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LETTER FROM THE EDITOR

Welcome to the *Academy of Accounting and Financial Studies Journal.* The *Journal* is the official publication of the Academy of Accounting and Financial Studies, an affiliate of the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The mission of the *AAFSJ* is to publish theoretical and empirical research which can advance the literatures of accountancy and finance.

As has been the case with the previous issues of the *AAFSJ*, the articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

The Editor works to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We continue to welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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HOW TO RECONCILE MANAGEMENT ACCOUNTING AND PERFORMANCE IN THE MUNICIPAL PUBLIC SERVICES OF AFRICAN CITIES? AN EMPIRICAL STUDY

Donatien Avelé, University of Moncton

ABSTRACT

Despite an approximate and contingent nature, management accounting plays a key role in attaining objectives in organizations. This empirical study aims to examine the tools of analytical management accounting implemented in municipal services. The research also studies the contingent factors of structural and behavioural nature susceptible of influencing municipal performance. In order to test the hypotheses developed in this paper, a questionnaire survey was conducted with 50 municipalities and 60 municipal services in Cameroonian cities. The results of this survey show that the use of management accounting is very basic and quiet summary throughout the public services that we visited. Finally, the same results of the study expose a certain number of factors that influence the performance of municipal public services.

INTRODUCTION

An organization is a system that encourages the distribution of formal and informal information with the aim of assisting managers in attaining their objectives. Accordingly, for this reason, managers implement a management accounting system as a tool to aid decision making. During the 1980's, researchers in the field of management accounting studied the characteristics of their management control systems (Gosselin, 2000). These studies were conducted on different aspects of management accounting systems such as price costing, budgets, and the degree of decentralization (Lukka and Granlund, 1996; Mévellec, 1995). Moreover, a municipality possesses a large number of services necessary for the proper functioning of the community, but is required to provide even greater varied needs (Van Ryzin and Immerwahr, 2004). One of the purposes of management accounting is to better coordinate the diverse group of activities that are part of the same organization (Lebas and Mévellec, 1999). Management accounting, as stated by Bouquin (2000), is far from being just a simple technology for a better financial or day-to-day management. It is also used as part of a set of tools for performance control and for cost reduction (Nanni and al, 1992). On the other hand, the determinants justifying the use of non-financial criteria to evaluate or guide performance are numerous with diverse theoretical explanations (Pointet and Wegmann, 2005). The interest accorded to these

criteria is justified in the current context (financial scandals, accrued market volatility), indicating the limits of accounting and financial information as a means of communicating performance (Depoers, 2002). Researchers such as Kaplan and Norton (1998), whose principal subject is non-financial indicators, explain that they complement the financial indicators that concentrate excessively on guiding short-term actions. One current theme in literature, regarding management accounting and monitoring, concerns non-financial indicators (Lorino, 2003); they are supposed to reflect company strategy and performance orientation. These are non-financial since they do not directly express the financial objectives of the organization as opposed to profit indicators based on results or total sales. Furthermore, the non-financial indicators that are included in a company's strategic prospect, based on human resource management or environmental concerns, in general can, respectively, be qualified as social and (Martory, 1999) and societal (Oxibar and Déjean, 2003).

However, very few studies, to our knowledge, have been undertaken to date to help better understand which factors are susceptible to influence the performance of municipal public services of African cities in general, and in particular Cameroonian cities. Thus, we include in the scope of this study an effort to understand why management accounting, despite its approximate and contingent character, has not yet been included in the management of these local entities. The object of this study is, specifically, to attempt to understand to what extent the structural and behavioural contingent factors can influence the performance of public municipal services. Finally, the research will also allow us to better determine how these local entities use their cost analysis systems.

PERFORMNCE CONTINGENCIES OF MUNICIPAL PUBLIC SERVICES AND RESEARCH HYPOTHESES

Dependent Variables

The dependent variables are chosen by taking into account the organizational distinctiveness of African municipalities. Due to the reticence of African municipal officials in general, and in particular, Cameroonian public servants to communicate financial statements, we measured the performance using a set of six criteria (These criteria are as follows: Q371_IMO (importance of objectives, 1= satisfaction of patients; Q372_IMO (importance of objectives 2 = ensure garbage collection), Q373_IMO (importance of objectives 3= ensure continuance of civil acts), Q374_IMO (importance of objectives 4= satisfaction of personnel), Q375_IMO (importance of objectives 5 = delivery of potable water), Q38_RO: realizing objectives. These criteria were personally assessed and evaluated by the department heads as a function of their importance on the 5-point Likert scale.

Independent Variables

The determinants of municipal performance are grouped into a set of five exogenous variables. After proposing the theory pertaining to each of these explicative variables, we will then present the hypotheses associated with them.

Explicative factors for behavioural contingents

Since the 1980's, management literature has strongly favoured an increased recourse to non-financial indicators to evaluate the performance of a company or its divisions and subsidiaries. Fisher J. (1994) studied the effects of implementing a system of non-financial measurements in five companies manufacturing high-technology products (semi-conductors). His study falls within the framework of management literature calling for an increase in using non-financial indicators since, according to the author, "financial measurements reflect the results of past decisions and do not help in defining the necessary actions required to initiate in order to survive in the actual competitive environment" (The author also states the insufficiencies of traditional systems based on financial measurements; however, he points out only a presentation on the limits of a single system of cost standards).
In light of this study, it appears that:

The non-financial measurement systems were implemented in specific companies that underwent a major "crisis" (ex: loss of an important client);

Their introduction requires a definition of indicators to estimate the results of the different factors retained;

Insofar as the author is concerned, the integration of non-financial indicators still does not allow for the resolution of all problems incurred by the evaluation of performance:

One of the major difficulties encountered relates to the inability of increasing the value of the benefits of using non-financial indicators.

Certain problems result when using joint financial and non-financial measurements. The coexistence of these measurements may be the source of less than optimal decision-making: when we purchase machinery to reduce delivery delays, the cost of this machinery is clearly identified; it is not the same as the profit gain by the reduction in delivery time.

The recourse to non-financial measures does not diminish the possibility of internal conflicts: if a production department is judged by the scale of production realized, if a quality control mechanism is judged on the rate of return by clients, all products rejected by the quality control mechanism decreases the rate of product returns, but also decreases the scale of production. Therefore, it appears that non-financial indicators cannot totally replace, by

themselves, financial measurements. The inherent problems implementing non-financial measurements are due to the absence of a theoretical analytical framework. Such a framework must define the space accorded to different types of measurements, the relationship between results expressed in both financial and non-financial measurements, and the relationship between different non-financial indicators. In addition, as stated by Avelé (2011), the performance of an organization could not be possible without considering the employees who participate daily in its activities. By "employees", we mean all persons who are gainfully employed by the organization including directors, which in our study means elected officials, civil servants, municipal employees, and municipal agents. The value of human resources represents the social dimension of the effectiveness. In the scope of this study, we have retained as explicative factors of behavioural contingence: respect commitments of payments, proof of job creation, number of jobs created, number of training hours, personnel mobility. Consequently, we present the following hypotheses:

H1 *The explicative factors of the behavioural contingent are positively correlated to the performance of municipal public services.*

As for the characteristic factors of the value of human resources, we retained: existence of complaints, sickness, frequency of dismissals, work related accidents, voluntary departures.

H2 *The characteristics factors of the value of human resources are positively related to the voluntary departure of employees.*

The contingency of controlling objectives

The use of the term "control" remains ambiguous. We kept with some nuances the concept of verification put forward originally by Fayol (1926) or Taylor (1965. We can substitute or add the idea of short-term planning. With organizations becoming more and more complex, it no longer suffices to verify the non-respect of rules and standards, but instead to initiate the capability to follow plans, to the point of even appropriating them. Anthony (1965), while observing this evolution, identified three levels of control:

Strategic control, which consists of defining objectives and the necessary resources to achieve them;

Management control, which allows managers to ensure that the resources are obtained and utilized in an effective and efficient fashion, in order to achieve the objectives of the organization;

Operational control, that allows those responsible to ensure a smooth functioning of specific daily work assignments.

According to the contingent approach, control systems are influenced by a set of structural factors that differentiate them from one environment to another. Numerous studies have thus confirmed the existence of correlations between the characteristics of companies and the attributes of control systems (Fisher, 1998; Chenhall, 2003). One of the problems that arises when attempting to control local municipalities is that they are atypical and complex organizations. The dichotomous version of control was undertaken Mintzberg (1982. p.148-157). He makes a distinction between "performance control" and "operational planning". The performance control system is by nature general and is intended for specific work assignments. He then defines the objectives of the performance control system: measure and motivate. As for the planning of work assignments, it emerges, according to Mintzberg, as the means by which non-routine decisions and tasks in a structured and function-oriented organization can be conceived in an integrated manner. In order to specify the field of application for the concept of strategic control, must we beforehand be interested in the motives of non-profit organizations? If the case of non-profit organizations is relatively simple, we can conclude that profit can be seen as a non-priority or bonus of these entities. However, the case of local municipalities is more delicate to comprehend. Anthony (1988, p.174) indicates that for these other types of organizations, the objective is a two-pronged set of priorities. The first is to ensure the balance between resources and employment. The second is to maximize the services provided to the community while minimizing the costs. In this particular sense, the desire to place local municipalities under control is not without merit.

Consequently, we propose the following hypothesis:

H3 *There exists a positive correlation between the performance of municipal public services and the control of objectives by MINATD ((Ministry of Territorial Administration and Decentralization).*

Behavioural contingence related to gender identity of elected management officials

It is part of our study to determine whether the sex of the elected management official influences the performance of community public services in Cameroon. In other words, is this an established practice that results in limiting professional activities for women in favour of "family duties", as suggested by Allouche (1993), thus creating an existential difficulty that may significantly influence community performance? At the same time, Carland and Carland (1991) note in their study that women directors and/or managers adopt different management strategies than their male counterparts. We must mention, nonetheless, the absence of empirical work or studies on the gender variable. This is the reason why Ducheneaut (1996) observes that, if the authors paid little attention to the question, it is because of the low rate of participation by

women in managerial positions. Besides, the researcher Gerry (2003) indicates the following facts:

Women entrepreneurship is a non-exploited source of economic growth;
The rate of women participating in entrepreneurship is lower than men;
Industries who select women in senior posts are seen as less important to the economic growth and development;
Centralized policies and programs do not take into account the specific needs of women entrepreneurs. Despite the considerable absence of empirical data on the gender variable, we believe that the opportunity to integrate such a variable in our study in order to verify if in the framework of evaluating community performance, it may have an impact on the anticipated organizational objectives. Hence, we propose the following hypothesis:

H4 *There exists a positive correlation between the sex of the elected manager and the performance of municipal public services.*

RESEARCH METHODOLOGY

The research methodology is based on a hypothetic-deductive type analysis, which by nature is both *quantitative and qualitative*. Hence, in order to test the hypotheses proposed above, a study in the form of a questionnaire was conducted with the assistance of local elected officials (mayors) and department service heads from the municipal public services of Cameroonian municipalities. The research combines the two types of work that are complementary in order to better understand the objectives of the study, that represents without doubt its original methodology. The details of the rate of response relative to the questionnaires returned, both acceptable and non-acceptable, are provided in Table 1 below:

Table 1
Response Rate to Quantitative Questionnaire from Department Managers

	Number of questionnaires	***Percentages***
Questionnaires sent	*148*	*100%*
Questionnaires returned	*88*	*59.45 %*
Non-usable questionnaires	*28*	*18.91%*
Usable questionnaires	***60***	*40.54%*

Certain questionnaires were not answered by the intended managerial persons themselves, but, as it turned out, by elected officials. In most cases, the latter referred us to general secretaries. The principal arguments for such an attitude can be summarized as follows:

First, the majority of those elected in Cameroon do not have complete mastery of the organizational hierarchy of the municipal office thus the functioning of different services;
The general secretaries in place are those who do understand the functioning of municipal services hence the general policies of municipal districts.
Mayors are not always physically present in the town halls, regardless of the reason.

The few elected officials that we were able to work with did not have at their disposition the community budget and the administrative accounts; therefore, we had to fall back to the general secretaries. We should also mention that department managers who had a mediocre training requested our assistance to better complete the questionnaire. The response rate of 40.54% appeared to be satisfactory to us, especially since we visited exclusively the services provided in Douala and Yaoundé. Those responsible for these departments clearly demonstrated their willingness to meet with us hence the higher response rate. Finally, we used the Statistical Package software for the Social Sciences (SPSS), version 13 to analyse the sample data in our study. The Table below summarizes the different types of municipalities in our sample.

Table 2
Types of Municipalities in our Sample

Types of municipalities	Number	Percentage
Rural Municipalities	*84*	*82%*
Urban Municipalities	*05*	*5%*
Urban District Municipalities	*11*	*11%*
Special Urban Regulatory Municipalities	*02*	*2%*
TOTAL	*102*	*100*

MAIN RESULTS AND DISCUSSION

The first contribution of this study arises from the observation that it is necessary to adapt existing management tools to the realities of the Cameroonian municipal sector. Next, we identify the contingent behavioural factors necessary to measure non-financial performance in order to quickly inform elected officials of the accomplishments by municipal managers and consequently provide for the future needs of the population.

The questionnaire administered to department managers applies to the cities of Douala (Cameroonian economic capital) and Yaoundé (political capital). At the time of the survey, both

Yaoundé and Douala were urban municipalities that comprised six and five smaller municipal districts or urban administrative centers respectively. In total, 60 department managers in the two urban municipal centers and the eleven administrative districts answered the questionnaire. The next step is to present the major tendencies as seen in our survey of the different municipal departments. Step by step we present the different municipal departments visited, the characteristics of the 60 municipal department managers visited, the organization of municipal activities, and the tools in use for control management of the municipal departments visited.

The Different Municipal Departments Visited

Upon examining the results of the survey, it seems that the departments visited can be grouped into 3 categories: financial services and other related services such as finances, taxation, and control (category 1), technical services (category 2), and administrative services (category3).

Table 3
Different Departments Visited during Survey

	Category 1	**Category 2**	**Category 3**	
Description	*Financial services*	*Technical services*	*Administrative services*	***Total***
Total	*18*	*20*	*22*	***60***
Percentage	*30%*	*33.33%*	*36.67%*	***100***

The majority of departments that are part of our survey employ fewer public servants (85%) compared to the total number of territorial agents, managers, and staff.

Degree of Autonomy for Municipalities

All departments that were part of our survey were municipal public services. Cases of contracting and other forms of delegating responsibility were rare or practically non-existent. With respect to the answers by senior managers regarding the real autonomy of the municipalities, only 20% of managers agreed or completely agreed with the decentralized character of their district. In addition, 18.4% of senior managers visited can freely use a global credit margin. With respect to budgetary constraints, 35% of managers declared it was an obligation to respect (13.3% agreed and 21.7% completely agreed). For selected activities, managers dispensed a certain amount of autonomy.

Management Accounting: Adopting Proper Tools in Municipal Public Services

What information can we draw from this table? As with accrual basis accounting, cash basis accounting is common throughout all municipal departments visited. We will conduct a brief analysis of the use of these tools within the Cameroonian municipal offices.

Table 4 Autonomy of Municipalities – Individual Tasks		
Purchasing Authority	***Autonomy***	
	% Yes	**% No**
Buying office supplies	78	22
Buying consumables	89.8	10.2
Increasing Credits	1.7	98.3
Budgetary Decision	-	100
Recruiting agents	-	100
Defining work methods	36.2	63.8
Distribution of work assignments	48.3	51.7

Table 5 Principal Tools of Management Accounting		
Management Tool	**Existence**	
	% Yes	**% No**
Cost Accounting	13.3	86.7
Accrual basis Accounting	100	-
Cash basis Accounting	100	-
Budgetary Control	20	80
Predictive Management	75	25
Budget Base Zero (BBZ)	64	36
Use of control boards	18	82

Accrual Basis Accounting Practices

The results of the survey show that 98% of municipal centers practice accrual basis accounting. This turns out to be a wise choice for the Cameroonian municipal offices for the absence of such a tool would reveal an insufficient financial knowledge by the municipalities as a whole. Accrual basis accounting is a current practice in the local municipalities. The practice has spread due to the increasing use of Information Technology. The concept of accrual basis accounting allows for the saving of necessary credits to pay certain expenses incurred but which will be invoiced at a later date. It is the procedure of accrual basis accounting that ensures optimal performance and control of the execution of purchase and service orders. In fact, this procedure consists of debiting the account affected before the transaction of a credit that profits a third party is registered. Thus, it avoids a contractual expense if the credits of that account are spent or if the balance available is inferior to the ensuing invoice that will follow (Schmitt D., 1988).

Management Accounting in Municipal Districts

Management accounting is, or has been, the object of considerable attention within the municipalities and its use by local elected officials. Results of the survey show that the use of management accounting in Cameroonian municipal public services remains quite limited, or almost non-existent. Analysing the sample, the same results show that 86.7% of departments visited do not use management accounting as opposed to only 13.3% who do. These percentages are not surprising since upon examining the texts relative to, or in the application of, municipal accounting in Cameroon, no mention is made of using analytical management accounting. The frequency of cost accounting is therefore relatively low or almost nil since 96% of municipal districts have no management accounting. On the other hand, the majority of municipal districts are content to calculate costs directly (consumable goods and personnel charges) from the departments, assuring benefits to the local population. The depreciations that would be required when using calculations and breakdowns do not appear at all in Cameroonian municipal accounting.

Cost accounting for operations

Ten municipal departments among the 60 visited determine the cost of operations of their principal activities versus only fifty who do not include it in their calculations.

Regarding the total costs, the results of the survey show simply that this type of cost determination is much more common in technical services than financial or administrative services.

Cost accounting (complete costs)

Only four departments, or 6.7% among the 60 visited, determine the complete costs as opposed to 56, or 93.3% who do not. This leads us to believe that cost accounting, or at least total costing, is not yet deeply rooted in Cameroonian municipal management. On the other hand, the distinction between fixed fees and variables fees is hardly ever done; therefore, we can state without any doubt that this distinction has not penetrated the Cameroonian municipal sector since only four departments operate on such a level, namely, the technical services of the urban municipalities of Douala and (of) Yaoundé.

Cost comparison

As for comparing the costs calculated in different departments, only 10 departments in 60 visited actually compared costs. Further, we asked respondents of our survey to indicate how

they would use the calculated costs in different departments visited, depending on whether they were employed to determine the cost of a good or the cost of a benefit.

Table 6 **Usage of Calculated Costs**		
The calculated costs were used for:	**Yes**	**No**
- better control of fees	5%	95%
- pricing cost benefits to services	6.7%	93.3%
- pricing cost benefits to end users	11.7%	88.3%

Regarding the results obtained to improve the control of charges in the different departments visited, we notice very quickly that those responsible in Cameroonian municipalities seem to attach little importance in mastering the charges relative to their activities. Of 60 departments visited, only 5% calculate costs in order to better control their charges, 11.7% to price the benefits to end users, and 6.7% to price benefits to departments.

Municipal budget base zero

The budget base zero (BBZ) is a method for preparing a budget. It is based on three large phases:

A reflection phase on the functioning of the department, the costs of benefits that it provides, and the research on gains in productivity;
A reflection phase on the quality of benefits seen from the viewpoint of the clients it services;
Finally, a phase related to the choice of the level of benefits desired by elected officials; in this 3rd phase, those elected decide on the distribution of resources in the municipality based on priorities.

In practice, the BBZ is a method for mobilizing departments that are flexible and adaptable. It is possible to realize only the first phase or possibly the first two phases; however, it still promotes progress in the group of departments at the same time and/or those working in groups. As a function of the financial situation of the municipality, it is possible to accentuate a more solid understanding of the control of costs or improving the quality of benefits. The method relies on the rigor and the formalization of the different steps in order to empower the secretary general to expertly manage the affairs of the municipality in conjunction with the support of the department heads. The BBZ ultimately becomes a common language within the municipality. Besides, it seems legitimate to invoke two reasons to allow the implementation of the BBZ in a municipal setting:

At the onset, it can be easily integrated within the reflection period in the budgetary procedures and also with the budgetary review of municipal works;

Then, BBZ becomes a participative undertaking. Or, in a structure where the personnel are a majority, assured of the quality of their employment, the participation of departments in implementing new management tools necessary to measure municipal performance is a factor in learning that reinforces the chances of success. Finally, the BBZ is a method of reallocation of resources, which in a municipal setting is primordial since the aim of municipal management is to be able to follow the evolution of the needs and expectations of the people, without forcing supplementary means.

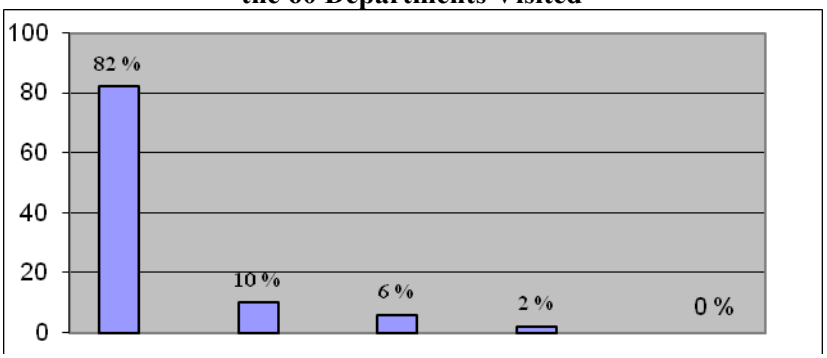
Table 7
Management Tool = BBZ

Management Tools	Frequency	Percentage
Yes	32	64%
No	18	36%
Total	60	100%

Use of Control Panels in Municipalities

Regarding the utilization of control panels throughout the municipalities, this variable was evaluated using a 5-point scale. The participants had to state their degree of agreement or disagreement varying from "not at all in agreement" to "completely in agreement".

Figure 1: Use of Control Panels Throughout the 60 Departments Visited



Average spread: 19.07; Average: 12.50; Median: 4.00; maximum: 41; Variance: 363.67; minimum: 01

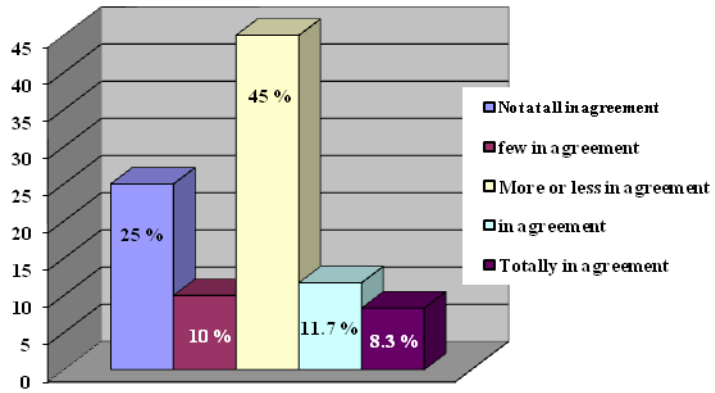
It appears quite simply that the use of control panels as part of Cameroonian municipal practices is in its infancy, thus practically inexistent as per the results of the survey. 82% of municipalities do not agree at all in using such a practice as control panels versus only 2% who agree. The first observations show us quite readily that control panels are more commonly found in the two urban municipalities of Douala and Yaoundé. From our observations, this can be explained by the fact that these two municipalities have sufficient liquid assets to implement such a management tool.

DESCRIPTIVE RESULTS: STRUCTURAL AND BEHAVIOURAL CONTINGENT

The Perception by Department Managers of Global Decentralization

The question asked to measure this autonomy was direct and straightforward. We questioned the managers of the various municipal public services if they felt they belonged to a decentralized municipality. Our aim was to measure their perception of autonomy. This "perception" is an essential gauge of autonomy since it comes from the persons responsible for the implementation of management tools necessary to control the performance of public services in Cameroonian municipalities. As with the mayors, the department managers questioned had to answer on a 5-point scale varying from "not at all in agreement" to "completely in agreement". The results of the onsite survey can be seen in the graph below:

Figure 2: Decentralization as Seen by 60 Department Managers in Sample



Average: 12; Maximum: 27; typical-spread: 05;
Minimum: 05; Median: 07

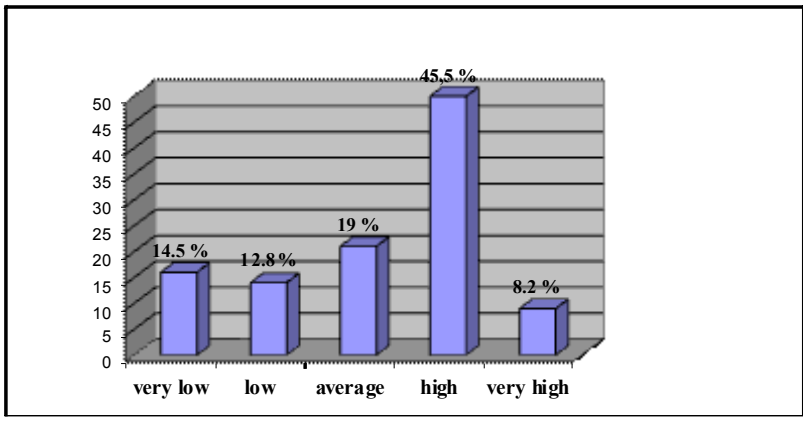
The results of the quantitative survey show that 25% of department managers "do not agree at all" that they are part of a completely decentralized municipality. Similarly, 6 department managers or 10% only slightly agree versus 27 managers or 45% who agree "more or

less". Conversely, only 7 department managers or 11.7% agree that they are in a fully decentralized environment while 5 managers or 8.3% completely agree with this statement.

