be used to estimate the relationship among one or more predictors and a categorical dependent variable, however, discriminant analysis requires assumptions that are more restrictive than those for logistic regression (Wright, 1995).

Like linear regression, the logistic model relates one or more predictor variables to a dependent variable, and the logistic model yields regression coefficients, predicted values, and residuals. Moreover, the predictors in a logistic model can be continuous or non continuous. In our case, the first variable, board category was a categorical variable that could only take two values 1 or 0. The other variable of interest, financial performance, is a continuous variable. Several conditions must be met for a logistic regression model to be valid. First, the dependent variable must be a dichotomous variable. Second, the cases must be statistically independent (a single case can be represented in the data set only once). The third condition requires that the model contain all relevant predictors and no irrelevant predictors, (a specificity assumption is nevertheless rarely met in practice (Wright, 1995)) Finally, to test hypotheses, larger samples are required than for linear regression analysis because standard errors for maximum likelihood coefficients are large-sample estimates. Ideally, a minimum of 50 cases per predictor variable is required (Aldrich & Nelson, 1984). In this research, the sample size could constitute a potential problem in terms of the accuracy of hypotheses testing.

To test the moderating effect of financial performance in this research, the logistic regression analysis was performed using the SPSS package. Model coefficients were computed as well as test statistics such as the Wald statistic. Finally, a classification table was developed.

To test the moderating effect of financial performance on the relationship between pluralism and CSR, three equations are studied. The first equation involves the variable Category (categorical variable) as well as its interaction with Tobin's q. The second equation involves the category variable and its interaction with ROE. In the third equation, the variable category was replaced by the raw scores of the board obtained using the Molz scale. This transformation of a categorical variable into a continuous one lead to some improvements in the analysis. In all the three equations, both industry and size were introduced as control variables.

An alternative method of testing for the moderating effect of financial performance is also suggested in this study. Based on a mathematical approach, the negative effect of the supposed moderating variable is to be demonstrated. To do that, the second degree derivative of the function of CSR found in the last equation has to be negative. A negative sign of the second degree derivative is interpreted as a negative "effect" of the variable on which the function is derived, in this case, ROE. Therefore, if the second derivative of the function is negative, ROE has a negative effect on the relationship and hence, can be considered as a moderator of this relationship. The database was used as a confirmatory source for this demonstration. In order to be able to use this method, CSR as a categorical variable had to be replaced by the probability of CSR that is continuous. This probability is the following in the logistic regression analysis:

$$Pn(CSRi)^{*} = e\ (CSR)\ /\ 1 + e\ (CSR)$$

$^{*}i = 0,1$

In this case and according to the final equation,

$$CSRi = \beta o + \beta 1CLASS + \beta 2CLASS*ROE + \textit{error term}$$

Probabilities for CSR as well as first and second degree derivatives were computed. The results appear in Appendix 4. This alternative approach was used as a confirmatory tool in the analysis and was proposed as an alternative to testing using logistic regression analysis.

RESULTS AND DISCUSSION

The results of this study are interesting in different respects. First, they demonstrate the complex nature of research on corporate social responsibility, and second, they illustrate the constant challenge that faces the researcher when he or she tries to prove different types of relationships. In the following table, descriptive statistics on the variables used in testing the first hypothesis of the study are presented. The first variable, category, represents the two categories of boards in the sample: pluralistic or managerial dominated boards. The variable CSR refers to Corporate Social responsibility, the dependent variable in the study. Industry and Assets are the control variables in the study.

Table 6
Descriptive Statistics

	Mean	Std. Dev	N
Category	.5000	.5061	42
CSR	.5	.51	42
Industry	.1951	.4012	41
Assets	3.2855	.5095	41

CSR: Corporate Social Responsibility
Assets: log of the firm's total assets.

1 Testing Hypothesis 1

Hypothesis 1 stating that there is a positive association between pluralism and CSR (inversely, a negative association between managerial domination and CSR) was supported at the .05 level in this study. The hypothesis was tested using a Chi-square test of differences to determine if there was a significant relationship between board category and the defined measure of CSR. A 2 X 2 crosstabulation was used in this case that lead to Chi-square tests such as the Pearson Chi-square, the Likelihood ratio, and the Linear-by-linear association tests which yielded significant results at $p < .05$ level. The crosstabulation is shown in Table 7.