Degree of Absenteeism as seen by 50 Mayors and 60 Department Managers in our Sample

We note that the phenomenon of absenteeism is a notion that is little understood, despite the proliferation of research studies attempting to comprehend, predict, or control it. Besides, after a review of the literature of more than one-hundred studies relating to absenteeism, Chadwick-Jones (1973) concludes that the efforts of the researchers was not concerted. In fact, he deplores the lack of both a uniform definition of absenteeism and a standardized approach. He notes, just as Gaudet (1963) once said, that the large diversity of measurement indices used in these studies renders comparisons and generalizations extremely difficult. It's also in this context that the multi-variant analyses such as the work presented by Fitzgibbons and Moch (1980) or that of Johns (1978) increasingly replaces the bi-variant analyses. Applying this knowledge in the context of our research study, we wanted to understand if the degree of absenteeism could influence the performance of municipal public services in Cameroonian municipalities. We therefore measured the degree of absenteeism on a 5-point scale varying from "very low" to "very high". The 110 officials in the sample were asked to provide, according to their respective field of competency, their appreciation of absenteeism and its effects on performance.

Figure 3: Appreciation of the Degree of Absenteeism by the 110 Municipal Officials (Mayors and Department Managers)



Average: 22; Maximum: 50; Median: 16; Minimum: 09; Typical-spread: 16.23

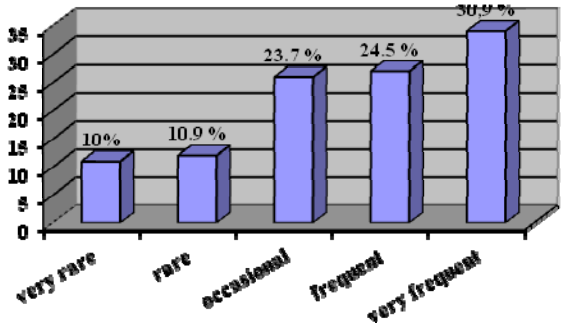
A detailed analysis of the results of the above survey shows that the degree of absenteeism is very significant. Of the officials questioned (mayors and department managers), 72.7% believe the rate of absenteeism has seen a marked increase from "average" to "very high"

in the local Cameroonian municipalities. Besides, the average score of 22 can also explain the high rate of absenteeism in Cameroonian municipalities along with a typical-spread of 16.7 can shed light on the diverse opinions regarding the appreciation of the degree of absenteeism. A maximum of 50 also justifies the number of persons who believe that the degree of absenteeism is sufficiently high and that it evidently has an influence on the performance of Cameroonian municipal public services. The median indicates that 50% of persons in the survey obtained an average score less than 16, while the other half obtained a score of greater than 16. We have taken our comprehension of this phenomenon of absenteeism beyond the relationship between the personal and the organizational characteristics involved. Numerous authors insist on the necessity of taking into account lifestyle influences outside the work environment. Smulder (1983) for example mentions that for certain employees, absenteeism was a means to experience positive benefits outside work instead of "attending personal matters" or "participating in family activities".

The perception of the Degree of Conflicts by the 50 Mayors and the 60 Department Managers in our Sample

Results of our own investigations show that there exists a significant correlation between the variables of "conflicts between the mayor and the district treasurer" and the performance of Cameroonian municipal public services. The participants were asked to assign on a 5-point scale varying from "very rare" to "very frequent" their appreciation of the degree of conflict between the mayors and district treasurers.

Figure 4: Degree of Conflict between Mayors and Municipal Treasurers



Average: 22; Maximum: 34; Median: 26; Minimum: 11; typical-spread: 10.07

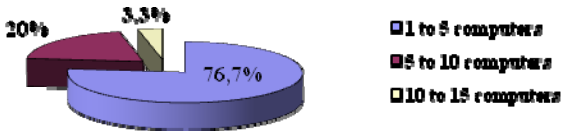
In Cameroon, the municipal treasurer is the "last defender of municipal rights". As such, he is personally responsible to prevent any lapse in regulations, to ensure the protection of estates and preferred rights, mortgages, or any other type of valuable securities. As well, he must pay the

regular authorized expenses; however, he may reject a request in case of irregularities, lack of credits, exceeding available funds, errors in data input, or absence of sufficient justification. It is at this level that numerous conflicts can arise between the elected official and the municipal treasurer. Consequently, 55.4% of persons questioned judged that the degree of conflicts within Cameroonian municipalities to be "frequent" or "very frequent". Conversely, 20.9 % rate it to be "very rare" or "rare". With an average score of 22 and a maximum of 34, this can also explain the large number of persons who judged the degree of conflicts to be relatively significant within the circle of mayors. The typical-spread of 10.7 does not explain the scattering that can occur regarding the appreciation of the degree of conflicts between those questioned who believe that the conflicts are frequent or very frequent and those who, on the contrary, consider them rare or very rare.

Degree of Computerized Municipal Activities

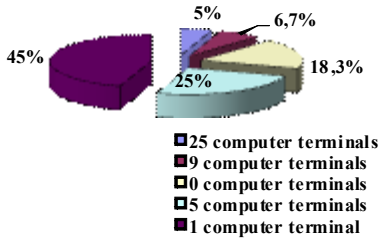
Upon examining all 60 municipal services in our sample, 45% of department managers stated having activities that are computerized versus 55% who did not. In order to measure the rate of computerization of municipal services we visited, we asked department managers to indicate, on a 5-point scale from "1 to 5", "5 to 10", and "10 to 15" the number of microcomputers available in the department and, to the extent possible, to specify any other range that may exist. As the survey shows, we observe 76.7% of departments that have between 1 and 5 computers, 20% that have between 5 and 10, and 3.3% that have between 10 and 15 computers. We noted that the departments that had their activities computerized realized their objectives with less difficulty than those departments whose management was still done manually; even though if in the majority of cases, as we determined, the activities were bureaucratic. The results of the first phase of observations revealed that the degree of computerization of municipal activities was correlated with the performance of the same departments in Cameroonian municipalities.

Figure 5: Degree of Computerized Activities
1. of 60 Departments Visited



Our field observations allow us to state that, if the majority of departments visited are equipped with at least one computer, it is because of the efforts and the cooperation of AIMF (International Association of Francophone Mayors) and member cities that includes Douala and Yaoundé who both applied for membership in 1984 and 1991 respectively. The financial support provided by AIMF has allowed these municipalities to equip themselves with computer technology, even though computers in most departments are never in use because of a lack of training by employees. The results of our survey show that 18.3% of departments (11) have no computer terminal. The same results show that 6.7% of departments (4) have 9 computer terminals versus 5% that have 3. Finally, 25% and 45% of departments we visited possess, respectively, 5 and 01 terminals. The pertinent information is shown in the graph below:

Figure 6: Number of Computerized Stations by Department



TEST OF HYPOTHESES: MAIN RESULTS

The analyse of correlations between the dependent variable (realizing objectives) and the dependent variables (respecting contracts with suppliers, job creation, number of jobs created, number of hours of training per year, and mobility of personnel) shows that all the explicative variables with the exception of personnel mobility are positively correlated to the realization of objectives. The coefficients of correlation between the realization of objectives and the factors characterizing the behavioural contingence are presented in the table below.

The Realization of Objectives and Explicative Factors of Behavioural Contingence

The analysis of the correlation between the realization of objectives and the honouring of contracts with suppliers shows that respecting commitments has a significant influence on the performance of municipal public services. In other words, this means that the more often the municipality respects its commitments with suppliers, more objectives are achieved. The Spearman rank coefficient of correlation is 0.326 with a probability of error of less than 5%. The sign and importance of the correlation shows a rapport quite significant between the realization of objectives and the respect for contractual obligations with suppliers. The results of the first

phase of observations showed that only 4% of mayors in the sample respected their obligations very frequently towards suppliers and 18% were respected very frequently. This result corroborates the work of Kanter and Brinkerhoff (1981) who concluded that entrepreneurs who honour their contracts towards their suppliers sensibly improve their organizational performances. In addition, we observe significant connections between the realization of objectives and the existence of job creation, the number of jobs created, and the number of hours in training. Municipalities that implemented a job creation plan along with a plan for training agents are those who realize the best performances. The explanation lies in the signs of the coefficients of correlation that exist between the endogenous variable and the exogenous variable, which are interlinked.

Table 8. Correlation Between the Realization of Objectives and Factors for Behavioural contingence

	Respecting Contracts	Existence of job creation	Number of jobs created	Number of hours of training per year	Mobility of personnel
Realization of objectives	Cor. 0.326*	Cor. 0.401**	Cor. 0.399**	Cor. 0.300**	NS***

* The correlation is significant at the 5% threshold (bilateral)
** The correlation is significant at the 1% threshold (bilateral)
*** Not significant

The quantitative analysis showed that 28% of municipalities in the sample implemented a job creation program but only 17% implemented a training program versus 72% and 83% respectively that did not create jobs or training programs. This shows quite well that local Cameroonian authorities still have to provide greater impetus in the field of job creation and especially job training for agents if they are to realize better performance in the Cameroonian municipal sector. This conclusion agrees with the work of Tchankam (1998) who previously showed that personnel training, job creation, and/or a training program interested both companies in the private sector and municipal public services. Moreover, the analysis by Akhtar (1986) on human resource training in the public service of Pakistan uncovered a certain number of oversights in the public sector. Insofar as this author is concerned, there is no career planning system either established or standardized. Workers are rarely matched with employment opportunities that correspond to their qualifications. A general malaise, a lack of ambition, and apathy on the part of the majority of salaried employees thus contributes to lowering productivity, both qualitative and quantitative, of a large number of industries in the public sector. There is no correlation between the realization of objectives and personnel mobility. The coefficient of correlation by Spearman leaves no doubt there are no connections between the two variables. Nonetheless, personnel mobility is supposed to reflect the degree of competency development by employees, as stated by Morin, Guindon and Boulianne (1996); however, this is based on the postulate that an employee who can perform various and diverse tasks in an organization, in different services, or in different circumstances has developed diverse abilities

and competencies allowing him to easily adapt and bring important contributions to the organization. During the first phase of observations, 78% of persons having taken part in the survey rate the mobility of personnel from "very low to average interest" as opposed to only 22% who view mobility with "high or very high interest".

Performance of Public Municipal Services and Control of Objectives by Minadt

The result obtained by cross-tabulation of the correlation between the realization of objectives and the control of objectives by the Ministry of Territorial Administration and Decentralization (Minatd) underlines a significant link. In order to measure this link between the dependent variable and the explicative variable, the coefficient of rank correlation by Spearman was calculated.

Table 9. Correlation Between Realization and Control of Objectives by Minadt	
	Control of objectives by Minadt
Realization of objectives	Correlation: 0.273*
The correlation is significant at the 5% threshold (bilateral)	

The coefficient of correlation indicates that the more frequently controls are exercised by the ministry, the more often objectives are realized. The quantitative analysis shows that the control of objectives by Minadt is not at all frequent according to the persons who participated in the field study. Of the participants, 12% believe that the control of these objectives is rarely or very rarely achieved versus 68% who think that it occurs only on occasion. Moreover, 20% declare that the control of objectives in the municipalities is frequently achieved by Minadt. In other words, this supposes that the realization of objectives is systematically tied to the regularity of controls in the Cameroonian municipal sphere, as we clearly see from the Spearman coefficient of correlation (r = 0.293). This result conforms to the theory developed by Chandler (1989) and Mussche (1974) who consider that organizational performance is tied to the regularity of controls. We can therefore consider that as soon as the controls become frequent, the performances are increasingly achieved.

However, the information gained from case studies offers a different perspective that complements the quantitative analysis. According to a senior official of one municipality, *"It is true that we have enormous difficulties when it comes to computerizing our activities, but the real problem lies elsewhere. If our municipalities, or at least this one, do not often achieve their objectives, it is because of numerous financial misappropriations that take place. The fundamental cause is evidently the absence of regular controls by the ministry. Listen, in the last financial exercise, we only received one single control; this is not at all serious, especially since management control, which is supposed to bring us corrective measures, is inexistent".*

Therefore, this testimony seems to reinforce the hypothesis according to which the regularity of controls influences the performance of municipal public services.

The Characteristic Factors of the Value of Human Resources and Voluntary Departures

The performance of an organization could not be possible without taking into consideration the employees who participate daily in its activities. By "employees", we mean all persons that work for an organization and receive remuneration; this term includes directors, which in our example applies to elected mayors, managers, civil servants, and municipal agents. The value of human resources represents the social aspect of effectiveness at work. The analysis of correlations between the characteristic variables of the value of human resources and voluntary departures shows significant relationships in areas such as grievances, work related accidents.

Table 10. Correlations Between the Value of Human Resources and Voluntary Departures

	Existence of grievances	Work related accidents	Frequency of dismissals	Sick Leave
Voluntary Departures	Cor. 0.296*	Cor. 0.402**	NS***	Cor. 0.548**

* The correlation is significant at the 5% threshold (bilateral)
** The correlation is significant at the 1% threshold (bilateral)
*** Not significant

The positive/negative sign of the correlations indicates that as the grievances increase, voluntary departures also increase within the sphere of Cameroonian municipal services and the performance of public services is also adversely influenced. Similarly, the higher the rate of work related accidents or sickness increase, the higher the increase in voluntary departures. Nonetheless, we should be cautious regarding the interpretation of these results since the quantitative analysis reveals a relatively low rate of voluntary departures overall in the 50 municipalities visited. Of these, 72% surveyed declared no departures whatsoever in the last two years preceding our survey in 2005 and 2006. As for the high rate of grievances, 42% declared that none existed compared to 48% who stated it was "low or very low". Only 10% of elected officials declared a rate of "high or very high". This result does not corroborate the research of Tchankam (1998) who concludes that the number of voluntary departures is higher in the public sector than in the private sector. According to this author, this situation seems dangerous since it deprives companies of the most talented, qualified, and experienced personnel. The low rate of voluntary departures can also be attributed to the information collected from municipal participants.

According to a speech given by the secretary general of one of the municipalities we visited, *"In our municipality, do not imagine for a second that people will seek early departures,*

especially with the economic crisis that now affects our country at this time. Even if they are not well paid, they will prefer to stay; remember they would still have to find a new job. The only time we see a voluntary departure is usually because of politics; that is, when someone on staff enters the political arena and wins a mandate, afterwards, he must resign. Regarding grievances or sickness or accidents, we do record a few cases, certainly, but most often this affects only the work rhythm that sometimes can influence our objectives ...."

The Table 11 recapitulates the principal results of the testing of our hypotheses relative to the analyses of the structural and behavioural contingent factors regarding the performance of the Cameroonian municipal public services.

Table 11. Nature of Hypothesis Formulated	**Test Result**
H1: The explicative factors of behavioural contingence are positively correlated to the performance of municipal public services.	Partially Confirmed
H2: The characteristic factors of the value of human resources are positively related to voluntary departures.	Partially Confirmed
H3: There exists a positive link between the performance of municipal public services and the control of objectives exercised by Minatd.*	Confirmed
H4: There exists a positive relation between the gender of an elected official and the performance of services municipal public services.	Refuted
**Minatd: Ministry of Territorial Administration and Decentralization.*	

CONCLUSION

The results of this study, based on a sample composed of 50 Cameroonian municipalities, show that management accounting is not yet rooted and accepted as a sound management tool by local entities. Research in management accounting and control is more closely associated with the domain of public management. To broach this field of analysis that is ill defined but certainly in demand, it is important for research projects to specify with greater precision the context in which they are writing as well as the organization studied. However, the implementation of a management accounting system requires initially adopting a form of language that is rare, especially in a context such as that of the Cameroonian local municipalities. The structural and behavioural contingent characteristics described in the framework of this research has allowed us to return the focus of the debate on the measure of performance with indicators based on future performance. It appears that a certain number of contingent factors exercise an influence on the performance of municipal public services. We have observed during the scope of our field study that a municipality is a heterogeneous organization composed of numerous activities, whose objectives and functioning are different, even opposite; consequently, the implementation of a management accounting system to improve such services must take into account this complexity.

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GOODWILL IMPAIRMENT: A COMPARATIVE COUNTRY ANALYSIS

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ABSTRACT

In response to de jure versus de facto issues about the convergence of accounting standards, we investigate whether non-U.S. firms (which list their shares on U.S. secondary markets and report under U.S. standards) are more likely to interpret and apply the accounting rules in a different manner than their U.S. counterparts. Specifically, this study evaluates a mediation effect: i.e., that non-U.S. firms will take greater goodwill impairment charges under SFAS 142 (ASC 350) than U.S. firms. The findings indicate that firm-level and country-level characteristics including legal, accounting, and cultural values affect the goodwill impairment decision and impact the comparability of accounting information.

INTRODUCTION

On November 7, 2007, the U.S. Financial Accounting Standards Board (FASB) replied, as follows, to the Securities and Exchange Commission inquiry: "Investors would be better served if all U.S. public companies used accounting standards promulgated by a single global standard setter as the basis for preparing their financial reports. This would be best accomplished by moving U.S. public companies to an improved version of International Financial Reporting Standards (IFRS)." The FASB promotes *de jure* harmonization (harmonized rules). However, the FASB, unlike Ball (2006), does not emphasize tensions between *de jure* (rules) and *de facto* (practices) harmonization. Rather, the FASB reports that historical differences, which provoked variations in practice, are disappearing and maintains that a principles-based system is preferable to an apparently rules-based system. Despite the FASB's confidence in the demise of historical differences, whether such differences exist remains an empirical question (Brunovs & Kirsch, 1991; Chen, Sun, & Wang, 2002; d'Arcy, 2006; Lang, Raedy, Yetman, & Joos, 2003; Tsakumis 2007). In addition, the FASB's belief that a rules-based global system improves the "usefulness and comparability of reported financial information" prompts a second empirical question: whether or not rules enhance comparability. Schipper (2003), for example, argues that U.S. GAAP is principles-based with implementation guidelines in the form of rules and that rules enhance comparability.

In this study, we are guided by the FASB's emphasis upon the "usefulness and comparability of reported financial information" and suggest that comparability is an

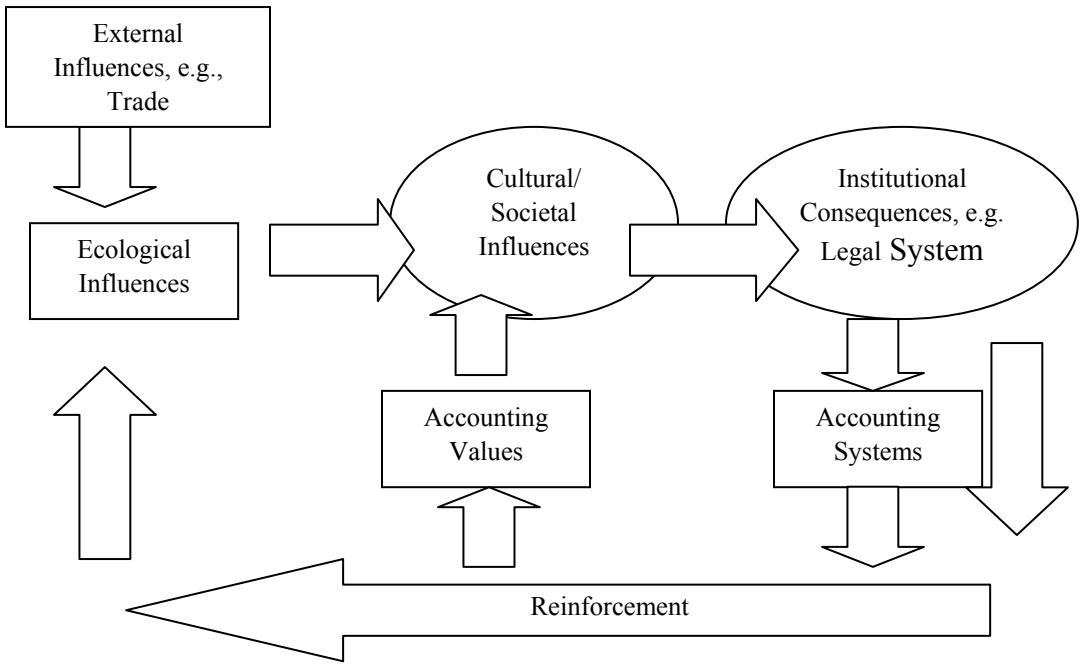
overarching goal focusing debate about harmonization and the desirability of principles-based standards. As Schipper explains, SFAS 141 and 142 are based upon the concepts of comparability and relevance (2003, p. 64). Further, she says, SFAS 141 and 142 are principles-based, but points out that application of the standards requires guidelines (i.e., rules) (2003, p. 65). Influenced by the FASB's and Schipper's emphasis upon comparability, we investigate whether historical differences, which provoke variations in practice, are disappearing and whether non-U.S. firms (which list their shares on U.S. secondary markets and report under U.S. standards) are more likely to interpret and apply the accounting rules in a manner that lowers reported earnings as compared to their U.S. counterparts. Specifically, this study evaluates the likelihood that non-U.S. firms will take greater goodwill impairment charges under SFAS 142 than U.S. firms. The use of cross-listed firm data provides a useful platform to compare country effects while controlling for similar GAAP data input. In other words, we are able to examine country-level differences in the application of impairment standards in order to determine if *de jure* harmonization enhances comparability.

Prior research (e.g., Lang, et al., 2003) compares cross-listed firms in the U.S. with foreign firms of the same country that are not cross listed and documents that the cross-listed firms tend to have more conservative accounting. Other studies have compared cross-listed firms in countries mandating IASB IFRS to non-cross listed firms of non-US countries adopting IFRS subject to modification; such studies have inconclusive findings. While a comparison of cross-listed foreign companies in the U.S. with non-cross listed companies mandating IFRS in their countries would provide some useful insights into the degree of *de facto* convergence, differences in governance structure, concentration of ownership, degree of board member independence, and other institutional differences make such analysis problematic. In addition to our efforts to capture the effects of such factors by including variables in the regressions as well as addressing the problems of selection bias and omitted variables through the use of powerful statistical techniques, our analysis minimizes some of the effects of these problems by comparing cross-listed foreign firms in the U.S. to U.S. firms listed on the same stock exchanges. Moreover, while our ultimate objective is to provide information that will help global standard setters evaluate the merits of uniform adoption of IFRS as a global reporting system, our focus is on determining whether institutional and cultural factors continue to cause differences in accounting practice, regardless of whatever global reporting model is mandated. Selecting a period after mandatory adoption of IFRS to perform our statistical analysis could have the effect of masking the influence of these factors on predisposition toward conservatism. Moreover, the years of our study 2003 and 2004 provide a rich venue from which to examine goodwill impairments under SFAS 142, as these years were marked by relative economic stability.

The statistical analysis findings of a sample of non-U.S. firms trading their shares in the United States show that they tend to incur significantly greater goodwill impairment charges than U.S. firms. Moreover, using Gray's (1988) framework (Figure 1), we find that historical differences continue to influence accounting practice, specifically the application of SFAS 142. Although both Financial Accounting Standards Board (FASB) and International Accounting Standards Board (IASB) standard setters agreed in principle in 2006 to harmonize accounting standards, our study illustrates how varying degrees of *de facto* implementation affect the

application of reporting standards. Our findings lend support to Ball's (2006) argument that "influences on financial reporting *practice* [italics original] remain local" (p. 15).

Figure 1 Gray (1988, p.7)



Section II provides a literature review that briefly compares FASB and IASB treatments of goodwill and goodwill amortization and/or impairment. We include these comparisons in order to provide *de jure* context for goodwill accounting. Section III analyzes the influence of institutions and societal values on accounting values, specifically on accounting conservatism. Conservatism is an example of a "cross-cutting" issue that arises in standards-setting projects between the IASB and FASB (Financial Accounting Standards Advisory Council, 2005). Based on the literature and our inferences of firm behavior, we formulate our hypotheses. Section IV describes the methods for collecting data for our sample of U.S. and non-U.S. firms and the statistical analysis formulation. Section V presents the results of our statistical analyses and a summary and discussion of our principal findings and their significance; Section VI presents sensitivity analyses; and Section VII offers concluding comments and avenues for future research.

REVIEW OF ALTERNATIVE TREATMENTS OF GOODWILL, GOODWILL AMORTIZATION, AND IMPAIRMENT

Background on Rules-based vs. Principles-based Systems

Alternative treatments of goodwill reflect national preferences for rules-based or principles-based standards. Such national preferences are a function of institutional and cultural differences, which are the product of a country's historical development. Rules-based systems generate detailed, nuanced accounting standards and provide little flexibility to the accounting practitioner. In contrast, the foundations of principles-based systems are the precepts of conceptual frameworks. According to principles-based systems, an over-reliance upon rules fails to capture the economic substance of business events, so that, for example, contextual differences among seemingly similar transactions may be aggregated erroneously. Moreover, principles-based standard adherents regard overly prescriptive accounting standards to be subject to earnings manipulation and other irregularities and, thus, counter–productive (e.g., *Alexander* and *Jermakowicz*, 2006). On the other hand, according to rules-based standard setters, a principles-based approach inhibits industry and firm comparisons. Moreover, under such a system, an opportunistic management team might apply standards selectively in order to improve reported results. Significant differences in accounting treatment and their application between the two systems in recognition and measurement of goodwill impairments provide context for our study, which shows how cultural and institutional differences between countries affect financial reporting in this area regardless of the system used. Such comparison as it relates to reporting of goodwill impairments reveals differences in the degree of conservatism, differences that we believe will not be eliminated despite efforts toward de-jure harmonization.

U.S. FASB vs IFRS

Under U.S. GAAP, goodwill is not amortized. Following the rules-based approach to accounting standards, the U.S. provides detailed criteria for identifying intangibles and separating them into finite and unlimited life categories. Impairments relating to property, plant, and equipment, and limited-life intangibles are covered under SFAS 144, while goodwill impairments are covered under SFAS 142. SFAS 142 requires that goodwill be tested for impairment at the level of the reporting unit, as defined in SFAS 131. Allocation of purchased goodwill over reporting units at any level below a subsidiary is arbitrary. Consequently, an overly zealous management can avoid impairments merely by reordering the reporting units so that a unit that has lost fair value is absorbed by another unit which has maintained a sufficiently large value relative to its carrying value. Subjectivity inherent in this bottom-up revaluation process enables management to avoid losses. Moreover, in time, the connection between the allocated goodwill and the acquisition that created it becomes nebulous.

Under IFRS 3, purchased goodwill cannot be amortized; rather it is tested for annual impairment. IAS 36 covers provisions relating to impairments of all operating assets including goodwill. Under IAS 36 goodwill is allocated to a cash-generating unit. Conceptually, the cash-

generating unit as defined in SFAS 144 and IAS 36 is different than that of a reporting unit as defined by SFAS 131. Essentially, a cash-generating unit represents a segment of the company in which future cash flows can be separately identified and isolated from cash flows associated with other segments. Such a segment can pertain to a territory, a product line, a group of assets or a single asset. In contrast, a reporting unit as defined by SFAS 131 is a decentralized segment of a business with a manager or management group for whom decision rights have been assigned. It is much broader in scope than a cash-generating unit to the extent that a responsibility center contains groups of assets each of which may generate separately identifiable cash flows or which synergistically operate to generate cash flows for the unit.

In summation, under IAS 36, a goodwill impairment is recorded when the carrying value of the cash generating unit exceeds the greater of its value in use and its net realizable value (i.e., its recoverable amount). Under SFAS 142's two-step process, step one requires that the fair value of the reporting unit is less than its carrying value. SFAS 142 makes it easier for a U.S. firm to avoid incurring an impairment loss than its international counterpart IAS 36 for two reasons. One is that reporting units may be dissolved and reorganized such that the fair market values of the reconstituted units do not individually show losses. Second, because cash generating units require that assets or asset groupings be related to specific cash flows, which are independent of other cash flows of the company, it is more difficult to avoid impairments when conditions clearly indicate a deterioration of the particular assets.

RESEARCH FRAMEWORK

The accounting treatment of goodwill is a critical issue because it is an accounting system issue that highlights international differences in accounting values. See Figure 1. For example, D'Arcy (2006) explores the impact of accounting harmonization by focusing on goodwill accounting, specifically in Germany and Japan. D'Arcy (2006) finds that harmonization efforts and the transition to international standards produce confusion. She concludes that comparability of accounts is impaired by diversity in accounting regulations as well as by institutional and cultural differences. Following D'Arcy, this study evaluates how institutional and cultural influences upon accounting conservatism affect comparability of financial reports and, more specifically, the application of U.S. GAAP with respect to the recognition of goodwill impairments. Goodwill impairments of non-U.S. and U.S. firms trading in the United States are examined in order to determine whether non-U.S. firms apply the impairment provisions of SFAS 142 more conservatively than U.S. firms and, thus, whether the "rules" of SFAS 142 provide comparability. Note, if cross listed non-US firms are found to apply the provisions of SFAS 142 differently due to cultural and institutional country differences, mandatory implementation of a single set of international standards may be counterproductive and result in less relevant and comparable reporting information.

The U.S. standards systems is rules-based and perhaps, according to Alexander and Jermakowicz (2006), overly-prescriptive. Such a system can be counter-productive in that it might generally encourage irregularities whenever "bright lines" don't exist. Given the subjectivity inherent in the asset revaluation process, U.S. management might avoid impairment losses in situations where non-U.S. management might take a loss. Although indicators of

goodwill impairment vary (Hayn & Hughes, 2006; Seetharaman, Sreenivasan, Sudha, & Yee, 2006), we follow a general approach to prediction analyses and use last period's information to predict this period's impairments. Because this study focuses on goodwill impairment, the sample investigates high-tech industries where purchases are of the utmost importance. In order to be competitive in a global market place, such high value firms must commit significant resources to research and development and foreign direct investment mostly in the form of selected acquisitions. For example, foreign firms invested $1.5 trillion in the United States from 1999 to 2005, approximately 2/3 of which have been spent to acquire going companies rather to establish new ones. Similarly, U.S. firm investments in foreign markets have gone to the acquisition of going-concern companies. Ball, McCulloch, Geringer, Minor, & McNett, 2008, pp. 48-49). Rapid access to advanced technology especially in computers and communications, greater success associated with known brands, and faster throughput and scale economies are the major factors behind acquisitions of established firms.

A related reason for limiting our sample to firms from high-tech industries recognizes that firms can also develop internally as well as externally, particularly in the case of our sample firms. Limiting our sample to high-tech firms allows us to discount the effects of internally developed goodwill on our results since we expect all tech firms to engage in both activities. Thus, the effects of any homegrown goodwill for one group of firms are assumed to be offset by homegrown goodwill for another group, allowing us to focus on the effects of purchased goodwill. Inclusion of firms from other industries into our sample would have limited the value and interpretation of our variables of interest and forced the inclusion of variables isolating the effects of internally- developed goodwill. Before we evaluate the impact of cultural and institutional factors on predispositions toward conservatism (using goodwill impairment as our proxy), we first determine whether there is any significant difference in accounting practice with respect to the degree in which goodwill impairment under SFAS 142 is applied. Accordingly, our basic hypothesis is:

H1a *U.S. firms are less likely to take impairment losses than non-US firms.*

Rejection of this hypothesis implies that either US firms are more likely to take goodwill impairments than non-US firms or that there is no difference between the two groups in the application of the standard measuring goodwill impairment (i.e., successful *de facto* harmonization of standards).

We theorize that accounting for goodwill highlights the divergence of *de jure* and *de facto* harmonization of standards. Next, we review explanations for differing influences upon global practices, with implications for *de facto* harmonization. We argue that country-level historical differences impact accounting practice and accounting values. In short, like Ball (2006), we argue that the influences upon practice, and values, remain local. In the context of our study, we imply that country factors unique to the U.S. sample companies and the cross-listed foreign sample companies cause the latter to apply SFAS 142 goodwill impairment rules more or less conservatively than the former. Although we emphasize Gray's (1988) framework (Figure 1) and suggest that his framework unifies the research, previous empirical work tends to fall into two categories: (1) an institutional perspective emphasizing contracting and litigation

influences (e.g., Huijgen & Lubberink, 2005; Lubberink & Huijgen, 2001; Watts, 2003); and (2) a cultural perspective emphasizing Gray's (1988) theory of cultural relevance (e.g., Doupnik and Tsukamis, 2004; Nobes, 1998; Salter & Niswander,1995). In general, the institutional perspective tends to explain accounting values, such as conservatism, as a function of the legal system; therefore, to the extent that varying levels of conservatism impact comparability of accounts, the explanations for differences are attributable to legal systems. The cultural perspective seeks to explain accounting values, such as conservatism, as a function of societal values. To date, the research offers conflicting results, and therefore, one of the goals of this study is to examine the relationships among conservatism, comparability, and institutions and among conservatism, comparability, and societal values. We also investigate whether the various explanations for conservatism are jointly determined and, thus, whether we have identified an endogeneity problem.

Institutional Explanations of Conservatism

Watts (2003) reviews variations in conservatism across similar (Pope and Walker, 1999) and different (Ball, Kothari, & Robin, 2000) institutional arrangements. Among the studies cited by Watts (2003) is that of Pope and Walker (1999), who study conservatism across similar institutional settings: i.e., the U.K. and the U.S., which are both common law countries. Pope and Walker (1999) investigate the Ball, Kothari, & Robin (1997) claim that a distinguishing feature of common law regimes is the treatment of "bad news." They base their conclusion on the finding that differences in conservatism between the U.K. and U.S. are attributable to differences in the reporting of extraordinary items. Following up on their earlier working paper (Ball *et al*., 1997) on "bad news" and common law regimes, Ball *et al*. (2000) use the Basu (1997) measures to study conservatism across different institutional settings. Ball *et al*. (2000) predict that common law countries' use of financial information in contracts leads to greater conservatism in common law countries than in code law countries. Using data from 1985-1995, Ball *et al*. (2000) find that earnings of common law country firms are "much more conservative" (2000, p. 293) than earnings of code law country firms. In summary, the literature on institutional influences on conservatism finds that firms in common law countries are more conservative than firms in code law countries. Thus, we hypothesize that:

H2a *Firms headquartered in common law countries are more likely to take impairments ceteris paribus than firms headquartered in code law countries.*

Disclosure practices also reflect institutional arrangements. To the extent that disclosure requirements are different across countries, one may hypothesize that management will have differential accounting treatments of business situations. While transparency of ownership structure, financial information, and management structure are influenced by a country's institutions, we do not have a theoretical basis for hypothesizing directionality of the influence. On the one hand, higher levels of disclosure will mean management and accountants use greater diligence in defining the initial characteristics of a transactions (i.e., identifying properly the goodwill value at the point of sale). If so, then fewer mistakes requiring impairments would

occur in the future. On the other hand, businesses could be presumed to make random errors in the initial establishment of goodwill. Subsequently, the countries with higher disclosure requirements would be more likely to take impairments. We investigate the following hypothesis:

H3a *The level of disclosure of a country will impact firm impairments.*

Cultural Explanations of Conservatism

Findings of the cultural relevance literature generally conflict with that of the institutional school of thought. For example, according to the cultural relevance literature, common law reporting structures tend to rank low on uncertainty avoidance, which is defined as the "extent to which the members of a culture feel threatened by uncertain or unknown situations" (Hofstede, 1997, p. 113). Great Britain, a common law country, ranks 35 on uncertainty avoidance (Hofstede, 2001); the U.S. ranks 46 on uncertainty avoidance (Hofstede, 2001). In contrast, code law countries tend to rank high on uncertainty avoidance. For example, Korea ranks 85 on uncertainty avoidance (Hofstede, 2001); Japan ranks 92 on uncertainty avoidance (Hofstede, 2001). According to Gray (1988), the higher a country ranks in terms of uncertainty avoidance, the more likely it is to value conservatism in accounting. In other words, code law countries—which tend to rank high in uncertainty avoidance—are more likely to value conservatism in accounting. Herein lies the controversy: The institutional literature posits that common law countries are more conservative than code law countries, but the cultural relevance literature would suggest that common law countries are less conservative than code law countries.

The tendency of code countries to exhibit greater conservatism in financial reporting has been empirically tested in a number of areas. One such area relates to inter-country differences in probabilistic assessments affecting financial reporting of contingencies. For example, Germany is a code-law country, yet Doupnik and Richter (2004) find substantial support for the hypothesis that cultural differences cause German accountants to interpret positively framed verbal probability statements used in international accounting standards more conservatively than U.S. accountants.

One of the goals of our study is to investigate the contradictory predictions of the institutional and cultural relevance schools of thought. Thus, we examine the hypothesis that:

H4a *The level of cultural characteristics of a country will impact firm impairments.*

If the alternative H4a is accepted and the alternatives of H2a and H3a are not, then the empirical implication is that cultural relevance dominates the institutional influence upon the impairment decision. If neither H4a nor H3a are accepted, then the resulting implication is that country-level differences do not influence the impairment decision and, additionally, that *de jure* harmonization is not subverted by variations in practice and historical differences among countries.

EMPIRICAL ANALYSES

Sample and Descriptive Statistics

The sample was taken for the years 2003 and 2004, which are stable with respect to US goodwill GAAP. We also selected these years, which occurred prior to mandatory adoption of IFRS in Europe (2005) as well as in Japan (2012) and other industrialized countries, in order to prevent the impact of such adoption from masking our cultural and institutional variables of interest. High-tech industry groups with SIC two digit codes of 28, 35 and 73 are utilized in the sample in part because of their propensity to acquire other firms. The focus of the study is on high tech firms that are in biotech (SIC 28), electronics (SIC 35), and software (SIC 73). Acquisitions in these industries are made to gain new knowledge, and thus, the goodwill account will likely be measuring a specific aspect of intangibles. The goodwill data were hand-collected from SEC filings. (Research Insight data were often not available.) In order for an observation to be included, all relevant variables must have valid data from SEC goodwill data, Hofstede cultural variables, a composite cultural index, and S&P index information.

Our non-random sample includes U.S. and non-U.S. firms that list their shares on U.S. secondary markets and report under U.S. standards. Because these firms may differ significantly from the rest of their respective populations (e.g., Lang et al., 2003), our sample of non-U.S. firms that list on U.S. secondary markets may be biased. Accordingly, we will test for selection bias. Using a two-stage technique developed by economists (e.g., Butler & Fauver, 2006; Lee, Rozier, Norton, & Vann, 2005; Renders and Gaeremynck, 2006), our test relies on the availability of instrumental variables, which induce variation in the "U.S. variable," but have no direct effect on impairment.

Prior research has established that financial disclosure is important internationally (e.g. Hope 2003). Disclosure, which is the reporting of information, is contrasted with recognition, which concerns an accounting transaction's precense. Hope (2003), for example, relied upon disclosure levels as measured by the Center for International Financial Analysis and Research (CIFAR, 1993, 1995); however, CIFAR scores are not available beyond 1995 when the last edition of *International Accounting and Auditing Trends* was published. Consequently, we rely upon the S&P Transparency and Disclosure scores (2005). We obtain disclosure scores from the Transparency and Disclosure Survey of the Standard & Poor's (S&P) Governance Services (2005), which continued previous S&P studies of transparency and disclosure in Europe, East-Asia, Emerging Asia, Latin America, Turkey, and Russia using 2000-2001 data. Companies' scores range from 1 – 100, although a previous S&P Transparency and Disclosure Survey translated scores from 1 – 10 (e.g., Khanna, Palepu, & Srinivansan, 2004). The S&P survey analyzes firm-level disclosure from an international investor perspective, so it considers publicly available and English-language information. Items in the survey include, for example, ownership structure, financial information, and management structure. Because our S&P score variable takes into account ownership structure and governance from one country to another, we believe that our model prevents variation in some of the components of our index from distorting our primary variables of interest.

Descriptive statistics are provided for background purposes. Table 1 presents headquarter country firm information, together with identification of the country's legal regime, S&P disclosure index, and a set of Hofstede cultural variables plus a cultural index. As the data are taken from firms on U.S. exchanges, it is no surprise that 95.0 percent of the firms are located in the U.S. This preponderance of U.S. firms actually works to the advantage of the study because if there is a non-U.S. incremental effect, then, it must be a strong one in order for it to be statistically significant.

Table 1 Headquarters Location Information

Location	Frequency	Percent	Law Regime	SP	UNC	Ind	MAS	P	CI
Australia	1	0.14	Common	61	51	90	61	36	0.02
Denmark	2	0.28	Code	52	23	74	16	19	2.03
France	4	0.55	Code	68	86	71	43	68	1.57
Germany	3	.41	Code	56	65	67	66	35	0.41
Great Britain	11	1.52	Common	71	35	89	66	35	0.08
Hong Kong	1	.14	Common	47	29	25	57	68	2.35
India	3	.41	Common	39	40	48	56	77	1.59
Ireland	1	.14	Common	55	35	70	68	28	0.34
Japan	2	.28	Code	55	92	46	95	54	2.58
Singapore	2	.28	Common	62	8	20	48	74	3.46
Switzerland	6	.83	Code	57	58	68	70	34	0.34
USA	688	95.03	Common	70	46	91	62	40	0.00
Total	724	100.00							

SP = S&P disclosure index
UNC = Hofstede cultural dimension of "uncertainty avoidance"
IND = Hofstede cultural dimension of "individuality"
MAS = Hofstede cultural dimension of "masculinity"
P = Hofstede cultural dimension of "power"
CI = Cultural index

The second area concerns the industry membership which is reasonably diverse. See Table 2.

Table 2 Distribution by SIC Groups

SIC	Frequency	Percent
28	210	29.01
35	103	14.23
73	411	56.76
Total	724	100.00

The third descriptive statistic Table 3 presents information about the model variables (See next section for variable definitions). The model follows the principle of using ratios to predict the decision, and, therefore, the standard deviations highlight any outlier impacts on the usefulness of a variable for prediction. As expected, the least useful variable (i.e., Accrl, defined as (net income – operating cash flow)/operating cash flow in t-1) in terms of significance had the highest deviation from the mean. For the purposes of the current study, these variables were not

winsorized because our intent was to examine general applicability. However, the elimination of some extreme observations probably would improve the model's predictability in other research.

Table 3 Descriptive Statistics
(Observations = 724)

Variable N	Mean	Std Dev	Minimum	Maximum
Impair	0.1091	0.3120	0.0000	1.0000
Size	5.3388	2.0737	0.4631	11.6680
Itang	0.1548	0.1583	0.0000	0.9038
Derat	0.8723	0.1940	0.0268	1.0000
Roe	-0.4562	4.0118	-90.6842	37.5185
Bkmkt	0.5511	0.8679	0.0074	15.5822
Accrl	-0.4376	8.7527	-93.6315	133.0673
neg 1	0.4876	0.5002	0.0000	1.0000
Frgn	0.9503	0.2175	0.0000	1.0000
Code	0.9765	0.1515	0.0000	1.0000
SP	69.5318	2.9785	39.0000	71.0000
cult index	0.0470	0.3072	0.0000	3.4617

Table 4 shows the relations between the independent variables of the base model. None of the correlations is very high; thus, the statistical integrity of the individual variables is indicated.

Table 4 Pearson Correlation Coefficients, N=724
Prob > |r| under HO: Rho=0

	Size	Itang	Derat	roe	bkmkt	accrl	neg 1
Itang	-0.0468						
	0.2089						
derat	-0.1876	-0.1202					
	<.0001	0.0012					
roe	0.1316	-0.0697	0.0591				
	0.0004	0 .0608	0.1123				
bkmkt	-0.1322	0.0890	0.0443	0.0095			
	0.0004	0.0166	0.2338	0.7985			
accrl	0.0185	0.0374	0.0619	-0.0178	0.0309		
	0.6192	0.3154	0.0961	0.0216	0.6323		
neg1	-0.3769	0.1263	-0.0186	-0.1769	-0.1659	0.0126	
	<.0001	0.0007	0.6182	< .0001	<.0001	0.7345	
Impair	0.0239	0.1249	-0.1167	0.0033	0.1488	0.0513	0.1461
	0.5213	0.0008	0.0017	0.9289	<.0001	0.1678	<.0001

Statistical Design

This section develops a model for impairments based on firm specific information for accounting report release information. Our model is based on the proposition that asset impairment is an accounting measure that reflects, as well as reinforces, accounting conservatism and that accounting practice reflects country-level influences. Upon proof of concept, the impairment model is coupled with social and institutional variables for purposes of analysis. The

model, which follows the general approach to prediction analyses, uses last periods' information to predict this period's impairments (e.g., Curcio, Kyaw & Thornton, 2003; Goodman & Peavy, 1986; Khanna *et al*., 2004) Similar results are found for size when it is defined as prior period asset value or market value.In our logit model, the dependent variable is "1" if an impairment is taken and "0" if no impairment occurs. Firms must have goodwill in the prior or current period. Similar results are found when all firms in the industry sectors and this sensitivity analysis indicates that model can select impairments even in the presence of all firms such that the study sample is not cherry-picking the data. A positive logit means the independent variable has the effect of increasing the odds that the dependent variable equals "1: i.e. impairment. Note, an impairment does not mean that the entire goodwill account is eliminated, but at least some of the goodwill has been deemed impaired.

We make the following propositions for the explanatory variables of impairment:

(1) The higher a firm's ratio of book/market, the more likely the firm is to take a goodwill impairment. Firms with more growth prospects (i.e., low ratio, high market value) are less likely to have impaired goodwill and, therefore, are less likely to incur a goodwill impairment (Beatty and Weber, 2006). Therefore, we predict the sign associated with a change in this variable to be positive. [See proposition for size variable below in (5).]

(2) If the firm has a low ratio of equity to debt-plus-equity (relatively leveraged), then management is more likely to take impairments. A higher level of debt in the capital structure may subject the firm to greater oversight due to contracting provisions of bond indentures. Accordingly, the firm is less likely to hide any deterioration in market value. On the other hand, a less risk-averse firm with relatively high levels of debt in the capital structure may adopt practices that tend to inflate income (i.e., accelerate revenue recognition or avoid recognition of impairment losses). While the analysis focuses on high-tech firms, industry differences do exist, which requires a categorization of this firm variable by industry (but a potential consequence is that some industries have a pronounced effect than others). Thus, we make no prediction regarding the direction of the change.

(3) Firms with a higher percentage composition of intangible assets to total assets are more likely to take impairments. These firms simply have more intangible assets on the books which increases the likelihood that some will become impaired. The logic of this assertion follows from a low book/market ratio implies that the net assets of the firm are not representative of firm value, at least, some of the effect is from goodwill and other intangibles. We, therefore, predict the direction of the change to be positive.

(4) Firms that generate higher value from their investments as evidenced by their return on equity are more likely to take impairments. From an income statement perspective, firms with good records can absorb losses. On the other hand, consistent with our assertion in (1), a higher return on equity may provide further evidence of a firm's growth

prospects, and given greater growth prospects, a firm might be less likely to incur an impairment loss. Thus, we make no prediction regarding the direction of change.

(5) Larger firms (in terms of market capitalization) would be expected to have greater disclosure requirements than smaller size firms and might, therefore, be more inclined to report a goodwill impairment if warranted. On the other hand, smaller firms in terms of market capitalization would be expected to employ fewer reporting units than larger size firms and, thus, are less able to manipulate the reporting units. This difference suggests that smaller size firms would be more likely to report goodwill impairments. Thus, the assumed direction based on size is uncertain.

(6) Firms with previous potentially large accrual differences (i.e., the difference between accounting earnings and operating cash flows) are hypothesized to be more likely to take impairments. From an income statement perspective, these firms are more likely to have to absorb bad firm impairment situations.

(7) Firms who have just reported negative earnings are more likely to take impairments. From an income statement conservatism perspective, firms that have just had a loss are likely to take a "big bath" in order to make future reports look better.

In addition to the above propositions, we also specify the leverage ratio by industry SIC (2 digit groups) because industry leverage ratios tend to cluster due to the business cash flows. The model statement is:

$$Impair_t = b0*Size_t + b1*Derat28_{t-1} + b2*Derat35_{t-1} + b3*Derat73_{t-1} + b4*Itang_{t-1} + b5*ROE_{t-1} + b6*Bkmkt_{t-1} + b7*Accrl_{t-1} + b8*Neg1_{t-1} + e \quad (1)$$

Where

$Size_t$ = log of total assets in t-1,
$Impair_t$ = 1 if impairment and 0 if no impairment,
$Itang_{t-1}$ = goodwill percentage of total assets in t-1,
$Derat28_{t-1}$ = total stockholders' equity / (long term debt + total stockholders' equity) in t-1 for SIC 28,
$Derat35_{t-1}$ = total stockholders' equity / (long term debt + total stockholders' equity) in t-1 for SIC 35,
$Derat73_{t-1}$ = total stockholders' equity / (long term debt + total stockholders' equity) in t-1 for SIC 73,
ROE_{t-1} = net income / total stockholders' equity in t-1,
$Bkmkt_{t-1}$ = total stockholders' equity / total market value in t-1,
$Accrl_{t-1}$ = (net income – operating cash flow)/operating cash flow in t-1,
$Neg1_{t-1}$ = 1 if negative earnings in t-1 and 0 otherwise,
b1, b2, b3, b4, b5, b6 b7 and b8 = estimation coefficients and e = error.