Table 7
Chi-square test of differences, managerial dominated versus pluralistic boards by socially responsible and less socially responsible firms.

Crosstabulation	N	%
Responsible/ Pluralistic	13	31.7
Responsible/ Managerial	7	17.1
Less responsible/ Pluralistic	7	17.1
Less responsible/ Managerial	14	34.1
Pearson Chi-square = 4.667	Sig. = .031*	
Likelihood Ratio = 4.757	Sig. = .029*	
Linear-by-linear Association = 4.556	Sig. = .033*	

*p<.05

The results confirm the theoretical assumptions linking pluralistic boards to socially responsible firms. It is clear that socially responsible behavior is related to a greater diversity in the board and is consistent with the formulated hypothesis according to which the more pluralistic the board, the more socially responsible the company. To further confirm these results, correlation coefficients were computed and tested between board categories and CSR. The coefficients were significant at the $p < .05$ level and consistent with the hypothesis.

Table 8: Correlations

		Category	CSR
Pearson Correlation	Category	1.000	.333
	CSR	.333	1.000
Sig.	Category		.031*
	CSR	.031*	

* p< .05

The positive association between CSR and pluralism is an important contribution to the research on the effect of board attributions on the social responsibility of the firm. Past research first tried to link some board attributes such as outside directors representation (Zahra et al., 1993; Greening and Johnson, 1993; Ibrahim and Angelidis, 1995), and women or minority representation (Ibrahim and Angelidis, 1994; Siciliano, 1996). The notion of pluralism as specified here, i.e., a set of attributes that further expand the concept of board composition, has been linked to CSR previously, but has never been proved to have a positive significant impact on it (Molz, 1995).

The findings of this study are important in that they confirm the positive relationship that exists between the diversity and pluralism of a board and the social responsibility of the firm. The multidimensionality of the social responsibility concept suggests that it is a set of attributes, as opposed to only one or two characteristics of a board, that defines the social behavior of a firm. The presence of outsiders or women is a key element in the manifestation of a greater social responsibility, however, the combination of these elements with the tenure of the chairman, the frequency of meetings, or the existence of a social responsibility committee, adds more power to the determinant role that a diversified board can have on the responsibility of a firm. That level of diversification of the board, called pluralism in this study, is indeed proved to have a significant positive impact on the social responsibility of the firms in our sample.

The confirmatory nature of the results obtained in Hypothesis 1 are important in corporate governance research to further insist on the crucial role that the board has as an outcome strategy shaping body. The findings indicate that the composition of the board in pluralistic terms such as the introduction of outside directors, a larger number of women, a higher frequency of meetings, and the existence of a social responsibility committee, are key elements in determining the social "behavior" of a firm. The display of these characteristics, although not the only factor in shaping a social determination for the firm, leads to a higher chance of succeeding in terms of social responsibility outcomes.

2 Testing hypothesis 2

The purpose of hypothesis 2 in this study is to determine the moderating effect that financial performance has on the relationship between pluralism and social responsibility. The moderating effect of financial performance on this relationship suggests that the social responsibility outcome in the relationship will differ with different levels of performance. In order to test this hypothesis, a logistic regression was used due to the categorical nature of the dependent variable CSR. First, descriptive statistics for the variables used in the logistic regression analysis will be presented in Table 9. Then, the results of the logistic regression performed using the SPSS package are presented in Table 10.

Table 9: Descriptive statistics for variables used in regression equations

Variables	Mean	Std. Dev	Variance	N
Category	0.5000	.5061	.256	42
CSR	.50	.51	.25	42
Cat*Tob	.4550	.5627	.317	42
Cat*ROE	4.9005	6.0496	36.598	42
Class	146.8033	33.7091	1136.306	42
Class*ROE	890.1598	3724.4873	$1.4^{E}+07$	42
Industry	.1951	.4012	.1609	41
Assets	3.2855	.5095	.2595	41

Cat*Tob: Interaction between category and Tobin's q
Cat*ROE: Interaction between category and ROE
Class*ROE: Interaction between class and ROE
Assets: Log of total assets.