The base case model proposition is that prior period firm variables predict an impairment. As previously stated, after we establish the base case model, we include legal, disclosure, and social variables so as to examine their incremental impact vis-à-vis the base case. Each variable

analysis is a unique experiment, and consequently no combined model is necessary or presented. In order to test the impact of institutional and social values upon the impairment decision, the research design will consider several hypotheses. The first associated research design equation is:

$$Impair_t = a1*US + b0*Size_t + b1*Derat28_{t-1} + b2*Derat35_{t-1} + b3*Derat73_{t-1} + b4*Itang_{t-1} + b5*ROE_{t-1} + b6*Bkmkt_{t-1} + b7*Accrl_{t-1} + b8*Neg1_{t-1} + e \quad (2)$$

Where US = 1 if the firm headquarters is in the US and 0 if not in the US.

One of our main objectives is to differentiate the effects of institutional structure on accounting practice and values from those of cultural influences on accounting practice and values. The former suggests that common law countries are more likely to take impairments while the latter suggesting that code countries are more likely to take impairments. Our identification of common law and code law countries is taken from LaPorta, Lopez-de-Silanes, Shleifer, & Vishny (1997). Equation (3) is the empirical equation to test the common law effect. The formula statement is:

$$Impair_t = a2*Comn + b0*Size_t + b1*Derat28_{t-1} + b2*Derat35_{t-1} + b3*Derat73_{t-1} + b4*Itang_{t-1} + b5*ROE_{t-1} + b6*Bkmkt_{t-1} + b7*Accrl_{t-1} + b8*Neg1_{t-1} + e \quad (3)$$

Where Comn = 1 if the firm is a headquartered in a common law country and 0 if headquartered in a code law country.

Next, we consider the level of disclosure. Given that the relationship between common law and conservatism is problematic, then the relationship between disclosure and conservatism is also worthy of investigation. Following an institutional perspective, we would expect that countries with higher levels of disclosure will be more likely to take goodwill impairments. That is, firms in common law countries may be hesitant to delay "bad news." due to the litigation concerns described by Watts (2003). If management fears shareholder lawsuits, firms in common law countries may be more likely to take impairments than firms in code law countries. Investors in insider economies are less likely to rely upon financial reporting information (Ely & Pownall, 2002). The associated research design equation to test the influence of disclosure practices is:

$$Impair_t = a3*SP + b0*Size_t + b1*Derat28_{t-1} + b2*Derat35_{t-1} + b3*Derat73_{t-1} + b4*Itang_{t-1} + b5*ROE_{t-1} + b6*Bkmkt_{t-1} + b7*Accrl_{t-1} + b8*Neg1_{t-1} + e \quad (4)$$

Where SP=S&P disclosure score.

Gray (1988) argues, "Conservatism can be linked most closely with the (Hofstede) uncertainty avoidance dimension" (p. 10). Further according to Gray (1988), the higher a country ranks in terms of uncertainty avoidance, the more likely it is to rank highly in conservatism. However, from an institutional perspective, the threat of litigation might encourage conservatism. Similarly, all of the other Hofstede variables can have positive or

negative influence on the accounting decision. We examine all of them and a composite cultural index. For purposes of example, the associated research design equation for the composite cultural index is:

$$Impair_t = a4*Culture + b0*Size_t + b1*Derat28_{t-1} + b2*Derat35_{t-1} + b3*Derat73_{t-1} + b4*Itang_{t-1} + b5*ROE_{t-1} + b6*Bkmkt_{t-1} + b7*Accrl_{t-1} + b8*Neg1_{t-1} + e \quad (5)$$

Where Culture=represents all cultural variables.

STATISTICAL RESULTS

This section presents the findings and interpretations of the previous design section's set of logit models that investigate the research hypotheses. The statistical results of the base case model are representative of a reasonably good model. The overall Chi-square statistic is significant at the .01 level and the concordant pair result is 71.4, which is good vis-à-vis a fifty-fifty proposition. The most significant independent variable is the proportion of intangible assets to total assets. The signs of the variables are as predicted and generally significant, except for the variables "ROE" and "Accrl," which are not significant. Given these results, the model is deemed sufficient for the framework base case and could be incrementally tested for institutional and social value variables. Table 5 presents the base case logit statistics.

Table 5 The Association between Impairment and Firm Characteristics, N = 724

	Parameter	Chi-Square	Significance	Odds Ratio Estimate Point Estimate	95% Confidence Limits	
Intercept	-2.6953	11.5539	<.0001			
size	0.1598	5.6535	0.0174	1.173	1.028	1.338
derat28	-2.2339	7.9024	0.0049	0.107	0.023	0.508
derat35	-1.1532	3.2724	0.0705	0.316	0.090	1.101
derat73	-1.3546	4.5734	0.0325	0.258	0.075	0.893
itang	1.4466	4.2875	0.0384	4.249	1.080	16.708
roe	0.0535	1.4173	0.2338	1.055	0.966	1.152
bkmkt	0.2777	6.0110	0.0142	1.320	1.057	1.648
accrl	0.0124	1.2235	0.2687	1.012	0.990	1.035
neg1	1.1029	14.210	0.0002	3.013	1.698	5.346
Likelihood ratio chi-square	46.0229		Pr < .0001			
Percent Concordant	71.4					

Table 6 has an incremental indicator variable "US" which measures whether a firm has a U.S. or non-U.S. headquarters. This variable is significant at the .01 level, and the negative sign indicates that U.S. firms are less likely to take impairments than non-U.S. firms. At issue is the appropriateness of the base case model in regards to U.S. and non-US firms. A sensitivity test of the difference between the means of U.S. and non-U.S. company variables of equation (1) indicates only two of the base-case variables' means are significantly different. This finding

suggests economic similarities between firms on an international perspective and indicates our base-case model should be robust. The findings from equation (2) do support the alternative of Hypothesis 1.

Table 6 The Association between Impairment with Firm Characteristics and Location
N = 724

	Parameter	*Chi-Square*	Sig.	Odds Ratio Estimate		
				Point Estimate	95% Confidence Limits	
Intercept	-1.3741	1.8919	0.1690			
Size	0.1331	3.7609	0.0525	1.142	0.999	1.307
derat28	-2.4700	9.3521	0.0022	0.085	0.017	0.412
derat35	-1.2485	3.7867	0.0517	0.287	0.082	1.009
derat73	-1.4625	5.2717	0.0217	0.232	0.066	0.807
itang	1.4147	4.1079	0.0427	4.115	1.048	16.162
roe	0.0536	1.4850	0.2230	1.055	0.968	1.150
bkmkt	0.2785	6.1920	0.0128	1.321	1.061	1.645
accrl	0.0140	1.5398	0.2147	1.014	0.992	1.037
neg1	1.0914	13.7252	0.0002	2.978	1.672	5.305
US	-1.1177	4.9952	0.0254	0.327	0.123	0.872
Likelihood ratio chi-square	50.4342	Pr < .0001				
Percent Concordant	72.6					

The results of Table 7 address the common versus code law question of Hypothesis 2. The variable "COMN" is significant at the .01, and the sign is negative. Code law country firms appear more likely to take goodwill impairments. This result contrasts with the expected result, which was based upon the institutional perspective (e.g., Ball et al., 2000). It appears that code law restrictions force impairments.

Table 7 The Association between Impairment with Firm Characteristics and Law System
N = 724

	Parameter	*Chi-Square*	Sig.	Odds Ratio Estimate		
				Point Estimate	95% Confidence Limits	
Intercept	-0.9658	0.7193	0.3965			
Size	0.1255	3.2286	0.0724	1.134	0.989	1.300
derat28	-2.4115	9.0042	0.0027	0.090	0.019	0.433
derat35	-1.2050	3.5404	0.0599	0.300	0.085	1.051
derat73	-1.4286	5.0482	0.0247	0.240	0.069	0.833
itang	1.4937	4.6052	0.0319	4.454	1.138	17.427
roe	0.0536	1.4896	0.2223	1.055	0.968	1.150
bkmkt	0.2789	6.0878	0.0136	1.322	1.059	1.649
accrl	0.0128	1.2856	0.2569	1.0103	0.991	1.036
neg1	1.0960	13.7843	0.0002	2.992	1.678	5.336
Comn	-1.5165	4.7926	0.0286	0.219	0.056	0.853
Likelihood ratio chi-square	50.1592	Pr < .0001				
Percent Concordant	72.2					

Table 8 shows the incremental effects of the S&P country disclosure index. Higher index scores mean better disclosures. The variable "SP" is significant at the .01, and the sign is negative. In total, it appears that high disclosure, which is more typical of common law countries, reduces the likelihood of impairments. Thus, the finding supports the rejection of the null of Hypothesis 3 and is consistent with our finding that code law country firms appear more likely to take goodwill impairments. Furthermore, we suggest that more diligence results in accurate initial recording of goodwill information.

Table 8 The Association between Impairment with Firm Characteristics and Disclosure Index
N = 724

	Parameter	*Chi-Square*	Sig.	Odds Ratio Estimate		
				Point Estimate	95% Confidence Limits	
Intercept	2.3202	0.8742	0.3498			
Size	0.1352	3.8866	0.0487	1.145	1.001	1.309
derat28	-2.3329	8.5596	0.0034	0.097	0.020	0.463
derat35	-1.1848	3.4322	0.0639	0.306	0.087	1.071
derat73	-1.4073	4.8986	0.0269	0.245	0.070	0.851
itang	1.5879	5.1168	0.0237	4.893	1.236	19.369
roe	0.0540	1.4874	0.2226	1.055	0.968	1.151
bkmkt	0.2743	5.9907	0.0144	1.316	1.056	1.639
accrl	0.0137	1.4639	0.2263	1.014	0.992	1.036
neg1	1.0852	13.6461	0.0002	2.960	1.664	5.265
SP	-0.0698	4.6034	0.0319	0.933	0.875	0.994
Likelihood ratio chi-square	49.7324	Pr < .0001				
Percent Concordant	72.2					

Table 9 shows the incremental effects of the various cultural dimensions for Hypothesis 4. The variable "Cultindx" is significant at the .1 level, and the sign is positive. The sign indicates that cultural index is associated with goodwill impairment. This finding is consistent with our finding that code law country firms appear more likely to take goodwill impairments.

Table 9 The Association between Impairment with Firm Characteristics and Cultural Variables
N = 724.

	UNC Parameter	Chi-sq. Sig.	Power Parameter	Chi-sq. Sig.	Individual Parameter	Chi-sq. Sig.	Masculine Parameter	Chi-sq. Sig.	Index Parameter	Chi-sq. Sig.
Intercept	-3.5771	8.58*	-3.1023	4.76#	0.3263	0.04	-10.7685	5.20#	-2.5802	10.47*
Size	0.1503	4.88#	0.1584	5.52#	0.1327	3.73&	0.1266	3.38&	0.1391	4.11#
derat28	-2.2234	7.85*	-2.2307	7.89*	-2.2770	8.23*	-2.1902	7.41*	-2.2564	8.12*
derat35	-1.1475	3.23&	-1.1671	3.34&	-1.2475	3.75&	-1.1007	2.87&	-1.2487	3.76&
derat73	-1.3569	4.59#	-1.3640	4.63#	-1.3979	4.85#	-1.2893	4.04#	-1.3958	4.85#
Itang	1.4785	4.49#	1.4563	4.34#	1.5690	5.02#	1.5538	4.92#	1.5320	4.81#
Roe	0.0532	1.41	0.0534	1.41	0.0527	1.41	0.0513	1.32	0.0526	1.40
Bkmkt	0.2783	5.99#	0.2779	6.00#	0.2744	5.98#	0.2759	6.01#	0.2770	6.00#
Accrl	0.0123	1.20	0.0124	1.22	0.0136	1.45	0.0135	1.44	0.0131	1.35
neg1	1.0931	13.95*	1.1039	14.24*	1.0664	13.14*	1.0013	11.44*	1.0774	13.45*
Culture Variables	0.0201	0.88	0.0104	0.12	-0.0316	5.16#	0.1325	3.03&	0.5825	3.98#
Concordant % chi-sq	71.5	46.86*	71.5	46.13*	72.5	50.82*	72.4	52.69*	72.0	49.65*
*=.01,#=.05,&=.1										

Selection Bias and Endogeneity

To address selection bias and endogeneity, we perform a two-stage least squares (2SLS) test in which we instrument for U.S./non-U.S. location. Good instruments are exogenous to the dependent variable. Previous research (e.g., Butler and Fauver, 2006) identifies one potential instrument, ethnolinguistic fractionalization, which is a reasonable instrument because the ethnolinguistic mix was determined before issues related to good will impairment ever arose. A second instrument, we think, is level of economic development. Economic development is a good instrument because it is related to the self-selection of firms that cross list on U. S. exchanges.

In the first stage, we regress the variable "U.S." on these two instruments and their interaction (without intercept as we are only interested in the predictive value of the dependent variable which is a zero-one variable). In the second stage, we use the projected "U.S." variable in place of actual variables. We test the correlation between residuals and the "U.S." variable.

Our results indicate no selection bias. The magnitude of the coefficient on "U.S." drops from 1.4146 in the OLS regression to 1.3345 in the 2SLS regression. Despite the drop, the coefficient is still statistically significant (p=.0163). From this analysis, we know that selection bias inflates the impact of firm location on goodwill impairment; however, location is still a determinant of impairment. Correlation between the residuals and the "U.S." variable is not significant at any conventional level.

MEDIATIONAL ANALYIS

Our statistical findings show that non-U.S. firms tend to incur significantly greater goodwill impairment charges than U.S. firms. In addition, we show that legal regime and disclosure practices are influential. However, the discovery that variables are influential provokes further inquiry. Specifically, we are interested in the influential or mediational process. Mediational analysis attempts to identify the intermediary process or processes that lead to the outcome of interest (Muller et al. 2005). According to Baron and Kenny (1986), a variable may be called a mediator "to the extent that it accounts for the relation between the predictor and the criterion" (1986: 1176). In other words, a mediator is responsible for the effect of the independent variables upon the dependent variables. In this study, a mediator would be responsible for the effect of the firm-level variables upon goodwill impairment, and we hypothesize that such mediators are country-level, as opposed to firm-level, mediators.

In order to demonstrate mediation, we must estimate the following research design models (Muller et al. 2005) as presented in general terms:

$$Y = \beta 10 + \beta 11X + \varepsilon 1 \qquad (6)$$

$$Me = \beta 20 + \beta 21X + \varepsilon 2 \qquad (7)$$

$$Y = \beta 30 + \beta 31X + \beta 32Me + \varepsilon 3 \qquad (8)$$

That is, the explanatory variable(s) must affect the dependent variable and the mediator variable, and the mediator must affect the dependent variable (Baron and Kenny 1986).

Furthermore, β31, the residual direct effect, should be smaller in absolute value than β11, the overall effect. In other words, the difference between β11 and β31 is the indirect effect attributable to the mediator. Furthermore, some controversy exists regarding the determination of significance. Preacher and Haves (2004) describe a procedure developed by Sobel (1982); the Sobel test compares the strength of the indirect effect of X on Y.

We addressed the question of whether U.S. identity or legal regime mediates the impairment decision. In the interest of being concise, the statistical tables are not presented. These analyses consider only firm location and legal regime because the use of these dichotomous variables permits a uniform statistical approach with logistic regressions. If firm location and legal regime are mediators, inclusion of the mediators should reduce the value of the coefficients. The results indicate that location and legal regime mediate the impairment decision with respect to firm size (α=.1).

A general linear model was applied to the "SP" and "Cultindx" variables in order to investigate mediation for these continuous variables in contrast to the previous logit analyses because the dependent variables are not dichotomous. Once again size (α=.1) is the only variable mediated by these two factors. Following Preacher and Haves (2004), we researched results of Sobel tests for U.S. identity, legal regime, disclosure, and culture (i.e., uncertainty avoidance) as mediators. Sobel tests provide support (α=.05) for identity, legal regime, disclosure, and culture as mediators of the relationship between the firm size and impairment. Finally, we also investigated (untabulated) of matched pair analyses for U.S. identity and disclosure practices. And, the matching on industry and, then, accounting asset size produces similar results. These results have implications for future research about size with respect to its meaning as an independent variable in international settings.

SUMMARY AND CONCLUSIONS

Following Gray's (1988) model, this study examines the impact of firm location, legal regime, disclosure, and social values on accounting practice and values and, thus, on comparability of accounts. In the area of intangibles, international differences in accounting practice and values suggest a daunting task in reaching global accounting convergence. Our study indicates that there are differences in accounting practices, even when firms are conforming to the same accounting standards. Rules and implementation guidelines, such as found in SFAS 142, do not necessarily enhance comparability.

We investigate explanations for the differences in comparability and conservatism practices. The most significant variable is the proportion of intangible assets to total assets. A firm with a relatively high proportion of goodwill is likely to reduce its assets. We find that U.S. firms cross-listed on U.S. exchanges are less likely to take impairments than non-U.S. firms. What determines whether a country's accountants adopt more conservative interpretations of accounting standards? Our evidence supports institutional explanations for conservatism. Code law countries are more likely to take impairments than common law countries; this finding is contrary to previous research (e.g., Ball *et al*., 2000), and we attribute the difference to a specific account result as opposed to a general net income effect. However, evidence is also consistent with cultural explanations for conservatism. Specifically, uncertainty avoidance is positively

associated with impairment decisions. The positive association is expected because code law countries tend to be characterized by uncertainty avoidance. Overall, then, our results support Gray's model (Figure 1) of multiple influences upon accounting systems and values, particularly those associated with cultural differences. In addition, the discovery that country-level variables are influential provokes further inquiry into the mediational *process*. A mediator is responsible for the effect of the independent variables upon the dependent variables; specifically in this study, we find that country-level mediators are responsible for the effect of the firm-level variable of size upon goodwill impairment.

Our study is limited to goodwill data that could be hand-collected from SEC filings. Furthermore, all relevant variables must have valid data from Research Insight accounting data, SEC goodwill data, Hofstede cultural variables and S&P index information. Our sample has a preponderance of US observations. Despite these limitations we find significance for country-level effects upon impairment decisions.

Our study is relevant for the debate about global convergence of accounting standards and principles-based standards. Our finding of country-level differences suggests caution. In the *Wall Street Journal*, Reilly and Scannell suggest that "potential problems" may impede global convergence (16 November 2007, p. A4). Specifically, Reilly and Scannell acknowledge that if "countries and regions take different approaches," then "a thicket of different interpretations" could stymie convergence. Furthermore, although the FASB believes that financial reports serve investors, Reilly and Scannell note that, in different regions and countries, financial reporting may serve governments—not investors. As reported in the aforementioned *Wall Street Journal* article, an Indiana University associate professor, Teri Yohn, argues, "I think you could have one set of standards, but given the differences in countries' institutions and perceptions and views the implementation is going to be different and the enforcement is going to be different" (November 2007: A4). Our study supports Yohn's concerns.

Future research might investigate country-level variables and continue to investigate the effects of local practices upon *de facto* accounting. For example, our mediational analysis suggests that firm location and the legal system are partially responsible for the effects of firm-level predictors on the impairment decision. Additional tests of Gray's [1988] model (Figure 1) may promote understanding of the differences between *de facto* and *de jure* accounting.

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DOES EXCESSIVE EXECUTIVE COMPENSATION REALLY PAY SHAREHOLDERS?

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ABSTRACT

The issue of executive compensation is controversial. Executive compensation is viewed as a solution to align the interests of owners with those of agents. However, instead of solving the problem, the pay mechanism aggravates the agency problem. Although there is an upward trend in the salaries of executives, excess money paid to executives does not ensure high returns to shareholders. First, this paper discusses the reasons for the executive pay rise. Then, the research examines the link between the executive compensation and financial performance from a market perspective. Banks quoted on the Istanbul Stock Exchange (ISE) in the four-year period 2006-2010 were analyzed using a price model. The results show that the regression coefficient for the executive compensation is significantly different from zero and negative. It is concluded that the executive compensation system is not designed towards shareholders' value maximization.

Keywords: *Executive compensation, financial Performance, banks, ISE, Turkey.*

INTRODUCTION

The conflict of interest between shareholders and managers has been known long before. Berle and Means (1932) argued that managers must be controlled in order to avoid losses. According to Adam Smith (1937), managers cannot watch partner's money with the same vigilance with which partners watch over their own so the negligence and profusion, therefore, must always prevail in the management of affairs of a company. Jensen and Meckling (1976) modeled this situation as an agency relationship and defined it as a contract in which the principals engage the agent to perform some services on their behalf. Pay mechanism is considered one of the methods to reduce this conflict of interest. However, executive compensation has become a controversial issue as pay-for-performance relation is ambiguous.

An upward trend is witnessed in the salaries of managers. The base salaries and bonuses of Forbes 800 CEOs increased from an average of $700.000 in 1970 (in 2002-constant dollars) to over $2.2 million in 2000 (Murphy and Zabojnik, 2004). The increase continued until 2008 when the global financial crisis started. This trend is partly explained by the fat cat theory used by the media. A similar hypothesis explains that managers with power (also known as "entrenched CEOs") use captive board of directors to arrange for themselves large increases[2] in pay at the expense of companies' shareholders (Bebchuk et al., 2002). As the base salaries and other

benefits are negotiated between the CEOs and the board of directors, the terms of the contract are not submitted to shareholders for approval. The termination benefits are also costly for shareholders. To name a few, Morgan Stanley paid $113 million to Philip Purcell in 2005; ExxonMobil paid $400 million to Lee Raymond in 2006; Home Depot paid $210 million to Bob Nardelli in 2007; Carrefour paid €38 million to Daniel Bernard in 2005. As for the latter one, the shareholders of Carrefour reacted to this payment and the Court of Appeal canceled the payment in 2008 based on the French 2005 Law to Promote Confidence and Economic Modernization (the Breton Law). This law increased the amount of information on executive compensation to be provided to shareholders, and set up some shareholder control over such compensation and penalties for non-compliance, for the first time. Another example of payment that was litigated is that of Richard Grasso, ex-chairman of the New York (NY) Stock Exchange, who resigned in 2003 due to the storms occurring after the announcement that he would receive a compensation of $140 million. He was sued by the Attorney General of NY, alleging that Grasso's compensation was unreasonable, especially for a non-profit organization (Conyon, 2011). The lawsuit against Grasso continued for five years. Although in 2006 the NY State Supreme Court issued a decision, ordering Grasso to repay a significant amount of excess compensation, in 2008 the NY State Court of Appeals dismissed all claims against Grasso. In order to improve transparency in the financial system, on July 21, 2010, President Obama signed the Dodd-Frank Act which implements a number of significant regulations regarding accountability and executive compensation.

Financial scandals as observed at Enron, World.com and İmar Bank[3] in the 2000s and the need to inform shareholders shifted the attention to corporate governance in Turkey as well. As of January 01, 2012 regulations to limit and disclose the pay of the top management are to be effective.

This study aims to investigate the pay-for-performance relation in Turkey. The research sample of this study is the banks quoted on the ISE. The banking sector is important for the Turkish economy, which is the 17th largest gross domestic product and 3rd fastest growing economy in the world according to 2010 data. Among the ten biggest global crisis, the 2001 crisis that occurred in Turkey ranked 7th by witnessing the failure of more than 20 banks.

This paper contributes to the literature in several ways. First, it discusses the arguments that favor the increase of executives pay level. Secondly, it conducts an empirical research to test the agency theory for a very crucial sector, which is banking. Finally, it provides empirical results that would be useful for linking executive compensation package to firm performance.

LITERATURE

The economic theory of executive compensation is the principal-agent contract (Ross, 1973). The contract approach is standard in the accounting, finance and economics literature. It asserts that firms design efficient compensation to solve moral hazards and to motivate

executives (Conyon and He, 2011). Shareholders elect the board which sets the executives' compensation for the mutual benefits of managers and shareholders. Agency theory predicts that executive pay will be positively correlated to firm performance. However, there is no real consensus on the relationship between executive pay and firm performance (Florin et al., 2010).

Executive compensation is different from compensation for lower-level employees. The former one is negotiated between the potential executive and the employer, which is often the board of directors. It often includes base salary, bonuses, stock options, additional executive-only benefits, incentives, perquisites, income protection guarantee in case of a sale or liquidity, and a guaranteed severance package (known as "golden parachutes") in the instance of a termination contract. The assessment of the optimum compensation is problematic since many subjective factors influence its terms. The contract is signed with the expectation that the executive will perform his best. However, the performance of the firm, which is a reflection of that of the executive, may disappoint shareholders. When the payment becomes unreasonable from the point of view of shareholders, the compensation is said to be excessive. This may result either by a failure to match compensation to the needs (in this situation the compensation is wasteful and unlawful) or by a poor judgment (Murrey, 2005) at the expense of the firm and shareholders' interests. Moreover, asymmetric information exists between shareholders and executives who may manage earnings. For instance, empirical evidence shows that incoming CEOs decrease net income of their starting year (Latif et al., 2011; Geiger and North, 2011), or debt issuance (Pae and Quinn, 2011). Thus, it becomes hard for the board of directors and shareholders to properly assess the true performance of the executives.

The origin of the term executives and the problem

Although the first known use of the term "executive" dates back to 1774, its usage meaning the "businessman" dates back to 1902. In the modern sense of the term, "executives" mean individuals who are not owners of firms but those who manage large corporations on behalf of passive dispersed owner-shareholders[4]. Until the turn of the twentieth century, founders (or founders' descendants) and/or big owners directed most of the large corporations. The "Great Merger Movement" that occurred between 1895 and 1904 witnessed more than eighteen hundred small manufacturing firms consolidate into 157 large corporations. Senior management positions, once held by proprietors, were transferred to non-owner, salaried executives. This shift of senior managerial position to non-owner executives brought about the modern problem of executive compensation (Wells, 2010).

The increase of executive compensation

Top executive pay has increased enormously over the past three decades (Minnick et al., 2011). Today, the ratio of average firm CEO pay to that of the average employee is around 400

in the United States, 22 in Britain, 20 in Canada and 11 in Japan (Hindery, 2008). In theory, the level of executive pay increases for one basic reason, which is to maximize shareholder value. However, the public criticizes highly paid executives, and stakeholders go to the limit of protest when the desired firm performance is not achieved. In practice, different arguments partly explain the rise of executive compensation.

Managers with power

Some managers may be more powerful due to different factors (Bebchuk, 2002) and take profit from their power to increase their pay. Some circumstances may give power to managers: anti-takeover protection, mostly in the form of golden parachutes, is accorded to CEOs; entrenched CEOs use captive board of directors to arrange for themselves large increases in pay at the expense of firm's shareholders[5]; CEO compensation is positively related to the CEO stock ownership, hence, the share ownership increase gives CEOs more bargaining power; the lack of institutional investors or a large shareholder increase the power of managers to extract rents through compensation.

Size effect

Studies show that the size (in terms of total turnover, total assets or operating profit) of the firm matters in shaping the compensation package. The bigger the size of the firm is, the bigger the pay of the executives is. (Murphy, 1999). Pay expectation of the executives increases parallel to the size of the firms.

Compensation packages with high-powered incentives

Due to the globalization wave and technological developments that took effect after the 1990s, firms faced increased competition in the business environment. Offering attractive incentives is one of the means of hiring high-qualified leaders. That is why the variable part of a CEO's salary has become a few times more than his base salary.

The relative size of the executive pay

The absolute amount of the executive pay is considered much higher than an average salary or a minimum wage of an employee. The number of executives is quite few in a large corporation where the number of total employees is usually more than tens of thousands. The leaders should be differently remunerated as far as the amount of executive compensation is tolerated in the corporate budget.

RESEARCH

This paper analyses whether the benefits paid to top management is worth vis-à-vis shareholders. According to agency theory, a positive association is expected between executive compensation and firm performance.

Sample

The study focuses on the Turkish banking sector because not only the sector is a critical one as the recent history[6] proves but also the executives are the most criticized ones as fat cats. There are 17 banks quoted on the ISE. The data set comprises the 2006-2010 years for the banks that disclosed the executive compensation information.

Research design

In order to investigate the relationships between the executive compensation and the financial performance of the firms, an adapted version of the model used by Cazavan-Jeny and Jeanjean (2006) is used in equation (1) below:

$$P_{jt} = \alpha_0 + \alpha_1 BVE_{jt} + \alpha_2 NI_{jt} + \alpha_3 LN(EC_{jt}) + \varepsilon_{jt} \quad (1)$$

where P_{jt} is the share price of firm j at time t, BVE_{jt} is the book value of equity of firm j at time t, divided by the number of shares outstanding at time t, NI_{jt} is the net income of firm j at time t, divided by the number of shares outstanding at time t, $LN(EC_{jt})$ is the natural logarithm of executive compensation paid by firm j at time t, and ε_{jt} is an error term. A logarithmic transformation is used for executive compensation to make variation constant across levels of the series to deal with heteroscedasticity.

This model relates share price to book value of shareholders equity (BVE_{jt}) and current net income (NI_{jt}). The effect of executive compensation to stock price is tested by regression coefficient α_3. This coefficient should be positive and significantly different from zero.

In the executive pay performance literature, both market-based measures and accounting-based measures are used. Accounting-based measures of firm performance reflect past information. In market-based measures, investors discount expected future performance in determining the stock price. Thus, the selection of performance measure is important (Laan et al., 2010). Most researchers select the performance measures from the accounting data such as the return on assets, earnings before interest and taxes, and earnings per share. In this study, performance measure, the dependent variable, is selected from a market-based approach.

Findings

Besides the variables included in equation (1), Table 1 presents descriptive statistics of executive compensation (EC) and market value (MV) as well. All amounts in Table 1 are in Turkish Liras (TL) and are to be multiplied by 1.000.

Table 1

Descriptive Statistics

Variables	Average	Std.Dev.	Median	Minimum	Maximum
MV	9.554.323	10.309.391	3.080.000	436.000	34.320.000
BVE	5.574.850	5.670.654	1.941.667	434.708	18.986.655
NI	1.039.067	1.108.709	267.904	2.742	3.401.986
LN(EC)	9,4	1,0	9,5	6,8	11,5
EC	20.295	22.483	13.348	881	100.075

Note . n=42. MV is the market value of the firms quoted on Istanbul Stock Exchange. BVE is the book value of equity. NI is the net income. LN(EC) is the natural logarithm of the executive compensation (EC). All of the values are in Turkish currency and are to be multipled by 1.000.

The average firm market value was TL9.554.323, the average book value was TL5.574.850 and the average net income was TL1.039.067. The results indicate that the sampled firms are relatively important ones in the Turkish market. The average executive compensation is TL20.295 where the minimum is TL881 and the maximum is TL100.075.

Table 2

Correlation Between Variables

Variables	BVE	NI	LN(EC)
MV	0,802*	0,800*	-0,118
BVE		0,855*	0,009
NI			0,205

Note . n=42. * represents significance at the 0.1% level (one-tailed test).

Table 2 presents the Pearson correlations among test variables. The largest and significant correlations are between MV, BVE and NI variables. Executive compensation has a negative correlation with market value and is not statistically correlated with other variables.

The results of the estimation of equation (1) are shown in Table 3. The adjusted R^2 for Model 1 indicates that the independent variables, book value of equity (BVE_{jt}) and net income (NI_{jt}), explain 84 percent of the stock price variation. When adding executive compensation, $LN(EC_{jt})$, the adjusted R^2 of Model 2 is only 1,9 percent higher than that of Model 1. The coefficient of $LN(EC_{jt})$ is significantly different from zero. As predicted, EC alone has given a very small number close to zero, so the distribution of log-transformed EC is closer to normal than EC, and the linear regression model works better with normal variables. However, the sign of the $LN(EC_{jt})$ coefficient is negative, contrary to positive prediction, which shows that the direction has a negative relationship.

Table 3

Models

Variables	Model 1	Model 2
BVE	1,25 *	0,81 ***
NI	4,14 **	5,98 *
LN(EC)	-	-0,82 *
Constant	-0,55	7,48
Adjusted R^2	0,84	0,86
F-Statistics	57,48	36,55

Note . *, **, *** represent significance at the 1%, 5%, and 10% levels, respectively.

The variance inflation factors (VIF) of BVE, NI and LN(EC) are 4,17, 4,35 and 1,17 respectively. Having VIF more than 2 is an indication of multicollinearity problem, values greater than 10 is an indication of serious multicollinearity problem. The condition index of BVE, NI and LN(EC) are 3,7, 10,3 and 28,9 respectively. When the value of condition index is greater than 30, it indicates a strong multicollinearity problem. The results show no serious multicollinearity problem. When the executive compensation increases, empirical results show that the wealth of shareholders is transferred to management, causing a negative impact on the share price. Agency theory predicts that executive pay is positively correlated to firm performance. The empirical results fail to establish a positive relationship. Entrenched executives and the lack of compensation committees to prepare an optimum contract are the possible answers for this negative relationship. The board of directors should review the executive compensation system to maximize shareholders' value.

CONCLUSION

Executive compensation is viewed as a solution to agency problem between shareholders and managers. It is argued that firms compensate their executives so that they accomplish the firm's goal, which is the shareholder value maximization. However, huge pay packages create worldwide discomfort among shareholders and are, therefore, criticized globally. Agency theory predicts a positive relation between executive compensation and shareholder value. In practice, this positive link is not clear. The objective of this study is to test agency theory for the relationship between executive pay and firm performance. The data set consists of all the 17 banks, quoted on the ISE for the period 2006-2010.

The results of this study show that there is a negative and statistically significant relationship between executive compensation and firm performance. Empirical evidence suggests that the executive compensation mechanism is not designed to increase shareholders' maximization in the ISE banking sector. It is believed that executive compensation should be linked to the firm's success. It is both the responsibilities of the authorities and the board of directors to protect shareholders' interests. Executives should be compensated according to a pay-for-performance plan.

ENDNOTES

1 "Fat cat" is a concept used to describe executives who earn what many believe to be unreasonably high salaries and fringe benefits. These top executives also receive generous pensions and retirement packages, consisting of extra compensation not available to other employees in the firm. This term conjures up the image of cats that consume more than an appropriate amount of food and become grossly overweight. In the United States, publicly-traded companies are required to disclose the amount of compensation that their top five executives receive. As a result, companies have been under a lot of scrutiny for excessive executive compensation, especially in the face of floundering revenues. A real-life example of a fat cat would be the former Disney CEO, Michael Eisner. For a period of five years in the late 1990s, Eisner received over $737 million in compensation, despite the fact that the firm's five-year net income reduced an average of 3.1% each year. (http://www.investopedia.com/terms/f/fatcat.asp, Accessed 21.03.2011).

2. Bebchuk et al. (2002) have defined these large increases as "rents" that are value in excess of which managers would receive under optimal contracting.

3. The Imar Bank scandal was one of the greatest banking corruption cases in the Turkish Republic, and the sum of the fraud amounted to $7.2 billion. This amount is even greater than that of Société Général Bank scandal in which the bank lost €4.9 billion.

4. Contrary to this definition, some people on the board or at the top management positions, irrespective of being an owner or managing a small firm, may call themselves executives. This misuse of the term is done in order to attach more importance to themselves and their firm.

5. See Murphy and Zabojnik (2004:192-193) for a counter argument of this assertion.

6. The total number of banks operating in Turkey is 49, down from 81 by the end of 1999.

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VALUE RELEVANCE OF POSTRETIREMENT BENEFIT OBLIGATIONS: AN IMPLICIT CONTRACTS ANALYSIS

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ABSTRACT

This paper investigates how the implicit nature of employee claims for postretirement benefits relates to firm valuation. A cross-sectional equity valuation model incorporating components of both pension and postretirement benefit (PRB) obligations is used to test hypotheses predicting reported obligations will be more value relevant when: 1) underlying implicit contracts are more likely to be honored; and 2) implicit claims are important to firms. The results extend prior accounting literature which focuses on the implications of measurement error in pension and postretirement benefit obligation metrics reported in financial statements. This implicit contract analysis demonstrates that, despite measurement error, incorporating firm-specific information related to the fundamental economic nature of postretirement benefits affects the value relevance of the obligations. The findings contribute to policy considerations regarding the appropriate nature and extent of footnote disclosures when information cannot be fully reflected by point estimates.

INTRODUCTION

Economic downturns focus attention on business failures. One consequence of corporate bankruptcy is restructuring and breach of contracts. Pension benefits are subject to federal funding and vesting regulations, however in bankruptcy a corporation's obligation to provide these benefits may be discharged and administration of the plan may be turned over to the PBGC. But, a firm's obligation to provide healthcare and other postretirement benefits to retirees is primarily supported by an implicit claim rather than an explicit and legally enforceable contract. In most cases, these benefits can be changed or terminated at any time. Thus, there is always uncertainty over whether currently offered postretirement benefits will be provided in the future.

This study investigates how the implicit nature of employee claims for postretirement benefits relates to firm valuation. A cross-sectional equity valuation model incorporating components of both pension and postretirement benefit (PRB) obligations is used to test hypotheses predicting reported obligations will be more value relevant when: 1) it is more likely that underlying implicit contracts will be honored; and 2) implicit claims are important to firms.

Results of this study provide insight on policy debates related to disclosure effectiveness. Reported postretirement benefit obligation estimates are more value relevant when firms are more likely to honor the underlying claim. This suggests that existence of contingencies, even in the presence of other sources of potential estimation error, does not preclude usefulness of disclosed obligations. Estimates that may not appear to be associated with market equity valuation in aggregated samples, may, in fact, be useful in valuation of subsets of firms. As firm conditions change, so can the association between market value of equity and reported estimates. Disclosures may be especially useful when future events are important to estimated obligations.

I find that amounts that are not value relevant when taken in isolation, are associated with market equity valuation when considered in conjunction with other information. These analyses provide a starting point for the extension of current approaches for examining value relevance. Considering underlying economics and developing composites of information may enhance footnote disclosure effectiveness. As standard setters address accounting for increasingly complex business transactions, useful disclosures may not only describe direct estimation parameters, but also illuminate economic fundamentals that affect measurement.

The remainder of this study is organized as follows. The next section provides background on implicit contracts. Hypotheses are then developed. The subsequent sections describe sample selection and data, followed by a description of the research design. Results are presented and discussed and concluding comments are made in the final sections.

IMPLICIT CONTRACTS

The Nature of Implicit Contracts

Implicit claims have been described as too nebulous and state contingent to reduce to writing at a reasonable cost (Cornell and Shapiro, 1987). Nevertheless, implicit contracts are quite common, and can affect the same parties as explicit contracts. These groups include, but are not limited to, customers, suppliers, creditors, and employees. Examples of implicit claims include promises of continuing service to customers, continuing business with suppliers, and continuing employee benefits. Most implicit claims arise in association with an explicit transaction. Because of their implicit nature however, implicit contractual claims are more difficult and costly to legally enforce than explicit ones.

Although implicit claims may be difficult to un-bundle and trade independently, they are nevertheless priced by stakeholders. While this price may not be directly observable, it will be incorporated into the value of some ostensibly priced attribute. Customers will be unlikely to pay the same price for an otherwise identical vehicle of unknown brand as they will for one from a well established firm with a reputation for customer service. Part of this price differential can be explained by the difference in value of the two firms' implicit promises to provide parts and service over the vehicle's life. Thus, implicit claims, while not necessarily legally enforceable,

will be enforced by market mechanisms related to stakeholders' assessment of the value of implicit contracts. These assessments will be impounded into firm value directly or by way of their effects on the terms of explicit contracts.

Pension and Postretirement Benefits as Implicit Contracts

Both the pension (SFAS No. 87, 88, 132, 158) and other postretirement benefit (SFAS No. 106, 132, 158) accounting standards express an understanding that explicit legal requirements do not necessarily mandate or encompass the provision of all retiree benefits. Rather, many benefits are provided as a result of an "...arrangement that is mutually understood by an employer and its employees" (SFAS No. 106, paragraph 7). Such an arrangement may be enforced by mechanisms other than the legal status of the promise to provide benefits including "...past practices, social or moral sanctions, or customs" (FASB, 1990, paragraph 156). Both statements expressly apply a substance over form view to what constitutes a "plan." SFAS No. 87, for example states that the pension accounting standard applies to "...a plan whose existence may be *implied* from a well-defined, although perhaps unwritten, practice of paying postretirement benefits" (FASB, 1985, paragraph 7). Similarly, SFAS No. 106 states, "This Statement applies to any arrangement that is in substance a postretirement benefit plan, regardless of its form or the means or timing of its funding. This Statement applies both to written plans and to unwritten plans whose existence is discernible either from a practice of paying postretirement benefits or from oral representations made to current or former employees" (SFAS No. 106, paragraph 8).

Thus, both accounting standards incorporate a recognition that pension and other postretirement benefits may arise from, and be enforced by, implicit and/or explicit contracting mechanisms. The continuity of benefit assumption is based on an interpretation of current benefit practices as an implicit contract. Measurement of projected pension benefit obligations (PBO) and accumulated postretirement obligation (APBO) reported under these standards is predicated on the assumption that implicit contracts will be honored: "Absent evidence to the contrary it shall be presumed that an employer that has provided postretirement benefits in the past or is currently promising those benefits to employees will continue to provide those future benefits" (SFAS No. 106, paragraph 8).

As described by Kirk (1990), postretirement benefit accounting provides an example of the paradoxes associated with incorporation of future events in the financial accounting reporting system. Both SFAS No. 87 and SFAS No. 106 allow for deviations from the terms of extant written plans in determining the basis for accounting, i.e., the "substantive' plan. Nevertheless, these deviations cannot be based on expectations about future plan amendments. In the case of postretirement benefits other than pensions, it has been suggested that many plans that provide health care benefits have been and will continue to be amended to reduce costs. Accounting for

these plans, however, does not reflect this probability. Thus, future events are selectively reflected in accounting disclosures.

The implicit and explicit dimensions of pension obligations have been both theoretically discussed and empirically investigated (Bulow,1982; Ippolito, 1986; Reiter, 1991; and Thomas, 1989). Additionally, the implicit commitment to continue pension plans has been indirectly researched in studies investigating breaches of this commitment. This literature, recognizing the economic importance of pension plan termination, investigates the breach as the phenomenon to be explained (Mittelstaedt, 1989; Thomas, 1989). In the context of non-pension postretirement benefits, research regarding the implicit nature of the obligation is limited. Similar to pension studies, the implicit obligation to continue to sponsor postretirement plans has been indirectly researched by investigating breaches of this commitment (Mittelstaedt, Nichols, and Regier, 1995).

HYPOTHESIS DEVELOPMENT

Differential Valuation of Pension and Postretirement Obligation Components

Accounting standards require multiple estimates of pension and postretirement benefit obligations to be disclosed in footnotes to financial statements. The two primary estimates of pension obligations include the accumulated benefit obligation (ABO) and the projected benefit obligation (PBO). The ABO represents the actuarial present value of benefits earned to date using current salary levels, and thus the firm's explicit and legally enforceable pension obligation. The ABO approximates the amount that a firm is obligated to satisfy should the plan be terminated. The PBO represents the actuarial present value of benefits earned to date using projected salary levels at retirement date. Thus, this measure assumes a continuation of the plan. In addition to the explicit obligation, the PBO contains an additional component related to the implicit obligation of the firm to continue the plan at current benefit levels. Should the pension plan be terminated, funding the excess of the PBO over the ABO would not typically be required.

The reported measure of postretirement obligations, the APBO, assumes continuity of the plan and its current benefits. This assumption is made regardless of the firm's legal ability to reduce or terminate benefits. Mandatory disclosures for postretirement benefits include sub-components of the APBO. These disclosures allow the APBO to be decomposed into portions related to: 1) eligible participants (comprising both retired and currently active employees); and 2) ineligible employees. Non-pension postretirement benefits are typically unfunded and there is usually no legal obligation to continue providing benefits, even to already eligible employees. While the entire postretirement benefit obligation is supported largely by an implicit contract with employees, it is less costly for firms to curtail benefits to currently ineligible employees.

Thus, the portion of the obligation that relates to employees currently ineligible for benefits is more sensitive to the assumption that implicit contracts will be honored.

The set of reported pension and postretirement benefit obligation measures can thus be viewed along a continuum of contractual explicitness. Pension ABOs are explicit, legally enforceable obligations of the firm. Funding and ultimate payment of pension benefits reflected in ABO estimates is federally regulated. The obligation to provide currently ineligible employees with postretirement medical benefits, on the other hand, is entirely implicit. In between these extremes lie the portion of APBO related to eligible participants and the portion of the PBO related to future salary levels. Investors will likely view various pension and other postretirement benefit obligations differently depending on the explicitness of the obligation.

H1: Explicitness is positively associated with value relevance of postretirement benefit obligation components.

Components of pension and postretirement benefits that are most sensitive to implicit contract issues are also most sensitive to actuarial and macro-economic assumptions. The degree to which such macro-economic and actuarial assumptions enter, and have the ability to impact, the estimation process has been a focus of policy discussions and academic research. These issues have been investigated in the context of valuation of pension and PRB obligation measures (Barth, 1991; Choi, Collins and Johnson, 1997). Prior accounting literature has not addressed implicit contract issues or investigated them as potential contributors to differential valuation of postretirement obligations. The following hypotheses introduce tests that are better able to discriminate between these alternative explanations.

Importance of Implicit Contracts with Stakeholders

PRB benefit changes are potentially associated with both direct and indirect costs. Direct costs include legal and administrative costs as well as the present value of any benefit increases. Indirect costs include reputation and productivity costs. Restructuring a PRB plan may adversely affect a firm's reputation with employees as well as other stakeholder groups that hold implicit claims (e.g., creditors, customers, and suppliers). Assuming rational firm value maximizing behavior, breach of implicit PRB contracts, although legally possible at any time, will occur only when benefits from the breach exceed the costs. Thus, the continuity of benefit assumption underlying APBO estimates is most appropriate when the cost of restructuring PRB plans is high. One condition where the indirect cost of PRB restructuring is relatively high is when firms rely heavily on implicit contracts with their stakeholders. The following research hypothesis is thus stated in alternative form:

H2: Value relevance of the APBO estimate is positively associated with reliance on implicit contracts.

Relative Costs of Implicit Contract Breach

A second condition where the cost of PRB restructuring is relatively high is when re-contracting costs with employees are high. Re-contracting costs increase when frequent modifications are made to PRB plans. Additionally, because restructuring benefits is costly, firms likely review the terms of all benefits offered when amending a plan. Increased benefits indicate an ongoing commitment to the PRB plan. When benefits are reduced, plan restructuring reflects a renewed commitment to providing postretirement benefits in accordance with the amended plan. In periods following changes in PRB plans, costs of additional changes are relatively high and the continuity of benefit assumption is thus more likely to hold.

H3: Value relevance of postretirement benefit obligation estimates is positively associated with recently modified postretirement benefit plans.

SAMPLE SELECTION AND DATA

Extremes in economic conditions may affect the extent to which investors analyze the underlying uncertainty about whether companies' explicit and implicit obligations will be valued. Corporate bankruptcies likely heighten awareness of this uncertainty, while economic booms likely lessen it. Thus boom and bust periods are not reasonable contexts for an initial or baseline examination of the valuation implications of implicit contract obligations. Recent economic periods have now been characterized as a series of "bubbles". The late nineties were characterized as an "internet bubble" which, after a short-lived bust, was followed by a real estate related bubble during the first decade of the 21st century. In order to consider the valuation implications of implicit claims for postretirement benefits in the context of a recent but stable economic period, my sample is taken from the 1991 to 1993 period. A sample of publicly traded firms making postretirement disclosures was identified from the National Automated Accounting Research System (NAARS) 1993 annual report file using key word search terms including: "No. 106," "employers' accounting for postretirement benefits," and "accumulated postretirement benefit obligation." A total of 730 firms was identified by this method.

In order to be retained in the sample, the following criteria must be satisfied: 1) financial statement footnotes must be available on Disclosure as of August 1994; 2) footnote disclosures must be sufficiently detailed to allow identification of variables in the analysis; and 3) financial data must be available on the COMPUSTAT. All pension and postretirement data were manually collected from financial statement footnotes. Other data used in the analysis (e.g., total assets, number of employees, stock price, etc.) were obtained from COMPUSTAT. The resulting sample includes 454 firms in 1993. The sample is well diversified across industries with 47 two-digit SIC codes represented in 1993. Descriptive statistics for financial variables used in this study provide evidence that the magnitude of all pension and other postretirement

obligation variables is significant in relation to other firm assets and liabilities. The mean (median) pension accumulated benefit obligation ranges from 28 to 34 (14 to 16) percent of equity market value over the three year period. Mean (median) pension projected benefit obligation ranges from 32 to 38 (18 to 19) percent of equity market value while the mean (median) accumulated postretirement benefit obligation represents 9 to 13 (5) percent of equity market value.

RESEARCH DESIGN

Valuation Models

Cross-sectional valuation models are used to test hypotheses. Prior literature has used a balance sheet valuation model that assumes a relation between market value of equity and book value of equity (Landsman, 1986; Barth, 1991; Choi, Collins and Johnson, 1997). The balance sheet valuation model begins with the relation:

$$MVE = BVA + BVL + (ONAm - ONAb) \quad (1)$$

Where: MVE = market value of equity;
BVA = book value of assets;
BVL = book value of liabilities (expressed as negative amounts);
ONA = All other net assets;
subscript m = market value and
subscript b = book value.

In this model, the book (accounting) values of assets and liabilities proxy for unobservable market values of assets and liabilities. My analysis examines valuation of partially off-balance sheet pension and postretirement asset and liability estimates. Thus, pension and postretirement assets and liabilities are incorporated into the above model. In order to control for size and heteroskedasticity, in empirical specifications all variables are scaled by the number of shares outstanding. To reduce multicollinearity, variables for which the coefficients are not expected to differ (book value of assets and liabilities, and pension and PRB assets) are combined to form single variables. This reduces the estimation equation to:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \varepsilon \quad (2)$$

Where: MVE = market value of equity per share;
BVNA = book value per share of non-pension/PRB net assets;
PRA = fair value per share of pension and postretirement plan assets;
ABO = accumulated benefit obligation per share;
PIECE = excess of projected benefit obligation over accumulated benefit obligation per share;
APBO = accumulated postretirement benefit obligation per share.