In the first regression, the board composition variable was categorized into two groups using a median split of the scores obtained in the Molz scale. These two groups were pluralistic boards and managerial dominated boards. This variable was entered in the logistic regression as a categorical variable that has two values: 0 and 1(0 for managerial dominated boards and 1 for pluralistic boards). Financial performance was measured using Tobin's q in a first equation, and ROE in a second one. The results of the two logistic regression equations are presented in Table 10 and Table 11.

Table 10: Results for Equation (1)

Variable	ß	S.E.	Wald	Sig.
Category	-2.302	1.1848	3.7754	.0520**
Cat*Tobin	-.7584	1.0356	.5363	.4640
Industry	.3001	.8753	.1176	.7317
Logassets	1.5260	.7436	.0043	.9478
Constant	1.5260	2.6931	.3211	.5710

**p<.1

Cat*Tobin: Interaction term between the category and Tobin's q variables.

The classification table for the model was the following:

		Predicted		
		0	**1**	
Observed	**0**	15	6	71.43%
	1	6	14	70.00%
			Overall	**70.73%**

Diagonal cells: →

To understand this classification table, the numbers in the diagonal cells must be examined. According to theory, the number of cases in the diagonal cells must be large compared to the number of cases in the off-diagonal cells to indicate a good match between the observed outcomes and those predicted by the model (Wright, 1995). In this case, the difference between the two diagonals is limited. This is an indication of a relatively poor fit between the observed and predicted model that explains the lack of significant results for the moderating effect. Indeed, the overall explanation of the model is 70.73% . Looking at the coefficients of the regression analysis for Equation 1 and its classification table, the results are not significant. The coefficient of the interaction term between board category and Tobin's q is not significant in the equation and the moderating hypothesis is not supported.

In a second logistic regression equation, ROE was introduced as the variable measuring financial performance. With the introduction of ROE, a comparison between the two equations was made and the same conclusion was reached: the hypothesis implying the existence of a moderating effect of the financial performance as measured by ROE on the relationship between pluralism and CSR was not supported. Table 11 presents the results for Equation 2.

Table 11: Results for Equation (2)

Variable	ß	S.E.	Wald	Sig.
Category	-2.5736	1.2944	3.953	.0468*
Cat*ROE	-.0946	.1027	.8494	.3567
Industry	.2080	.9004	.0534	.8173
Logassets	-.1056	.7369	.8494	.3567
Constant	1.9972	2.8169	.5027	.4783

*p<.05
Cat*ROE: Interaction between the category and ROE variables

The classification table for model 2 was the following:

		Predicted		
		0	1	
Observed	0	15	6	71.43%
	1	6	14	70.00%
			Overall	**70.73%**

Although the classification tables are the same for the two equations, the coefficients of the variables in the two regression equations are different. On the basis of these equations, the hypothesis tested was not supported. In order to improve the significance of the results and to further investigate the supposed moderating relationship, a third equation was introduced using the variable CLASS as the board composition variable and ROE as the measure of financial performance. The variable CLASS is introduced as a continuous variable representing the scores of the different boards of the sample on the Molz scale. The results for Equation 3 are the following.

Table 12: results for Equation 3

Variable	ß	S.E.	Wald	Sig.
Class	.0353	.0140	6.3351	.0118*
Class*ROE	-.0004	.0003	2.1384	.1437
Industry	.0491	.9944	.0024	.9606
Logassets	.0733	.8481	.0075	.9312
Constant	-4.5776	3.0064	2.7302	.0985 **

*p<.05,** p<.1

Class*ROE: Interaction between the class and ROE variables

Significant improvements were noticed with the introduction of Equation 3. The variable CLASS is significant at the .05 level and the interaction variable is close to be significant at the .1 level. The classification table for this model as well as the overall percentage of explanation of the model are also higher.

		Predicted 0	1	
Observed	0	16	5	76.19%
	1	5	15	75.00%
			Overall	**75.61%**

The results of this equation are not significant at the p<.1 level. The overall prediction "power" of the model has improved from 70.73% to 75.61% with a better classification of two additional boards in the sample as shown in the diagonal cells (16 instead of 15 and 15 instead of 14). However, the coefficients of the logistic regression need to be examined.

In the logistic regression analysis, the raw coefficient of the predictor variable (ß) represents the change in the natural logarithm of the odds ratio. The concept of odds is different than probability. Odds tell how much more likely it is that an observation is a member of the target group rather than a member of the other group. The odds ratio estimates the change in the odds of membership in the target group for a one-unit increase in the predictor. When in linear regression the model coefficients estimate the change in the dependent variable for any one-unit increase in the independent variable, in logistic regression, the predictor ß represents the change in the natural logarithm of the odds ratio. Even if this interpretation is less straightforward, a positive predictor coefficient means the predicted odds increase as the predicted value increases; a negative coefficient indicates that the predicted odds decrease as the predictor increases; and a coefficient of zero means that the predicted odds are the same for any value of the predictor (Wright, 1995). Table 13 presents the coefficients and the odds ratio for Equation 3.

Table 13: Odds ratios

Variable	Coefficient	Odds ratio
Class	.0353	1.0359
Class*ROE	-.0004	1.0004
Constant	-4.9675	.00069

Looking at Table 13, we see that the odds of being part of the target group, in this case, the odds of being socially responsible increase with a one-unit increase of the class variable, and decreases with a one-unit increase of the interaction term. This interpretation can yield to interesting comments concerning the impact of the interaction term on the relationship between board composition in terms of pluralism and managerial domination and CSR. Although not statistically significant in the logistic regression analysis, the odds ratio of the interaction term can be interpreted in a way that supports the hypothesized moderating relationship. In effect, according to the interpretation of the odds ratio linked to the interaction term, the odds of being socially responsible decrease as the interaction variable increases. It is *less likely* that a firm will be part of the target group when the interaction term increases. Therefore, it is less likely that a firm will be socially responsible with a change in the level of the interaction term. If the class is hold constant, then with different levels of REO, the membership of one firm in a group or another changes. The moderating effect of financial performance is thus implied by the equation results, yet, it could not be statistically demonstrated. The sample size as well as other limitations of this study will be developed below.

3 Results of alternative method

In an attempt to prove the moderating effect of the financial performance variable ROE on the relationship between board composition and CSR, an alternative approach was taken to mathematically prove the supposed moderating effect. In order to use this mathematical approach, equation 3 was used as a basis for the computation of first and second degree derivatives to the equation, in order to demonstrate that the sign of the second degree derivative is negative for all the firms in our sample, and therefore, the interaction variable has a negative effect, thus a moderating effect, on the relationship between CSR and board composition.

The following expression was used:

Expression (1) = Pn (CSRi)* = -4.5776 + 0.0351CLASS – 4.5776CLASS*ROE + *error term*

*i = 0,1

In order to compute first and second degree partial derivatives, equation 3 had to be transformed using the probability Pn(i). This probability is the probability that a firm n is classified in i=0 (socially responsible group) or i=1 (less socially responsible group). In this case, in Equation 3,

$$CSR = -4.5776 + 0.351CLASS - 4.5776CLASS*ROE + \textit{error term}$$

Expression (1) is the probability of being classified in either the socially responsible or less socially responsible groups. In logistic regression analysis, this probability equals:

e[Pn(CSR)]/ (1+ e[Pn(CSR)])
e: natural logarithm.

The use of probabilities is important in this case in order to meet the criteria for a continuous CSR variable. Since in equation 3 CSR was a categorical variable, probabilities had to be introduced to transform it into a continuous one and compute the partial derivatives needed.