Prior literature examining valuation of pension liabilities has not decomposed the PBO into ABO and PIECE components. Rather, the PBO and ABO reported under SFAS No. 87 have been used as alternative estimates of pension liabilities in valuation models. Incorporation of the PIECE parameter allows information from both the ABO and PBO to be included in the analysis, without confounding inferences on the ABO.

Use of the balance sheet valuation model facilitates comparison of results with prior studies. Equation 2 thus represents the basic model underlying all empirical analyses reported. Additional variables (e.g., multiplicative dummy variables) are introduced into this model to test hypotheses. The theoretical underpinning of this model, however, is less well established than for an alternative valuation model incorporating accounting earnings information. Additionally, when multiplicative dummy variables are based on income or expense items, controlling for accounting earnings is especially important to interpretation of results. Thus, an additional model based on Feltham-Ohlson (1995) is used for all analyses. This model expresses market value as book value plus discounted future abnormal earnings. Assuming abnormal earnings follow a simple autoregressive process (Bernard, 1995), the Feltham-Ohlson approach can be expressed as follows:

$$\text{Price} = \alpha + \beta_1(\text{net book value of operating assets}) + \beta_2(\text{abnormal earnings}) + \varepsilon \quad (3)$$

Where: abnormal earnings $= NI_{i,t} - r_{i,t}(BVE_{i,t-1})$
NI = net income before extraordinary items per share;
r = $R_f + \beta_i(R_m - R_f)$, with β_i representing the firm specific equity beta derived from a market model regression, R_m = return on market and R_f = risk-free interest rate.

For this analysis, the model is adapted to incorporate pension and postretirement assets and liabilities resulting in the following estimation equation (hereafter referred to as the abnormal earnings (ABEARN) model):

$$MVE = \alpha + \beta_1 ABEARN + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 YR + \varepsilon \quad (4)$$

Where: ABEARN = abnormal earnings per share estimated as described above, using firm specific equity betas derived from monthly market model regressions estimated over a 60 month period, and R_m and R_f from Ibbotson and Sinquefield (1995);
all other variables as previously defined.

Research Design for H1

The first hypothesis predicts that the explicitness of claims underlying components of postretirement benefits is positively associated with value relevance. This relationship is investigated using three tests. The following estimation equation is used for the first two tests:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 YR + \varepsilon \quad (5)$$

Prediction: $\beta_3 < \beta_4$; $\beta_3 < \beta_5$

Where: all variables as previously defined.

The pension ABO, which is an explicit obligation supported by federal regulations, is predicted to be reflected in market value of equity to a greater extent than the more implicit PIECE (PBO less ABO) and non-pension APBO. Since liabilities are entered into regressions as positive values, predicted coefficients are negative.

The APBO can be decomposed based on participant eligibility. The obligation related to already eligible participants is predicted to be reflected in market value of equity to a greater extent than the portion related to ineligible participants. Decomposing the APBO results in the following estimation equation:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 ELG + \beta_6 INELG + \beta_7 YR + \varepsilon \quad (6)$$

Prediction: $\beta_5 < \beta_6$

Where: ELG = APBO per share related to eligible participants;
INELG = APBO per share related to ineligible participants;
all other variables as previously defined

Research Design for H2

The second hypothesis investigates importance of firms' implicit claims in valuation of PRB obligations. Although a variety of stakeholder groups hold implicit claims, employees are the stakeholder group most directly affected by implicit postretirement obligation claims. Thus, valuation implications of employee and non-employee stakeholder implicit claims are separately analyzed.

Compensation arrangements with employees are often expressed in written contracts, but many aspects of firms' relations with employees are implicit. Conditions of employment that are typically supported by implicit claims include working conditions, job security, wage security, and promotion opportunities. The firm's reputation for providing these benefits can affect its ability to attract and retain high-quality employees. When the firm does not have a reputation for honoring all dimensions of its commitments with employees, employees may be less willing to accept implicit claims from the firm and may demand more explicit contractual terms. The firm's ability to rely on implicit employee contracts thus affects the terms of resulting explicit contracts with employees. The PRB obligation represents an implicit contract with employees.

In order to investigate valuation implications of the importance of employee stakeholder claims, the following equation is estimated:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 (LABOR * APBO) + \beta_7 YR + \varepsilon \quad (7)$$

Where: LABOR = 1 if importance of employee stakeholder groups is high, 0 otherwise;
all other variables as previously defined

A proxy for the importance of employee stakeholder groups and their implicit claims is developed based on the economic significance of postretirement obligations to employees.

Economic significance to employees: The number of employees is important to economic assessment of PRB obligations. Two firms may have an identical APBO estimate, but a very different APBO per employee. When APBO per employee is high (low), employees may (may not) be materially affected by a breach of the implicit contract. LABOR, an indicator variable for the top quartile of APBO per employee in sample firms, is a proxy for the economic significance of PRB claims to employees.

Non-employee stakeholders are not directly affected by implicit PRB obligations. Nevertheless, stakeholders such as customers, suppliers, and creditors, who also rely on implicit contracts with the firm, may be indirectly affected. A firm's reputation for honoring implicit obligations with one stakeholder group may carry over to others. Additionally, employees' willingness to accept a firm's implicit contracts may have productivity and profitability implications affecting its ability to honor other implicit contracts.

Bowen, DuCharme, and Shores (1995) develop implicit claims variables to jointly proxy for the extent to which a firm depends on implicit claims with five broad groups of stakeholders. I use four of these variables (i.e., those that are not related to employees) to develop an index for firm dependence on implicit claims with non-employee stakeholders. These variables are described below and classified by related stakeholder group.

Customers: Firms with three digit SIC codes 150-179, 245, 250-259, 283, 301, and 324-399 are identified as durable goods producers and identified by the indicator variable DUR.

Suppliers: Cost of goods sold (scaled by adjusted total assets and averaged over the current and up to two preceding years) is used to proxy for the extent to which firms are subject to supplier-related implicit claims related. COGS is an indicator variable for the top quartile of observations for this supplier implicit claim value.

Short-term creditors: Short-term notes payable (scaled by adjusted total assets and averaged over the current and up to two preceding years) is used as a proxy for the extent to which a firm is subject to implicit claims related to short-term creditors. NP is used as a dummy variable indicating observations with this short-term creditor implicit claim value in the top quartile of the sample.

All stakeholders: Advertising expense (scaled by adjusted total assets and averaged over the current and up to two preceding years) is used as a proxy for the extent to which a firm is subject to implicit claims related to multiple stakeholder groups. ADV is used as a dummy variable indicating observations with this implicit claim value in the top quartile of the sample.

The sum of these indicator variables is used to construct an index (observations with missing values for underlying variables used for each implicit claim proxy are coded as low for that proxy.) This index is used as a proxy for the extent to which a firm relies on non-employee implicit contracts. Three different levels of the index score (4, 3, and 2) are used to classify observations as high non-employee implicit contract. The dummy variable HIX is equal to one for high non-employee implicit contract observations, and zero otherwise.

The proxies for reliance on non-employee implicit contracts relate to broad characteristics of firms such as industry classification. Thus, each is subject to alternative interpretations. Implicit contracts with customers, for example, are often important when firms produce durable goods, but this activity may also relate to labor intensity. In order to disentangle the effects of employee and non-employee implicit claims, a control for employee claims is introduced in tests of H2. Pension and other postretirement assets and liabilities are scaled by the number of current employees are used. The following estimation equation is employed to test H2 in the context of non-employee stakeholders:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 (HIX*APBO) + \beta_7 YR + \varepsilon \quad (8)$$

Where: HIX = 1 if firm is classified as high non-employee implicit contracts, 0 otherwise;
All other variables as previously defined.

Research Design for H3

The third hypothesis investigates importance of the continuity of benefit assumption to valuation of APBO estimates. Reported estimates of the APBO are predicated on the assumption that firms will continue to provide postretirement benefits at current levels to the same groups of employees and H3 predicts the value relevance of reported APBO estimates is related to the appropriateness of this assumption. Three proxies are developed for the probability that firms will honor employees' implicit claims for postretirement benefits at current levels (i.e.,

appropriateness of the continuity of benefit assumption). Each is based on the assumption that modification of PRB plans is costly, and thus unlikely to occur frequently. Accordingly, when firms have recently modified PRB plans, it is more likely that benefits will continue to be offered in accordance with the newly revised plan, at least in the foreseeable future. Three variables indicating recent revision in PRB plans proxy for the likelihood that the continuity of benefit assumption is appropriate and the implicit contract for benefits will be honored. These proxies are incorporated into valuation models as multiplicative dummy variables on APBO as follows:

$$MVE = \alpha + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 (HONOR_i * APBO) + \beta_7 YR + \varepsilon \quad (9)$$

Where: $HONOR_I = 1$ if appropriateness of continuity of benefit assumption is high, 0 otherwise.
i = 1,2,3 as described below;
all other variables as previously defined.

The HONOR1 variable is developed from review of footnote disclosures. It indicates firms disclosing a PRB plan change anytime between the adoption of SFAS No. 106 and the observation fiscal year end. Firms have discretion over the timing, form, and disclosure of PRB changes. Two additional variables that are independent of disclosure decisions are developed to identify changes in benefits. HONOR2 is based on APBO estimates. Observations where the change (either increase or decrease) in reported APBO per employee is in the top quartile of the sample are coded as high change in APBO (HONOR2). HONOR3 is based on reported postretirement costs. Observations where postretirement costs per employee changes are in the top quartile of the sample are identified as high change in postretirement cost (HONOR3).

RESULTS

Results of H1 Tests

Hypothesis 1 investigates differences in value relevance of various measures of postretirement obligations. For both valuation models, coefficients on the book value of net assets, net income or abnormal earnings, and postretirement assets are significantly positive while that on the ABO is significantly negative. The coefficient on PIECE and APBO are insignificantly different from zero. (Throughout the results section, results are presented after elimination of observations identified as influential based on a DFFIT value (Belsley, Kuh, and Welsh, 1980) greater than one. In most cases elimination of influential observations does not affect interpretation of results, but significance is affected.) These results are consistent with those reported in related studies (Barth, 1991; Amir, 1994; and Choi, Collins, and Johnson, 1997). Results of tests of H1 comparing the coefficient on ABO to those on the more implicit PIECE and APBO are reported in Table 1. In this table, Panel A presents results of tests based

on the balance sheet valuation model while Panel B presents results using the abnormal earnings model. As predicted, in both specifications the coefficient on ABO is significantly less than that on both PIECE ($p < 0.02$, $p < 0.04$) and APBO ($p < 0.03$).

Table 1:
Comparison of Coefficients on Pension and PRB Components

Panel A: $MVE = \beta_0 + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 YR + \varepsilon$		
TEST	$\beta_3 < \beta_4$	$\beta_3 < \beta_5$
t-statistic (p value)	1.97 (0.02)	1.78 (0.03)
Panel B: $MVE = \beta_0 + \beta_1 ABEARN + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 YR + \varepsilon$		
TEST	$\beta_4 < \beta_5$	$\beta_4 < \beta_6$
t-statistic (p value)	1.79 (0.04)	1.88 (0.03)

Where:

MVE= stock price per share;
ABEARN = abnormal earnings per share;
BVNA = net assets per share (excluding pension and PRB accruals);
PRA = sum of fair value of pension & PRB assets per share;
ABO = ABO per share for pension plans;
PIECE = Excess of pension PBO over ABO per share;
APBO = APBO per share for PRB plans;
YR = 1 if year is 1992, 0 otherwise.

Critical (one-sided) $t\ \alpha_{=0.10} = 1.28$; $t\ \alpha_{=0.05} = 1.65$; $t\ \alpha_{=0.01} = 2.36$

Table 2 presents results of estimating the regression equation decomposing the APBO into components related to eligible (ELG) and ineligible (INELG) plan participants. Across both valuation model specifications coefficients on basic estimation parameters are consistent with predictions, the coefficient on ELG is significantly negative ($p < 0.05$), and that on INELG is insignificantly different from zero. As predicted, the ELG coefficient is significantly less than that on INELG. Reported results provide evidence consistent with a positive relation between value relevance and explicitness of claims underlying obligations.

Results of H2 Tests: Employee Implicit Claims

The second hypothesis tests valuation implications of the extent of firm reliance on implicit contracts. Table 3 presents results of estimating equation 7 using high APBO per employee (LABOR) as a proxy for importance of employee implicit claims. In both valuation model specifications estimated coefficients on all parameters are as predicted. Coefficients on both the book value of net assets and pension/postretirement assets are significantly positive ($p < 0.01$). The coefficient on ABO is significantly negative ($p < 0.01$), while those on PIECE and APBO are insignificantly different from zero. The incremental coefficient on the LABOR variable is significantly negative ($p < 0.01$).

Table 2
Estimation with APBO Components

$MVE = \beta_0 + \beta_1 NI_i + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 ELG + \beta_7 INELG + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	Predicted Sign	Coefficient (t-value)	Coefficient (t-value)
Specification			B/S	ABEARN
Intercept	β_0	+/-	15.33 (12.85)	18.80 (16.46)
NI_i	β_1	+		7.19 (7.16)
BVNA*	β_2	+	0.84 (12.19)	0.73 (12.47)
PRA	β_3	+	0.72 (3.43)	0.79 (3.97)
ABO	β_4	-	-0.78 (-3.53)	-0.84 (-4.00)
PIECE	β_5	0/-	0.20 (0.25)	0.12 (0.16)
ELG	β_6	0/-	-0.55 (-1.74)	-0.61 (-2.17)
INELG	β_7	0/-	0.54 (0.88)	0.73 (1.27)
YR	β_8		-0.48 (-0.42)	-2.27 (-1.92)
Adjusted R^2			0.43	0.37
Sample Size			679	665
Test: $\beta_6 < \beta_7$			t = 1.33 (p = 0.09)	t = 1.81 (p = 0.04)

Where: ELG = APBO per share for eligible participants;
INELG = APBO per share for ineligible participants
And all other variables as previously defined.
Critical (one-sided) t $\alpha_{=0.10}$ = 1.28; t $\alpha_{=0.05}$ = 1.65; t $\alpha_{=0.01}$ = 2.36

Table 3
Estimation with LABOR

$MVE = \beta_0 + \beta_1 NI_i + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 (APBO*LABOR) + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	Predicted Sign	Coefficient (t-value)	Coefficient (t-value)
Model			B/S	ABEARN
Intercept	β_0	+/-	15.62 (12.90)	17.24 (14.22)
NI_i	β_1	+		5.14 (4.62)
BVNA	β_2	+	0.83 (11.74)	0.80 (11.91)
PRA	β_3	+	0.67 (3.46)	0.63 (3.33)
ABO	β_4	-	-0.76 (-3.55)	-0.72 (-3.49)
PIECE	β_5	0/-	0.46 (0.61)	0.71 (0.96)
APBO	β_6	0/-	0.12 (0.49)	0.09 (0.39)
APBO*LABOR	β_7	-	-1.07 (-4.76)	-0.95 (-4.25)
YR	β_8	+/-	-0.73 (-0.66)	-2.14 (-1.84)
Adjusted R^2			0.45	0.46
Sample Size			688	684

Where: LABOR = 1 if APBO per employee is in the top quartile, 0 otherwise;
And all other variables as previously defined.
Critical (one-sided) t $\alpha_{=0.10}$ = 1.28; t $\alpha_{=0.05}$ = 1.65; t $\alpha_{=0.01}$ = 2.36

Results of H2 Tests: Non-Employee Implicit Claims

Four proxies for non-employee implicit claims are used to develop an indicator variable (HIX) for high non-employee implicit claims. Correlations of these four proxies (as well as the labor intensity proxy) were evaluated. Most variables are significantly correlated, but none of the correlations are especially high. Three different levels of the index score are used to classify firms as highly sensitive to non-employee implicit claims. Non-employee implicit claims index scores of 4, 3, and 2 are used as alternatives for classifying firms. HIX4 represents the top 1% of sample observations, while HIX3 and HIX2 represent the top 13% and 32%, respectively. Classification as HIX4 requires each of the four individual non-employee implicit claim proxies to be identified as high. Classification as HIX3(HIX2) requires at least 3(2) of the 4 individual non-employee implicit contract variables to be identified as high. Two of the four variables used to construct the non-employee implicit contract index are based on reported expenses: cost of goods sold and advertising expense. Thus, a control for earnings is important to interpretation of results when this index is incorporated in regression analyses.

Table 4 reports results of estimating equation 8. The sign and significance of coefficients on all estimation parameters are as predicted. The APBO coefficient is insignificantly different from zero overall, but significantly negative when the HIX variable is defined by a non-employee implicit contract index value of 2, 3, or 4.

Table 4
Estimation with HIX_i Using Balance Sheet Specification

$MVE = \beta_0 + \beta_1 BVNA + \beta_2 PRA + \beta_3 ABO + \beta_4 PIECE + \beta_5 APBO + \beta_6 (APBO*HIX) + \beta_7 YR + \varepsilon$

Independent Variable	Coefficient	(t-value)	(t-value)	(t-value)
HIX value		HIX4	HIX3	HIX2
Intercept	β_0	18.54 (17.28)	18.55 (17.41)	18.59 (17.60)
BVNA	β_1	0.67 (12.59)	0.67 (12.54)	0.66 (12.31)
PRA	β_2	0.21 (2.98)	0.22 (3.14)	0.22 (3.21)
ABO	β_3	-0.85 (-2.40)	-0.92 (-2.60)	-0.90 (-2.70)
PIECE	β_4	-0.49 (-0.46)	-0.55 (-0.53)	-0.14 (-0.14)
APBO	β_5	-0.82 (-1.03)	-0.60 (-0.74)	-0.57 (-0.67)
$APBO*HIX_i$	β_6	-21.85 (-1.61)	-4.60 (-2.42)	-1.36 (-1.52)
YR	β_7	-0.86 (-0.79)	-0.75 (-0.70)	-0.82 (-0.76)
Adjusted R^2		0.32	0.32	0.32
Sample Size		631	631	631

Where: HIX_i = 1 if non-employee implicit contract index value is at least i, 0 otherwise, with i=2,3,4;
And all other variables as previously defined.
Critical (one-sided) $t_{\alpha=0.10} = 1.28$; $t_{\alpha=0.05} = 1.65$; $t_{\alpha=0.01} = 2.36$

Table 5 reports results of estimating a regression equation based on the abnormal earnings valuation model. The incremental coefficient on the HIX variable is significantly

negative when HIX is defined as an index value of 3 ($p<0.01$) or 4 ($p<0.06$), but insignificant when HIX is defined at the value of 2.

Table 5
Estimation with HIX_i Using Abnormal Earnings Specification

$MVE = \beta_0 + \beta_1 ABEARN + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 (APBO*HIX) + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	(t-value)	(t-value)	(t-value)
HIX value		HIX4	HIX3	HIX2
Intercept	β_0	19.19 (17.62)	19.22 (17.76)	19.15 (17.67)
ABEARN	β_1	2.69 (3.08)	2.71 (3.10)	2.42 (2.75)
BVNA	β_2	0.66 (12.32)	0.65 (12.24)	0.65 (12.18)
PRA	β_3	0.21 (3.06)	0.23 (3.24)	0.23 (3.25)
ABO	β_4	-0.80 (-2.40)	-0.88 (-2.64)	-0.81 (-2.49)
PIECE	β_5	0.40 (0.36)	0.33 (0.29)	0.78 (0.68)
APBO	β_6	-0.87 (-0.95)	-0.61 (-0.65)	-0.85 (-0.94)
$APBO*HIX_i$	β_7	-21.41 (-1.61)	-4.72 (-2.55)	-1.38 (-1.08)
YR	β_8	-1.59 (-1.41)	-1.48 (-1.32)	-1.46 (-1.28)
Adjusted R^2		0.32	0.32	0.32
Sample Size		629	629	629

Where: HIX_i = 1 if non-employee implicit contract index value is at least i, 0 otherwise, with i=2,3,4;
And all other variables as previously defined.
Critical (one-sided) $t_{\alpha=0.10} = 1.28$; $t_{\alpha=0.05} = 1.65$; $t_{\alpha=0.01} = 2.36$

Results support a relation between the importance of both employee and non-employee implicit claims and value relevance of reported APBO estimates. In firms with the highest level of reliance on non-employee implicit contracts, results suggest that the APBO is value relevant.

Results of H3 Tests

Three different proxies are used to investigate the import of appropriate continuity of benefit assumptions in tests of H3. Results of estimating valuation equations where the proxy for continuity of benefit assumption appropriateness is based on footnote disclosure of PRB plan changes (HONOR1) are reported in Table 6. Across both specifications coefficients on all parameters are consistent with predictions. In particular, the incremental coefficient when a change in PRB plan has been disclosed (HONOR1) is significantly negative.

The HONOR2 and HONOR3 variables are based on changes in reported PRB metrics. The percentage change in APBO per employee ranges from a 70% decrease to a 230% increase. The mean percentage change is 3%. The percentage change in PRB cost ranges from a 99% decrease to a 343% increase. The mean percentage change is a 0.60% increase. These descriptive statistics suggest that the range of percentage changes is high, but on average changes are modest.

Table 6
Estimation with HONOR1

$MVE = \beta_0 + \beta_1 NI_i + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 (APBO*HONOR1) + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	Predicted Sign	Coefficient (t-value)	Coefficient (t-value)
specification			B/S	ABEARN
Intercept	β_0	+/-	21.13 (18.83)	19.61 (15.66)
NI_i	β_1	+		4.48 (2.52)
BVNA	β_2	+	0.73 (14.10)	0.78 (13.33)
PRA	β_3	+	4.18 (4.68)	2.08 (3.04)
ABO	β_4	-	-7.35 (-6.88)	-3.72 (-3.81)
PIECE	β_5	0/-	-3.23 (-1.17)	-0.30 (-0.20)
APBO	β_6	0/-	-1.31 (-1.50)	-1.38 (-1.46)
APBO*HONOR1	β_7	-	-5.09 (-4.24)	-2.41 (-1.48)
YR	β_8	+/-	-1.34 (-1.25)	-1.74 (-1.46)
Adjusted R^2			0.42	0.46
Sample Size			669	678

Where: HONOR1 = 1 if PRB plan change is disclosed, 0 otherwise;
And all other variables as previously defined.
Critical (one-sided) $t_{\alpha=0.10} = 1.28$; $t_{\alpha=0.05} = 1.65$; $t_{\alpha=0.01} = 2.36$

Table 7
Estimation with HONOR2

$MVE = \beta_0 + \beta_1 NI_i + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 (APBO*HONOR2) + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	Predicted Sign	Coefficient (t-value)	Coefficient (t-value)
specification			B/S	ABEARN
Intercept	β_0	+/-	20.16 (18.22)	20.89 (18.08)
NI_i	β_1	+		3.73 (3.33)
BVNA	β_2	+	0.72 (14.02)	0.71 (13.77)
PRA	β_3	+	1.09 (1.89)	0.78 (1.43)
ABO	β_4	-	-3.10 (-3.83)	-2.39 (-2.98)
PIECE	β_5	0/-	-0.32 (-0.28)	-0.79 (-0.74)
APBO	β_6	0/-	-0.44 (-0.58)	-0.81 (-0.97)
APBO*HONOR2	β_7	-	-4.51 (-2.78)	-4.86 (-2.64)
YR	β_8	+/-	-1.28 (-1.19)	-2.01 (-1.74)
Adjusted R^2			0.41	0.41
Sample Size			680	674

Where: HONOR2 = 1 if change in APBO is in the top quartile, 0 otherwise;
All other variables as previously defined.
Critical (one-sided) $t_{\alpha=0.10} = 1.28$; $t_{\alpha=0.05} = 1.65$; $t_{\alpha=0.01} = 2.36$

Results using changes in APBO estimates (HONOR2) as the proxy for appropriate continuity of benefit assumption are summarized in Tables 7. The signs of all coefficients are as predicted. The Coefficient on APBO is insignificantly different from zero, while the incremental coefficient on the HONOR2 variable is significantly negative in all specifications.

Table 8 presents Results using changes in PRB cost (HONOR3) as the proxy for appropriate continuity of benefit assumption. The signs of all coefficients are as predicted. The Coefficient on APBO is insignificantly different from zero, while the incremental coefficient on the HONOR3 variables is significantly negative in all specifications. Three different proxies are used for the appropriate continuity of benefit assumption (HONOR1, HONOR2, and HONOR3). Results using each of three proxies in Table 6, Table 7 and Table 8 are all consistent with predictions.