The computation of the first and second degree partial derivatives are presented in Appendix 4. The results of this alternative computational approach tended to support to a certain extent the proposed hypothesis. Using second degree partial derivatives to prove the negative (moderating) effect of the financial performance variable on the relationship, results were found to be consistent with the expected negative tendency. On the 42 firms of the sample, 31 firms were found to have a negative second degree partial derivative of the Pn(i) expression with regards to class and ROE. The results suggest that 73% of the firms have a negative second degree derivatives, which means that in 73% of the cases, the interaction term has a negative effect on the relationship, thus supporting the moderating effect hypothesized.

4 Discussion and limitations of the study

Despite the use of three logistic regression analyses and an alternative method to test hypothesis 2, the hypothesized relationship was not supported in this study. Although the moderating effect of financial performance on the relationship between CSR and pluralism is not supported in this sample, it should be demonstrated in a larger sample. The sample size is indeed critical, especially with the use of the logistic regression analysis.

As in linear regression analysis, several conditions must be met for a logistic model to be valid. The lack of support for hypothesis 2 in this study can be due to the demands of these conditions. According to the theory, to test hypotheses in logistic regression analysis, larger samples are required than for linear regression analysis. A minimum of 50 cases is required (Wright, 1995). Due to its theoretical and convenient nature, the sample size of this study was limited to 42 firms. This size could be a major cause for the lack of support of hypothesis 2 especially when the significance of the results are very close to the 10% level as it is the case in this research. In addition to the sample size, the specificity assumption stating that the model should contain all relevant predictors and no irrelevant predictors was a concern. Two predictors: CLASS and CLASS*ROE were introduced in the model. Although it is stated that in practice this specificity assumption is rarely met (Wright, 1995), in this case, other variables from the broad literature on social responsibility could have been introduced to strengthen the model. Variables such as environment dynamism were introduced in the study of the ownership and performance relationship (Li and Simerly, 1998). This variable taking into account the uncertainty perspective, the rate of change, the degree of instability and other factors influencing the environment of a firm, can be interestingly linked to variables like pluralism or CSR in a model like the one developed in this study.

An additional limitation to this study could be due to the structure of the sample. Indeed, in the first sub-sample, drawn from a population of socially responsible firms from the list of the Top 50 Canadian corporate citizens, financial performance could have a minor impact on their social outcome since they are expected to have less sensitivity to financial fluctuations due to their established social status. The second sub-sample could be more sensitive to variations in financial performance than the first sub-sample.

The other limitation of this study lies in the measurement of CSR. Research tended to point out the multidimensionality of the notion and its complex measurement (McGuire, 1988; Molz, 1995). Based on a survey of the literature, three methods of measuring CSR have been developed so far. The first, uses expert evaluations of corporate policies. The validity of this methodology depends on the skills and qualifications of those making the assessments (Abott and Monsen, 1979). Rankings or scales based on reputation have also been used but are subject to high criticism (Moskowitz, 1972. 1975). Other researchers have used content analysis of corporate annual reports and other documents (Anderson and Frankel, 1980). Such measures however, confuse social orientations with corporate actions. Moreover, these documents have more public relations than informational values. A third measure of CSR uses performance in controlling pollution as a proxy measure. Pollution however, reflects only one aspect of social responsibility and is only valid for certain industries. It is important to point out that a diversity element is taken into consideration in the CSR measure. In this study, there could have been a confounding element in that diversity of the board in terms of women and outsiders is taken into account in both pluralism and CSR measures. The fact that diversity appears in both measures is critical, in this study it could have constituted a confounding obstacle to significant results.

As a result of the criticism expressed at the use of these methods, the measure of CSR used in this study was not only alternative and original, but had also been used in past research on CSR and pluralism (Molz, 1995). A final concern about CSR and financial performance in this study is related to the potential time lag between variations of financial performance and their effect on social responsibility outcomes. Studies have shown that firms prior financial performance is more closely related to CSR than subsequent performance (McGuire et al., 1988). The use of financial performance measures for the same year in this study could perhaps constitute a reason for the lack of support for hypothesis 2. Additionally, the measure of financial performance used in this study, namely, Tobin's q, tends to measure long term growth potential. The expected moderating effect of financial performance when using Tobin's q could not be due to an increased "slack" from firm performance as predicted, but could perhaps be due to the market premium attributable to the firm being a good citizen (long term market development, less legal liability, reputational effects). For this reason, ROE was expected to be more "objective" in its illustration of financial performance. The inconclusive results for hypothesis 2 provided however results that were not consistent with the expected effect of ROE on the relationship between pluralism and CSR.

A last limitation of this study lies in the Molz scale used to classify the boards of the sample. A discussion of the attributes and their accuracy in measuring the degree of pluralism in a board is relevant in our case. Molz's choice of attributes for the scale could be broadened to include other aspects of a board that could have been omitted. However, when it comes to studying boards of directors the attributes that can be selected for a study are to a certain extent limited. The major problem with a scale of this sort is clearly what could be called the "gray" boards. Indeed, when a strong distinction is made and boards are separated into two broad categories, it is somewhat difficult to catch the nuances that could differentiate boards that are part of the same category. Some boards could be almost the same on most of the attributes but strongly differ on one or two of them making them range in another category. The "in-between" boards are thus problematic mainly because of a lack of sophistication of the scale. Moreover, more sophisticated tools could be helpful to provide more rigor to the scale development. In any case, this scale is an original manner of studying board composition and is useful for this particular study.

CONCLUSION

Corporations, just like people, have responsibilities. Depending on the ideological lenses that researchers look through, the notion of responsibility presents various degrees and nuances. The idea of responsibility of the corporation has been underlying business research since the pioneering work of Berle and Means (1932) on the separation between ownership and control. By building the foundations of research on corporate governance, these two scholars put an emphasis on the responsibilities pertaining to both managers and shareholders and to the extent to which these responsibilities were conflicting. In the traditional model of corporate governance, the only responsibility of management is towards the shareholders (represented by the board of directors) in whose hands rests the ultimate control of the corporation (Alkhafaji, 1989).

With the evolution of the firm's size and importance as well as the increasing sophistication of management research, the notion of responsibility has expanded and has been translated in a new paradigm called the stakeholder theory of the firm (Freeman, 1984). This broadened notion of responsibility of the firm is the cornerstone of a relatively new concept in management research called Corporate Social Responsibility (CSR).

This study is an attempt to understand the relationship between the corporation's governance structure and its impact on social responsibility. It is part of the research continuum that directs attention to the corporation's legitimacy and responsibility in a society in which it has taken a fundamental place. The focal point of the study is the impact of the board's composition and structure as well as the financial performance eof the firm on its social responsibility. The support for the positive association between pluralistic board and CSR was an important contribution of this study to the corporate governance research. It succeeded in demonstrating a relationship that was not proven in past research (Molz, 1995). The positive relationship between pluralism and CSR confirms the assumption that a more diversified board in terms of outside directors and women, with a higher frequency of meetings, a committee in charge of social responsibility matters, and shorter tenures of chairmen, has a positive impact on the social outcome of the firm.

The hypothesis implying a moderating effect of the financial performance of the firm on the relationship between CSR and pluralism was not supported in the study. The use of an alternative method to prove the moderating effect of financial performance did not yield to the expected confirmatory results.

In this study, social responsibility was not the only variable of interest, the board's characteristics that can influence social responsibility were also critical elements. As the responsible body for shaping corporate strategic outcomes, it is interesting to look at the influence that its composition and structure have on a societal level. It is clear that the responsibility concept needs further research and that with the addition of small pieces of work, a broader picture will finally be drawn.

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APPENDIX 1

COMPANIES USED IN THE STUDY

Air Canada
Alberta Energy Company Limited.
Alcan Aluminum Limited
Ault Foods Limited
Barrick Gold Corporation
Barrington Petroleum Limited
BC Gas Inc.
BC Telecom
BCE Mobile Communications Inc.
Bruncor Inc.
Call Net Enterprises Inc.
Cambior Inc.
Canadian Airlines Corporation
Canadian Tire Corporation Limited
CFCF Inc.
Chieftan Energy
Corel Corporation
Geac Computer Corporation Limited
Harris Steel Group Inc.
Hudson's Bay Company
IPL Energy Inc.
The Jean Coutu Group (PJC) Inc.
Le Groupe Videotron Limitée
Maple Leaf Foods Inc.
Newtel Enterprises Limited
Noranda Inc.
Norcen Energy Resources Limited
Northern Telecom Limited
Numac Energy Inc.
PanCanadian Petroleum Limited
Petro Canada
Quebectel Group Inc
Quebecor Inc.
Renaissance Energy Limited
Sears Canada Inc.
Shell Canada Limited
Talisman Energy Inc.
Teleglobe Inc.