Table 8
Estimation with HONOR3

$MVE = \beta_0 + \beta_1 NI_i + \beta_2 BVNA + \beta_3 PRA + \beta_4 ABO + \beta_5 PIECE + \beta_6 APBO + \beta_7 (APBO*HONOR3) + \beta_8 YR + \varepsilon$

Independent Variable	Coefficient	Predicted Sign	Coefficient (t-value)	Coefficient (t-value)
specification			B/S	ABEARN
Intercept	β_0	+/-	20.11 (18.07)	21.26 (18.27)
NI_i	β_1	+		4.69 (4.36)
BVNA	β_2	+	0.72 (13.99)	0.71 (13.71)
PRA	β_3	+	1.45 (2.27)	0.74 (1.43)
ABO	β_4	-	-3.67 (-3.98)	-2.73 (-3.57)
PIECE	β_5	0/-	-0.89 (-0.91)	-0.87 (-0.88)
APBO	β_6	0/-	-0.88 (-1.06)	0.10 (0.12)
APBO*HONOR3	β_7	-	-1.73 (-1.37)	-4.43 (-4.07)
YR	β_8	+/-	-1.16 (-1.07)	-2.28 (-1.97)
Adjusted R^2			0.41	0.41
Sample Size			674	668

Where: HONOR3 = 1 if change in PRB cost is greater than 10%, 0 otherwise;
And all other variables as previously defined.
Critical (one-sided) $t_{\alpha=0.10} = 1.28$; $t_{\alpha=0.05} = 1.65$; $t_{\alpha=0.01} = 2.36$

In summary, results are robust across valuation model specifications and proxies for appropriate continuity of benefit assumption. In each case, the reported APBO estimate is negatively associated with market value of equity when recent changes have been made to plans.

CONCLUSIONS

The accounting and finance literature has contributed to our understanding of the implications of explicit contracts, but very little empirical research has addressed implicit

contracts. In some part, this is due to difficulty in observing quantifiable measures of implicit claims. Alternative measures reported in pension and other postretirement disclosures create a unique research context for investigating implicit claims. These measures differ in explicitness of underlying claims but have many other economic and measurement similarities. This study extends the literature on implicit contracts by testing the extent to which the valuation of PRB obligations relates to the implicit nature of the underlying claim.

Much of the discussion surrounding accounting for pensions involved attempts to determine which of the potential measures of pension obligations was the "best." Empirical research has also shared this focus to varying extents, typically assuming different measures of postretirement benefits contain greater or lesser "measurement error." This study argues that the value relevance of accounting information can be influenced by the nature of the obligations that are being measured as well as interaction with firm specific actions and characteristics (such as reliance on implicit contracts with stakeholders and benefit plan amendment decisions).

The measurement error perspective is limited as long as it is considered within the confines of estimation parameters. Measurement error can arise from a number of sources, not all of which directly related to numerical estimation processes. Reported results describe a relation between APBO valuation and the strength of implicit contracts. If a broader view is taken, implicit contract issues can be interpreted as a potential distinct source of measurement error in equity valuation. But, identifying and even explaining measurement error, is not, however, inherently interesting in the absence of valuation implications. Results of measurement error analyses may suggest that estimation error (i.e., lack of reliability) impairs usefulness of reported information. Unless suggestions are made regarding ways reliability could be improved, however, this research contributes little to the paradox of reporting future oriented information.

This analysis is predicated on the view that although footnote disclosures have previously been demonstrated to be value relevant, disclosed amounts often differ in some fundamental way from recorded assets and liabilities and results of this study suggest that estimates such as the APBO can be useful in the valuation of subsets for firms. So, the appropriate nature and extent of footnote disclosures will continue to be an important accounting issue. Empirical evidence, like that reported in this study, contributes to these considerations by investigating the value relevance of complex obligations in conjunction with the nature of the obligations, managerial actions, firm-specific factors, and the full set of disclosed information.

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DURATION OF CORPORATE DEBT ISSUES

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ABSTRACT

Previous research investigates how corporate finance managers make their bond maturity decisions. This paper investigates the relationship between duration and bond characteristics. The relationship between firm features and the durations of 8,627 corporate debt issues placed by U.S. corporations in public markets between 1990 and 2002 is examined. The major finding of the study is that firm quality, as measured by credit rating, is directly related to bond duration, with investment-grade firms issuing debt with a longer duration than their high-yield counterparts. The findings also suggest that bond duration is inversely related to firm size, that regulated non-financial firms have longer bond duration, and that syndicated offerings have longer duration than non-syndicated offerings.

INTRODUCTION

Numerous theoretical and empirical studies have investigated the different factors that firms consider when choosing the maturity of their debt issues. In this paper, the duration of debt issues is examined. Some questions about the determinants of debt maturity may also be answered by examining firms' duration choices.

Duration measures the number of years required to recover the true cost of a bond, considering the present value of all coupon and principal payments received in the future. Debt maturity focuses more on matching the cash flow generated from the chosen project to the life of the project. Research comparing both approaches (duration and maturity) may discern whether firms focus on duration or maturity. Hypotheses that have been offered to explain corporate debt maturity are used to examine the firms' duration choices to see if factors that influence maturity choices also affect bond duration.

Using a sample of debt issues from the Thomson Financial SDC Platinum database, the determinants of the durations of 8,627 public, non-convertible corporate debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002 are documented. How signaling and asymmetric information as well as agency problems are related to bond duration is also examined.

This paper is organized as follows: The following sections provide a comprehensive examination of the theories surrounding debt maturity and bond duration, including a set of

testable hypotheses. A description of the data obtained for analysis is provided, and the models and results are then presented. The conclusions of this paper are presented in the final section.

THEORIES AND HYPOTHESES

Theories and hypotheses that have been offered to explain corporate debt maturity are used to examine the firms' duration choices to determine if factors that influence maturity choices also affect bond duration. Specifically, how signaling and asymmetric information as well as agency problems are related to bond duration is investigated.

SIGNALING AND ASYMMETRIC INFORMATION

Flannery (1986) examines the maturity structure of a firm's risky debt using a model of uncertainty where debt serves as a signal of credit quality. The model indicates that, given low costs for debt issuance, high-quality firms will issue short-term debt when they expect to benefit from bondholder scrutiny during the refinancing process, while low-quality firms issue long-term debt to avoid re-evaluation. On the other hand, abnormally high refinancing costs will lead to a pooling equilibrium where both high-quality and low-quality firms issue long-term debt.

The risk of not being able to refund debt because of deterioration in financial or economic conditions can motivate firms to lengthen the maturity of their debt. Sharpe (1991) and Titman (1992) suggest that unfavorable news about a borrower may arrive on the refinancing date, causing investors not to extend credit or to raise default premia on new debt issues. Diamond (1991) refers to this refinancing risk as a liquidity risk in that the borrower is forced into an inefficient liquidation because refinancing is unavailable. Diamond (1991) builds on Flannery's (1986) paper by suggesting that high-quality firms indeed desire short-term debt but face the risk that refinancing may be unavailable, forcing liquidation and loss of control. Thus, the optimal maturity structure is decided by a trade-off between its preference for short-term debt based on an expected improvement in credit rating and greater liquidity risk. While liquidity risks give some firms an incentive to borrow long-term, such firms may not be able to do so because the rate of return required to compensate investors for bearing long-term credit risks can induce firms to take risky low-quality projects. According to Diamond (1991), there are two categories of short-term borrowers: high-rated borrowers using short-term debt to take advantage of the arrival of information and low-rated borrowers who are screened out of the long-term debt market because lenders want to keep them on a "short leash." Thus, long-term bonds are issued by those firms having intermediate ratings.

Diamond (1993) develops an asymmetric-information model where debt seniority is related to debt maturity. Assuming that credit ratings provide noisy signals for the quality of a firm's projects, lenders have two possible options: (1) liquidating bad projects and denying the firm a chance to extract control rents, or (2) simply accepting a promised payment at the end of

the life of the project in return for forgiving the amount of currently due obligations. As a result, high-quality borrowers utilize short-term debt since it can be refinanced as positive information is revealed. Alternatively, low-quality borrowers have long-term debt in the hope that lenders will not want to liquidate. However, in an effort to avoid identifying themselves as low-quality borrowers, they will emulate the high-quality borrowers by issuing debt at both ends of the maturity spectrum.

In this paper two empirical tests are constructed to measure the relationship between firm quality and bond duration. First, Flannery's (1986) separating equilibrium hypothesis is tested by comparing investment-grade issues with speculative-grade issues. In this case, the signaling hypothesis suggests that investment-grade issues should have shorter durations than speculative-grade issues. Alternatively, Diamond's (1993) asymmetric information model suggests no difference between bond-rating groups. Second, Diamond's (1991) hypothesis is tested by comparing high- and low-rated issues to intermediate-rated issues. Asymmetric information theory suggests that both high-rated and low-rated issues should have shorter durations than intermediate-rated issues since low-quality firms are screened out of the long-term debt market. Even though credit-rating information is publicly available, it is used to test the asymmetric information hypothesis since firms with a low credit rating are more susceptible to information asymmetry problems than are firms with a high credit rating. As a result, firms with a low credit rating are more likely to issue short-term debt due to the larger information costs associated with long-term debt.

AGENCY PROBLEMS

Myers (1977) analyzed possible externalities generated by debt on shareholders' (and management's) optimal investment strategies. According to Myers (1977), in some cases, the benefits from undertaking profitable investment projects are split between stockholders and bondholders. If debt matures after the expiration of the firm's investment option, profits from investment will accrue, at least partially, to the bondholders rather than accrue fully to the shareholders. As a result, a shareholder and manager coalition will be reluctant to pursue future investment. Myers calls this the underinvestment problem. Myers (1977) predicts that debt maturity after the expiration of the growth option causes an underinvestment problem. High-growth opportunity firms are more likely to face an underinvestment problem compared with low-growth opportunity firms. The implication of the Myers (1977) paper is that firms with a history of underinvestment and a large number of growth opportunities should attempt to control underinvestment by including less debt in their capital structure, placing restrictive covenants on debt issues, or shortening the maturity of debt issues. Empirically, Barclay and Smith (1995), Guedes and Opler (1996), Stohs and Mauer (1996), and Highfield (2008) all find that firms with more growth options have shorter-term debt, supporting the idea that short-term debt is

employed to reduce agency problems. Applying this line of logic to bond duration, one would expect high-growth firms to have shorter bond duration.

Because small firms typically have more growth opportunities, along with greater business risk, they are more susceptible to agency problems than their larger counterparts. Thus, small firms in riskier businesses attempt to lower agency costs by issuing short-term debt. Although several authors (e.g., Mitchell, 1991; Barclay and Smith, 1995; Stohs and Mauer, 1996; and Ooi, 1999) find a positive relationship between debt maturity and firm size, Carey, Prowse, Rhea, and Udell (1993) and Scherr and Hulburt (2001) find that firm size is inversely related to debt maturity. Alternatively, Guedes and Opler (1996) find that large firms issue at both ends of the maturity spectrum, while small firms tend to issue long-term debt. Based on this line of reasoning, one would expect larger firms to have longer bond duration.

While some firms struggle with agency problems and benefit from the self-imposed discipline of short-term debt, other firms such as utilities and financial institutions are monitored by government and industry regulators. Using an agency-problem framework, Smith (1986) and Barclay and Smith (1995) suggest that regulations reduce managerial discretion and effectively control underinvestment, risk shifting, and asset-substitution problems. Citing fewer growth opportunities, Smith (1986), Smith and Watts (1992), Barclay and Smith (1995), Guedes and Opler (1996), Kirshnaswami, Spindit, and Subramaniam (1999), and Highfield (2008) find that regulated firms issue long-term debt. Applying this line of logic to bond duration, one would expect to find that regulated firms have longer bond duration.

Finally, Rajan (1992) suggests that short-maturity loans provide opportunities for lenders to extract rents from borrowers at the time of loan renewal or to subject the borrower to a hold-up problem. In the case of syndication, any rents would have to be shared with other members of the syndicate; therefore, since the lead bank incurs additional costs from the monitoring activities necessary to convince other banks to join the syndicate, rent extraction becomes less profitable. Long-term loans lower the overall cost of monitoring by allowing these costs to be amortized over time, making the loan more profitable for the lead bank in the syndicate. Additionally, short-maturity loans also come with more frequent renewals that increase the amount of monitoring necessary to convince other banks to join the syndicate. Dennis and Mullineaux (2000) find that loan syndication is directly related to loan maturity; therefore, extending this concept to the bond market, on average, one would expect syndicated bond issues to have longer durations than their non-syndicated counterparts.

In this paper, four empirical tests are constructed to measure the relationship between agency problems and bond duration. First, Myers' (1977) theory that high-growth firms have shorter bond duration in an effort to control agency problems is tested. Second, similar to Barclay and Smith (1995) and Stohs and Mauer (1996), a test is conducted for a direct relationship between firm size and bond duration, since small firms have more growth opportunities and should use short-term debt to control agency problems. Third, consistent with Smith (1986) and Barclay and Smith (1995), the proposition that regulated firms have longer

bond duration is tested. Finally, since syndicated loans are effectively a hybrid of public and private debt, comparable to Dennis and Mullineaux (2000) and Highfield (2008), the hypothesis that syndicated bond offerings have longer duration than non-syndicated offerings is evaluated.

DATA SOURCE

The sample for this paper includes 8,627 public, non-convertible corporate debt instruments issued between January 1, 1990 and December 31, 2002. Issue information came from the Thomson Financial SDC Platinum U.S. Corporate New Issues database (SDC). Bank debt and commercial paper were not included in the SDC database. The SDC database is limited to public debt offerings with a maturity of at least one year (defined as 360 days). In addition, observations where the issuing firm did not have an S&P rating at the time of issuance were eliminated.

Table 1 presents sample summary statistics. The bonds in the sample range in duration from 0.97 years to over 99.99 years, and the mean duration is 6.10 years. The bonds in the sample range in maturity from 1 year to a little over 101 years, and the mean maturity is about 9.75 years. Approximately 31 percent of the sample has an S&P A rating or above, 2 percent has an S&P B rating or below, and 67 percent falls into the S&P middle-rate range. Approximately 94 percent of the sample has an S&P rating in the investment-grade range, and 6 percent falls into the S&P high-yield range. About 40 percent of the bond issues are syndicated. Of those, the average coupon rate is just over 6.78 percent, and the average firm in the sample has a total market capitalization of $9 billion.

Table 1: Sample Descriptive Statistics
The sample contains 8,627 debt instruments issued placed in U.S. markets between January 1, 1990, and December 31, 2002. The descriptive statistics of the sample are presented below.

VARIABLE	N	MEAN	STD DEV	MINIMUM	MAXIMUM
Coupon	8627	6.779	1.506	0.000	17.000
Duration	8627	6.097	3.734	0.973	99.990
Maturity	8627	9.751	9.937	1.000	101.464
Log (Maturity)	8627	1.857	0.974	0.000	4.619
Market-to-book	8627	1.073	3.167	0.995	264.285
Regulate	8627	0.685	0.464	0.000	1.000
Log (Total Cap)	8627	22.919	1.771	14.224	28.360
DEratio	8627	9.187	177.18	0.000	99.000
SYNDICATE	8627	0.401	0.490	0.000	1.000
Multiple	8627	0.289	0.453	0.000	1.000
Financial	8627	0.504	0.500	0.000	1.000
HIGHTECH	4937	0.163	0.369	0.000	1.000
S&P Rating AAA	8627	0.045	0.207	0.000	1.000
S&P Rating AA	8627	0.162	0.368	0.000	1.000
S&P Rating A	8627	0.450	0.497	0.000	1.000

Table 1: Sample Descriptive Statistics
The sample contains 8,627 debt instruments issued placed in U.S. markets between January 1, 1990, and December 31, 2002. The descriptive statistics of the sample are presented below.

VARIABLE	N	MEAN	STD DEV	MINIMUM	MAXIMUM
S&P Rating BBB	8627	0.285	0.451	0.000	1.000
S&P Rating BB	8627	0.034	0.182	0.000	1.000
S&P Rating B	8627	0.020	0.140	0.000	1.000
S&P Rating CCC	8627	0.001	0.044	0.000	1.000
S&P Highrate	8627	0.657	0.474	0.000	1.000
S&P Midrate	8627	0.320	0.466	0.000	1.000
S&P Lowrate	8627	0.022	0.147	0.000	1.000

Tables 2.1 and 2.2 show the distribution of debt issues in the sample by year of issue. Corresponding to the low interest-rate environment of the late 1990s, the heaviest volume of new issues in the sample was in 1997 and 1998. As shown in Panel A of Table 2.1, the mean duration over the sample period is 6.10 years, ranging from an average duration of 4.05 years in 2000 to 7.50 years in 1993. Panel B of Table 2.2 shows the mean maturity for the sample, which is 9.75 years. Overall, the mean maturity for the sample ranges from an average maturity of 5.71 years in 2000 to 12.22 years in 1991. As a general rule, (1) bonds paying interest prior to maturity will have durations less than their maturity, and (2) the larger the coupon, the shorter the duration. Tables 2.1 and 2.2 indicate that the mean duration is less than the mean maturity for the sample.

Table 2.1: Time Distribution of Debt Issues
The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The total number of issues per year and the mean duration of the issues placed each year are presented below.

Panel A: Time Distribution of Debt Issues: Duration

Year of Issuance	Total Number of Issues	Mean Duration in Years
1990	145	6.27
1991	248	6.71
1992	414	6.86
1993	536	7.50
1994	404	5.97
1995	625	6.38
1996	980	5.65
1997	1291	6.33
1998	1395	7.16
1999	872	5.58
2000	654	4.05
2001	973	5.18
2002	90	5.67
Total	8627	6.10

Table 2.2: Time Distribution of Debt Issues The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The total number of issues per year and the mean maturity of the issues placed each year are presented below.		
Panel B: Time Distribution of Debt Issues: Maturity		
Year of Issuance	Total Number of Issues	Mean Maturity in Years
1990	145	11.91
1991	248	12.22
1992	414	10.80
1993	536	11.66
1994	404	8.88
1995	625	10.28
1996	980	9.06
1997	1291	10.81
1998	1395	12.15
1999	872	8.30
2000	654	5.71
2001	973	9.33
2002	90	8.14
Total	8627	9.75

Table 3 presents the distribution of debt issues by duration across bond ratings. As one would expect for new bond issues, the sample contains relatively few high-yield rated bonds as compared to the number of investment-grade bonds. In fact, the sample does not contain any observations with CC, C, or D ratings. In this sample, 56 percent of the issues has a duration under 7 years; 15 percent of the sample has a duration between 7 and 10 years; and 29 percent has a duration of 10 years or greater. Of bonds with an S&P rating of A or higher, 47 percent has a duration of 5 years or less, and only 1 percent has a duration of 20 years or greater. Thus, over 52 percent of the sample having a high S&P rating has a duration between 5 and 20 years. Conversely, of bond issues with an S&P rating of BBB or lower, 15 percent has a duration of 5 years or less, and 13 percent has a duration of 20 years or greater. Thus, about 72 percent of the sample with an S&P rating of BBB or lower has a duration of 5 to 20 years. As a check, the duration of S&P investment-grade credit ratings was regressed against the duration of S&P speculative-grade credit ratings. At the same time, the durations were limited to 20 years or less, since 99 percent of the observations had a duration of less than 20 years.

As shown in Table 4, the issues with investment-grade ratings tend to have longer durations than their high-yield counterparts.

Table 3: Distribution of Debt Issues by Duration Across S&P Bond Ratings

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. This table shows the distribution of the debt issues by S&P bond rating and term to duration. The mean and standard deviation of bond duration for each rating class are also presented.

	S&P Bond Rating							
Duration	AAA	AA	A	BBB	BB	B	CCC	Total
X < 2	101	619	612	173	3	0	0	1508
2 ≤ X < 5	47	233	1068	626	78	22	0	2074
5 ≤ X < 7	26	110	483	438	125	100	10	1292
7 ≤ X < 10	54	294	1209	876	72	49	7	2561
10 ≤ X < 20	160	138	507	352	18	3	0	1178
20 ≤ X < 30	0	1	2	1	1	0	0	5
30 ≤ X	1	4	3	1	0	0	0	9
Total	389	1399	3884	2467	297	174	17	8627
Mean Duration	7.79	4.58	6.09	6.67	6.13	6.39	6.67	6.10
Std. Dev.	5.24	4.08	5.24	3.59	2.30	1.42	1.19	3.73

Table 4: Distribution of Debt Issues by Duration Across S&P Bond Ratings (Regression Results)

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The dependent variable for all regressions is bond duration. S&P AAA is a binary variable equal to one for bonds issued by firms with Standard and Poor's AAA credit rating at the time of issuance, zero otherwise. S&P AA is a binary variable equal to one for bonds issued by firms with Standard and Poor's AA credit rating at the time of issuance, zero otherwise. S&P A is a binary variable equal to one for bonds issued by firms with Standard and Poor's A credit rating at the time of issuance, zero otherwise. S&P BBB is a binary variable equal to one for bonds issued by firms with Standard and Poor's BBB credit rating at the time of issuance, zero otherwise. S&P BB is a binary variable equal to one for bonds issued by firms with Standard and Poor's BB credit rating at the time of issuance, zero otherwise. S&P B is a binary variable equal to one for bonds issued by firms with Standard and Poor's B credit rating at the time of issuance, zero otherwise. S&P CCC is a binary variable equal to one for bonds issued by firms with Standard and Poor's CCC credit rating at the time of issuance, zero otherwise. The t-statistic for each coefficient (reported in parentheses) is calculated using heteroscedasticity-consistent standard errors (HCSEs), and statistical significance is displayed by the use of one (10%), two (5 %), and three (1%) stars.

Bond Ratings	Investment-grade Regression	Speculative-grade Regression
INTERCEPT	6.20*** (8.10)	6.05 (5.61)
S&P AAA	1.52*** (6.58)	
S&P AA	1.71*** (9.51)	
S&P A	-0.14 (-0.85)	
S&P BBB	0.42** (2.49)	
S&P BB		0.02 (0.10)
S&P B		0.35 (1.30)
S&P CCC		0.63 (0.74)
R-SQUARE	0.0502	0.0301
ADJ. R-SQUARE	0.0497	0.0219
OBSERVATIONS	8139	488

Table 5 presents the distribution of debt issues by maturity across S&P bond ratings. Forty-three percent of the issues had a maturity under 7 years; 11 percent of the sample had a maturity between 7 and 10 years; and 46 percent had a maturity of 10 years or greater. Table 5 shows that, in general, as bond ratings decline, the mean term to maturity declines.

Table 5: Distribution of Debt Issues by Maturity Across S&P Bond Ratings

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. This table shows the distribution of the debt issues by S&P bond rating and term to maturity. The mean and standard deviation of term to maturity for each rating class are also presented.

	S&P Bond Rating							
Term to Maturity	AAA	AA	A	BBB	BB	B	CCC	Total
X < 2	83	563	437	60	2	0	0	1145
2 ≤ X < 5	38	175	610	355	31	4	0	1213
5 ≤ X < 7	35	127	727	422	55	19	2	1387
7 ≤ X < 10	18	77	371	339	84	57	7	953
10 ≤ X < 20	61	329	1253	924	106	93	8	2774
20 ≤ X < 30	49	41	185	122	14	1	0	412
30 ≤ X	105	87	301	245	5	0	0	743
Total	389	1399	3884	2467	297	174	17	8627
Mean Term to Maturity	15.19	7.23	9.54	10.83	8.78	8.87	8.65	9.75
Standard Deviation	13.84	10.07	9.38	10.30	4.97	2.40	1.88	9.94

Of the 5,672 bonds with an S&P rating of A or higher, 1,906 (34 percent) have maturities of less than 5 years, and 768 (14 percent) have maturities of 20 years or greater. Thus, approximately 53 percent of the sample with a high S&P rating falls in the maturity range of 5 to 20 years. Conversely, of the 2,955 bond issues with an S&P rating of BBB or lower, only 452 (15 percent) have maturities of less than 5 years, and 387 (13 percent) have maturities of 20 years or greater. Thus, approximately 72 percent of the sample with an S&P rating of BBB or lower falls in the maturity range of 5 to 20 years. The distribution of debt issues by maturity across bond ratings shown in Table 5 confirms the results shown in Table 3.

METHODS AND RESULTS

Duration was calculated as follows:

$$Macaulay\ Duration = \frac{\frac{1C}{1+y} + \frac{2C}{(1+y)^2} + \cdots + \frac{nC}{(1+y)^n} + \frac{nM}{(1+y)^n}}{P} \quad (1)$$

Where P = price of the bond; C = semiannual coupon interest (in dollars);
y = one-half the yield to maturity or required yield;
n = number of semiannual periods (number of years × 2); and, M = maturity value (in dollars)

Using the duration of the bond issue as the dependent variable, the following specifications of bond issue duration were estimated:

$$DURATION = \beta_0 + \beta_1 S\&P\ INVEST_i + \beta_2 MV/BV_i + \beta_3 REGULATE_i + \beta_4 LN(TOTALCAP)_i + \beta_5 SYNDICATE_i + CONTROL\ VARIABLES + \varepsilon_i \quad (2)$$

$$DURATION = \beta_0 + \beta_1 S\&P\ HIGHRATE_i + \beta_2 S\&P\ LOWRATE_i + \beta_3 MV/BV_i + \beta_4 REGULATE_i + \beta_5 LN(TOTALCAP)_i + \beta_6 SYNDICATE_i + CONTROL\ VARIABLES + \varepsilon_i \quad (3)$$

The control variables include a binary variable for multiple issues by the same firm and the total-debt-to-equity ratio (Debt/Equity). (Note: The F-test relative to Table 6 failed to reject the hypothesis that the coefficient estimates on MV/BV, Debt/Equity, and LNTOTALCAP are jointly zero.) The t-values were computed using White's (1980) heteroscedasticity-consistent standard errors (HCSEs).