Torstar Corporation
Transalta Corporation
Viceroy Resource Corporation
Wascana Energy Inc.

APPENDIX 2

Face Validity of Discriminant Model (Molz, 1988)

Attributes	Managerial boards	Pluralistic boards
	Median	Median
Discriminant score	-1.73	+1.67
Chairman is CEO	Yes	No
% out nom. com	No committee	69%
% out soc. res. com	No committee	80%
% outsiders	27%	61%
Number of meetings	10	7
Salary ratio	1.19	1.02
% total stock ins	9%	2%
% total stock out	Less than 1%	Less than 1%
% minorities on board	7%	6%
Tenure	13 years	1 year

Key: % out nom com = % of outsiders on nominating committee; % out soc res com = % of outsiders on social responsibility committee; % total stock ins = % of total stock held by inside directors; % total stock out = % of total stock held by outside directors.

From : Molz (1988) Managerial Domination of Boards of Directors and Financial Performance. *Journal of Business Research,* Vol. 16, pp. 235-249.

APPENDIX 3

Face Validity of the Molz Scale in the study

Attribute	Managerial board	Pluralistic board
	Median	Median
Discriminant score	-0.8494	+0.8028
Chairman is CEO	Yes	No
% outs soc. res. com	No committee	40.5%
% outsiders	54%	84.2%
Number of meetings	6	10
% women	23.2%	45%
Tenure	43 years	1 year

Key: % outs soc. res. com = % of outsiders on social responsibility committee.

APPENDIX 4

Computation and results for alternative approach

$$Pn(CSRi) = -4.5776 + 0.0351CLASS - 0.0005CLASS*ROE$$

1 First degree partial derivative :

$$\frac{dPn(i)}{dCLASS} = Pn(i)\,[1-Pn(i)]\,(0.0351-0.0005ROE)$$

2 Second degree partial derivative :

$$\frac{d^2Pn(i)}{dCLASSdROE} = \frac{dPn(i)}{dROE}\,[1-2Pn(i)](0.0351-0.0005ROE) + Pn(i)\,(1-Pn(i))\,(-0.0005)$$

The following results were obtained by replacing the variables in the second degree derivatives with their values in the sample knowing that :

$$Pn(i) = e(CSR)/\ 1+ e(CSR)$$

Firm	Pn(i)	Effect
1	2.3377	-0.1219
2	0.0750	0.02396
3	1.2311	-0.0470
4	-2.4321	0.01452
5	55527.87	1529671.24
6	0.33365	0.00878
7	3.2837	-0.17819
8	2.2896	-0.13269
9	3.4322	-0.2127
10	0.1892	0.0181
11	0.5388	-0.0033
12	0.35169	0.01133
13	1.91924	-0.09924
14	0.82014	-0.0240
15	4.0281	-0.2338
16	0.37419	0.0072
17	1.6990	-0.07646
18	0.8370	-0.01943
19	1.0331	-0.0334
20	0.6253	-0.00758
21	4.76041	-0.2962
22	0.41064	0.0052
23	0.69353	-0.0126
24	0.10015	0.02434
25	0.8048	-0.018
26	0.18111	0.0210
27	0.13852	0.0173
28	0.67643	-0.0137
29	1.16739	-0.0415
30	1.09498	-0.0372
31	6.34419	-0.6425
32	0.363422	0.0092
33	2.91253	-0.1664
34	10.7577	-0.6669
35	7.9469	-0.4949
36	1.5342	-0.0611
37	0.45802	0.0025
38	1.49486	-0.0676
39	0.87776	-0.0267
40	0.73159	-0.0165
41	1.3920	-0.0590
42	0.26050	0.01878