SIGNALING AND ASYMMETRIC INFORMATION

Equation (2) tests Flannery's (1986) separating equilibrium hypothesis. Investment-grade issues were compared to speculative-grade issues by including a binary variable. S&P INVEST denotes bonds issued by firms with S&P investment-grade credit ratings at the time of issuance. Table 6 presents the regression model coefficient estimates. Column (2) reports the full regression estimates, Column (3) reports the estimation excluding financial firms, and Column (4) reports the estimation for financial firms only. (An examination of the conditional number and variance of inflation factors did not indicate a problem with multicollinearity.)

The signaling hypothesis is confirmed if investment-grade issues have shorter durations than speculative-grade issues, but Diamond's (1993) asymmetric information model suggests no difference between the bond rating groups. Unlike Stohs and Mauer (1996), evidence supporting Flannery's (1986) signaling hypothesis was not found. In addition, the empirical results in this paper do not support Diamond's (1993) asymmetric information model that there is no difference between investment-grade issues and speculative-grade issues. Instead, the results of this study suggest that investment-grade firms issue debt with a longer duration than their high-yield counterparts, on average.

Equation (3) is utilized to specifically examine Diamond's (1991) hypothesis that there is a nonmonotonic structure in credit ratings. High-rated and low-rated issues are compared to intermediate-rated issues by including two binary variables. *S&P HIGHRATE* is a binary variable for bonds issued by firms rated as AAA, AA, or A by S&P at the time of issuance. *S&P LOWRATE* is a binary variable for bonds issued by firms rated as B, CCC, or D by S&P at the time of issuance. These results are shown in Table 7.

Table 6: Regression Model #1

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The dependent variable for all regressions is bond duration. S&P INVEST is a binary variable equal to one for bonds issued by firms with Standard and Poor's investment-grade credit rating at the time of issuance, or zero otherwise. SYNDICATE is a binary variable for bond issues that are syndicated. LNTOTALCAP is the natural logarithm of the total capitalization of the issuing firm. (MV/BV) is the issuing firm's market-to-book ratio. The control variables (not presented) include (Debt/Equity), the total-debt-to-equity ratio, and MULTIPLE, a binary variable for multiple issues by the same firm. The t-statistic for each coefficient (reported in parentheses) is calculated using heteroscedasticity-consistent standard errors (HCSEs), and statistical significance is displayed by the use of one (10%), two (5 %), and three (1%) stars.

Variables	All Issues	Non-financial Issues	Financial Issues
INTERCEPT	12.78***	10.81***	8.18***
	(24.00)	(12.56)	(9.60)
S&P INVEST	0.65***	1.14***	-0.45
	(3.79)	(6.72)	(-1.01)
MV/BV	-0.07	0.08	-0.08
	(-0.64)	(0.03)	(-0.58)
REGULATE	-0.93***	0.28***	
	(-10.64)	(2.81)	
LNTOTALCAP	-0.32***	-0.22***	-0.14***
	(-13.54)	(-5.66)	(-4.30)
DERATIO	0.02**	0.01*	0.05
	(2.23)	(1.95)	(1.04)
SYNDICATE	1.57***	1.00***	1.74***
	(19.73)	(10.11)	(13.40)
MULTIPLE	0.14*	-0.43***	0.42***
	(1.68)	(-4.02)	(3.22)
R-SQUARE	0.1039	0.0447	0.0506
ADJ. R-SQUARE	0.1031	0.0431	0.0491
H_0: (MV/BV) = (Debt/Equity) = LNTOTALCAP = 0	62.20***	11.72***	6.45***
OBSERVATIONS	8627	4274	4353

It was found that high-rated firms tend to issue debt with longer durations than middle-rated companies. The coefficient for low-rated firms is not statistically significant except for the issues restricted to non-financial firms. This direct relationship between credit ratings and duration is inconsistent with Diamond's (1991) hypothesis that there is a nonmonotonic structure in credit ratings, and it is also inconsistent with Diamond's (1993) asymmetric information model that low-quality issuers attempt to emulate high-quality issuers.

Table 7: Regression Model #2

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The dependent variable for all regressions is bond duration. S&P HIGHRATE is a binary variable for bonds issued by firms rated as AAA, AA, or A by S&P at the time of issuance. S&P LOWRATE is a binary variable for bonds issued by firms rated as B, CCC, and D by S&P at the time of issuance. SYNDICATE is a binary variable for bond issues that are syndicated. LNTOTALCAP is the natural logarithm of the total capitalization of the issuing firm. (MV/BV) is the issuing firm's market-to-book ratio. The control variables (not presented) include (Debt/Equity), the total-debt-to-equity ratio, and MULTIPLE, a binary variable for multiple issues by the same firm. The t-statistic for each coefficient (reported in parentheses) is calculated using heteroscedasticity-consistent standard errors (HCSEs), and statistical significance is displayed by the use of one (10%), two (5 %), and three (1%) stars.

Variables	All Issues	Non-financial Issues	Financial Issues
INTERCEPT	13.66**	11.93***	7.44***
	(24.11)	(13.22)	
S&P HIGHRATE	0.27***	0.59***	-0.19
	(2.99)	(5.83)	(-1.10)
S&P LOWRATE	-0.36	-0.53*	0.16
	(-1.30)	(-1.94)	(0.20)
MV/BV	-0.08	-0.01	-0.02
	(-0.66)	(-0.01)	(-0.58)
REGULATE	-0.94***	0.25**	
	(-10.73)	(2.55)	
LNTOTALCAP	-0.34***	-0.24***	-0.12***
	(-13.26)	(-5.92)	(-3.20)
DERATIO	0.01**	0.02*	0.05
	(2.20)	(1.87)	(1.05)
SYNDICATE	1.61***	1.07***	1.73***
	(19.68)	(10.59)	(3.11)
MULTIPLE	0.15 *	-0.42***	0.41***
	(1.78)	(-3.90)	(3.11)
R-SQUARE	0.1036	0.0441	0.0507
ADJ. R-SQUARE	0.1027	0.0423	0.0489
H_0: (MV/BV) = (Debt/Equity) = LNTOTALCAP = 0	59.78***	12.64***	3.74
OBSERVATIONS	8627	4274	4353

AGENCY PROBLEMS

Four empirical tests are constructed in this paper to evaluate the relationship between agency problems and bond duration. First, a growth measure, the issuing firm's market-to-book

ratio (MV/BV), is used to test Myers' (1977) theory that firms with high growth opportunities have shorter bond duration in an effort to control agency problems. Inconsistent with Barclay and Smith (1995), Guedes and Opler (1996), Stohs and Mauer (1996), and Highfield (2008), all coefficient estimates for MV/BV were statistically insignificant in this study.

Since small firms have more growth opportunities and should issue short-term debt to control agency problems, in the second empirical test regarding agency problems, a test for a direct relationship between firm size and duration using the natural logarithm of the total capitalization of the issuing firm (LNTOTALCAP) was conducted. Consistent with Carey et al. (1993) and Scherr and Hulburt (2001), bond duration was inversely related to firm size, a finding inconsistent with Myers' (1977) hypothesis that small firms use short-term debt to control agency problems.

Table 8: Regression Model #3

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The dependent variable for all regressions is bond duration. S&P HIGHRATE is a binary variable for bonds issued by firms rated as AAA, AA, or A by S&P at the time of issuance. S&P LOWRATE is a binary variable for bonds issued by firms rated as B, CCC, and D by S&P at the time of issuance. SYNDICATE is a binary variable for bond issues that are syndicated. LNTOTALCAP is the natural logarithm of the total capitalization of the issuing firm. MV/BV is the issuing firm's market-to-book ratio. The control variables (not presented) include (Debt/Equity), the total-debt-to-equity ratio, and MULTIPLE, a binary variable for multiple issues by the same firm. INTERACTION is the interaction term between REGULATE and FINANCIAL binary variables. The t-statistic for each coefficient (reported in parentheses) is calculated using heteroscedasticity-consistent standard errors (HCSEs), and statistical significance is displayed by the use of one (10%), two (5%), and three (1%) stars.

Variables	All Issues
INTERCEPT	9.88*** (19.81)
S&P INVEST	0.85*** (5.49)
MV/BV	-0.07 (-0.65)
INTERACTION	-1.76*** (-11.04)
LNTOTALCAP	-0.28*** (-8.27)
DERATIO	0.01** (2.46)
SYNDICATE	1.39*** (18.90)
MULTIPLE	0.02 (0.36)
R-SQUARE	0.1570
ADJ. R-SQUARE	0.1563
H_0: (MV/BV) =(Debt/Equity) = LNTOTALCAP = 0	62.20***
OBSERVATIONS	8627

The hypothesis that regulated firms have long-term debt is also tested by using a binary variable for regulated firms (REGULATE). Inconsistent with Smith (1986) and Barclay and Smith (1995), the findings in the third test regarding agency problems indicate that regulated firms have shorter duration, with one exception: non-financial institutions. Once the sample is restricted to non-financial firms, the results indicate that regulated firms tend to issue debt with

longer durations than non-regulated firms, a finding consistent with the hypothesis that government regulation can effectively control agency problems such as underinvestment, risk shifting, and asset substitution. As an alternative specification, the hypothesis that regulated firms have longer durations was tested by introducing an interaction term (INTERACTION) between REGULATE and FINANCIAL (a binary variable for financial firms). As shown in Tables 8 and 9, coefficient estimates on INTERACTION were negative and statistically significant, suggesting that regulated financial firms have shorter durations.

Table 9: Regression Model #4

The sample contains 8,627 debt instruments placed in U.S. markets between January 1, 1990 and December 31, 2002. The dependent variable for all regressions is bond duration. S&P HIGHRATE is a binary variable for bonds issued by firms rated as AAA, AA, or A by S&P at the time of issuance. S&P LOWRATE is a binary variable for bonds issued by firms rated as B, CCC, and D by S&P at the time of issuance. SYNDICATE is a binary variable for bond issues that are syndicated. LNTOTALCAP is the natural logarithm of the total capitalization of the issuing firm. MV/BV is the issuing firm's market-to-book ratio. The control variables (not presented) include (Debt/Equity), the total-debt-to-equity ratio, and MULTIPLE, a binary variable for multiple issues by the same firm. INTERACTION is the interaction term between REGULATE and FINANCIAL binary variables. The t-statistic for each coefficient (reported in parentheses) is calculated using heteroscedasticity-consistent standard errors (HCSEs), and statistical significance is displayed by the use of one (10%), two (5%), and three (1%) stars.

Variables	All Issues
INTERCEPT	10.98*** (20.73)
S&P HIGHRATE	0.28*** (3.99)
S&P LOWRATE	-0.34 (-1.01)
MV/BV	-0.07 (-0.70)
INTERACTION	-1.76*** (-11.70)
LNTOTALCAP	-0.24*** (8.71)
DERATIO	0.01** (2.40)
SYNDICATE	1.44*** (19.24)
MULTIPLE	0.19 * (0.63)
R-SQUARE	0.1564
ADJ. R-SQUARE	0.1556
H_0: (MV/BV) = (Debt/Equity) = LNTOTALCAP = 0	59.78***
OBSERVATIONS	8627

A binary variable for syndicated issues (SYNDICATE) was used to test the hypothesis that syndicated offerings have longer durations. Supporting Dennis and Mullineaux (2000) and Highfield (2008), regardless of sample selection, the fourth test regarding agency problems indicates that syndicated offerings have longer durations than their non-syndicated counterparts. As shown in Tables 6 and 7, all coefficients for SYNDICATE are statistically significant. This finding is consistent with the proposition that long-term loans help control agency problems associated with bank monitoring and rent extraction.

COMPARISON OF DURATION AND MATURITY: EMPIRICAL FINDINGS

In the previous sections, hypotheses were evaluated that have been offered to test corporate debt maturity to examine firms' duration choices to determine if factors that influence firms' debt-maturity decisions also affect duration choices. Most of the results in this paper support the findings of previous empirical work that examines the determinants of debt maturity, except for two major hypotheses. Stohs and Mauer (1996) support the signaling hypothesis by Flannery (1986) and find that investment-grade issues have shorter maturity than speculative-grade issues. They also find strong support for the prediction of a nonmonotonic relationship between debt maturity and bond rating; firms with high or very low bond ratings use short-term debt. In contrast, this study finds that investment-grade firms issue debt having longer durations than their high-yield counterparts. A direct relationship was also found between bond duration and firm quality as measured by credit ratings. One possible reason for this finding is that high-quality firms are able to pay lower coupons because of their high credit ratings. As a result, their debts have longer durations than debt issued by low-quality firms. Similarly, low-quality firms are forced to issue short-term debt and to pay higher coupons because of their poor credit ratings. As a consequence, their debts have shorter durations than debt issued by their high-quality counterparts.

CONCLUSIONS

Much theoretical and empirical research focuses on the determinants of debt maturity. In this paper, departure is made from earlier studies by examining the duration of debt issues. As an exploratory investigation, this paper searches for potential linkages between the various theories and empirical findings from the previous literature on debt maturity and bond duration. A sample of 8,627 debt issues from the Thomson Financial SDC Platinum database was examined to identify the important factors in determining the length of duration of public, non-convertible debt. Macaulay's Duration was used as the dependent variable to test theoretical hypotheses where bond duration is influenced by signaling and asymmetric information as well as agency problems.

This study finds no support for the signaling hypothesis, nor does it find support for the theory of a nonmonotonic structure in credit ratings where firms with very high and very low credit ratings have shorter durations, while firms with intermediate credit ratings have longer durations. Instead, a direct relationship was found between bond duration and firm quality as measured by credit ratings. This evidence is in line with Diamond's (1991) hypothesis that risky firms are screened out of the long-term debt market.

For agency problems, the issuing firm's market-to-book ratio was used as a growth measure to test Myers' (1977) theory; however, no support was found in this study for the hypothesis that high-growth firms have shorter duration. Alternatively, consistent with Carey et

al. (1993) and Scherr and Hulburt (2001), larger firms were found to have shorter debt durations than their smaller counterparts. Thus, these findings contradict Myers' (1977) hypothesis that small firms have short-term debt to mitigate agency problems. Inconsistent with Smith (1986) and Barclay and Smith (1995), regulated firms were found to have shorter debt duration, with one exception: non-financial institutions. Once the sample was restricted to non-financial firms, the results indicate that regulated firms tend to issue debt with longer duration than non-regulated firms. Finally, strong evidence was found to support the hypothesis that syndicated public-debt offerings, like syndicated bank loans, have longer duration than their non-syndicated counterparts.

Much theoretical and empirical research focuses on the determinants of debt maturity. In this study, departure is made from earlier studies by examining the duration of debt issues. A sample of 8,627 debt issues from the Thomson Financial SDC Platinum database was examined to identify the important factors in determining the length of duration of public, non-convertible debt. Macaulay's Duration was used as the dependent variable to test the theoretical hypotheses that bond duration is influenced by signaling and asymmetric information as well as agency problems.

The major finding of this study is that firm quality, as measured by credit rating, is directly related to bond duration. Evidence suggesting that bond duration is inversely related to firm size is also found. In addition, this paper also finds that regulated non-financial firms have longer bond durations and that syndicated offerings have longer durations than non-syndicated offerings.

In this paper, an investigation was conducted as to whether or not any systematic characteristics lead firms to determine duration choices. Although this paper supports some research and raises questions with respect to other research, questions remain concerning the duration choice of debt issued by U.S. corporations. For example, why is duration a better measurement of a firm's interest-rate risk than maturity? Additional research on comparing both approaches may also contribute to understanding of the results presented here.

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THE RISE IN EQUITY EXCHANGE TRADED FUNDS (ETFS): THE CASE OF MOMENTUM?

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ABSTRACT

Using data obtained from CRSP and Morningstar (2001-2009), this study examines the returns and liquidity behavior of 2,366 Equity Exchange Traded Funds (ETFs). ETF portfolio formation and holding periods (6, 3 and 1 months) for the entire entire sample and by specialties with deciles categorized by returns and liquidity were analyzed. Momentum does not exist when analyzing the overall portfolio of ETFs. The mean formation estimate for the entire ETFs winners is 31.5%, compared with the value of 0.2% for the 6 months formation and holding periods respectively. On the other hand the mean formation periods returns for the losers are -24.25% compared to 3.3% for the holding period. In the formation and holding periods of 1 and 3 months there were evidence that momentum exist amongst the losers portfolios. There is plausible reason for this result. The 1 and 3 months period are not enough time to factor in transaction cost.

INTRODUCTION

Exchange traded funds (ETFs) are Trust funds and basket of securities designed to track an index. ETFs add the flexibility, ease, and liquidity of stock trading to the benefits of traditional index fund investing. The world global financial market has witness a substantial increase in equity exchange traded funds (ETFs) since its inception in the early 1990's to date. These increases are more prevalent in the US. Recently, as early as 1993, the State Street Global Advisor listed the first ETF on the American Stock Exchange. According to Fund International (2004), US domestic equity ETFs grew at an annual compounded rate of 38.3% from 2000 to 2004. Outside the US, similar trends were observed, most especially in UK, Europe, Asia and South Africa.

The reasons for the growth of ETFs could be attributed to its characteristics. ETFs tend to offer greater tax benefits due to the fact that they generate fewer capital gains as a result of lower turnover of the securities that comprises their portfolios. The sale of ETFs securities only reflects the changes in its underlying index. Since ETFs are index based, they are unlikely to experience high management fees. Furthermore, the composition of ETFs as a basket of securities provides diversification inherently across an entire index. ETFs can be traded at any time while the exchange is open. Like other types of funds, arbitrage forces the price of ETFs to

be aligned with the net asset value, thereby limiting its tracking error. ETFs are structured as a trust to minimize tax distribution in most cases.

The increasing trends in ETFs have not abated despite the downturn of economic activities. In her recent paper, Mitchell (2010), noted that some portion of the ETF market have withstood the recent slowdown of economics fluctuations. She observed that from January through the end of April 2010, investors confidence in an economic recovery has led to strong performance in equity exchange traded funds.

LITERATURE REVIEW

Based on size, trading volume, returns and fund price performance, Madura and Ngo (2008), examined whether ETFs exhibited pricing discrepancies. They formed decile of portfolios over 93 months (January 1997-September 2004) in which the beginning of each month was considered the portfolio formation month. For eight different holding periods within each decile, they obtained the abnormal holding period returns. The same decile portfolio applied to apportioned size was also used for trading volume and fund price performance. They concluded that ETFs do not experience momentum. That, the performance of ETF's is inversely related to size, while ETFs with lower trading volume are more likely to be mispriced or subject to liquidity premium. Most literatures look at the source of price momentum either as driven by the stock specific industry or by individual-stock momentum. Scowcroft and Sefton (2005), confirmed that price return momentum is driven by industry momentum. They however postulated that momentum occur in medium cap industry.

Jong and Rhee (2008), looked at the abnormal returns with momentum and contrarian strategies using exchange traded funds. Their study found that investment in ETFs provides abnormal return which exceeds transaction cost. And that the presence of abnormal return exist after using Fama and French (1993) three factor-factor model to adjust for risk. In that case, portfolios of ETFs that either buy the winners and short the losers or buy the losers and short the winners could earn abnormal returns. However, it is pertinent to note that all US ETFs are passively managed to track an index, not actively managed to time the market or beat the market by loading up on high momentum stocks. Yet in spite of this disadvantage of actively managed mutual funds, ETFs provided economically and statistically significant abnormal returns to contrarian strategies of buying the loser ETFs and shorting the winner ETFs with formation and holding periods of one day and one week, and to momentum strategies of buying the winners ETFs and shorting the losers ETFs with formation and holding period from 4 to 39 weeks, according to the authors.

The concept of buying past winners and selling past losers strategies were further evaluated by Jegadeesh and Titman (1993). They found that this strategy realized significant abnormal returns over the 1965 to 1989 period. They selected stocks based on 6-months holding period and returns. They found a realized compounded excess return of 12.01% per year on

average. They argued further that the profitability of the relative strength strategies were not due to their systematic risk. The results of their tests also indicated that the relative strength of profits could not be attributed to lead-lag effects that resulted from delayed stock price reactions to common factors. The evidence is, however, consistent with delayed price reactions to firm-specific information. The returns of the zero-cost winners minus losers portfolio were examined in each of the 36 months following the portfolio formation date. With the exception of the first month, this portfolio realizes positive returns in each of the 12 months after the formation date.

However, the longer-term performances of these past winners and losers reveal that half of their excess returns in the year following the portfolio formation date dissipate within the following 2 years. The returns of the stocks in the winners and losers portfolios around their earnings announcements in the 36 months following the formation period were also examined and a similar pattern was found. Specifically, stocks in the winners portfolio realize significantly higher returns than the stocks in the losers portfolio around the quarterly earnings announcements that are made in the first few months following the formation date. However, the announcement date returns in the 8 to 20 months following the formation date are significantly higher for the stocks in the losers portfolio than for the stocks in the winners portfolio, they concluded.

In his comparative study about the interaction between value and momentum, Asness (1997) posited that both value and momentum strategies are effective in predicting returns across sections of stocks. Thus, according to Asness, pursuing a value strategy entails to some extent buying firms with poor momentum. Similarly, buying firms with good momentum entails to some extent pursuing a poor valued strategy. He contends that in most cases, holding momentum constant leads to a more effective value strategy.

Asness further stated that the relations of value and momentum to future returns are not simply stronger holding the other variable constant, but that, they are conditional upon each other. In general, value works, but largely fails for firms with strong momentum. Momentum works, in general, but is particularly strong for expensive firms. He interpreted these differences why value strategies work is that value represents risk versus that the market is inefficient. Value strategies might work because of investors' inability to price securities correctly (e.g., investors might systematically over extrapolate good or bad past results). He went ahead to ask the following questions: "Is it plausible that investors' abilities are much better among recent winners than among recent losers? Do investors misprice bad news more than good news"? Lakonishok, Josef, Shleifer and Vishny (1994) offered one possible explanation for the efficacy of value strategies. According to them, investors might wish to avoid owning stocks with good value because of the perception that those are bad companies. Perhaps no such stigma applies to recent winners, no matter what their valuation measures indicate. They contend that value strategies largely fail among winners because the premium to owning bad companies is nonexistent. That is, there are no bad companies among recent winners.

In their 2001 study, Jegadeesh and Titman evaluates various explanations for the momentum profits documented previously by their 1993 research. Here they first document momentum profits in the eight years subsequent to their 1993 study. They discovered that momentum profits are not entirely due to data snooping biases. Furthermore, their results suggested that market investors did not altered their investment strategies in a way that would eliminate the source of return predictability. They examined the returns of the momentum portfolios in the post-holding period. By looking at the post-holding period performance they concluded that its returns should be negative in comparison to the momentum portfolio.

RESEARCH QUESTIONS

The goal of this study is to access the returns and liquidity behavior of ETFs. How an individual stock reacts to the stream of returns (monthly) as with the case of this study and momentum could be applied in developing hypotheses for returns discrepancies of ETFs. Many studies such as those of Chopra (1992), Jegadeesh and Titman (1993), and Liang and Mullineaux (1994) have found the existence of individual stock overreaction on price differences. In their 1999 study Moskowitz and Grinblatt also found compelling evidence on the existence of momentum on monthly industry returns where the industry indexes are computed from the CRSP data base. The null hypothesis in this study with respect to returns is that ETFS do not exhibit momentum and if it does it depend on the formation and holding period and the momentum effects are minimal.

To ascertain the usefulness of trading volume or as an indicator of ETF returns, we estimate liquidity as the proportion of the trading volume to the number of outstanding shares. Hence the liquidity in the previous month is applied in forming deciles of portfolio holdings of ETFs. The returns are then measured from the formation to the holding period. It is hypothesized that ETFs with less liquidity are likely to derive smaller returns due to liquidity premium and because they are more likely to be monitored closely.

METHODOLOGY AND DATA

This study attempts to replicate an existing research using different set of data set and research questions. The data for this research were obtained from CRSP and Morningstar. The data are from 2001 t0 2009. In their 2008 study Madura and Ngo examined if ETFs are constrained to pricing discrepancies. They tested whether the trading strategies result in gains above market level. Their trading strategies were on; a) size (market capitalization), (b) trading volume, and (3) stock price performance (momentum).

This paper is decomposed into two steps: deciles of portfolios are formed based on returns and liquidity. Then, how the decile portfolios performed in subsequent holding periods are accessed. The start of each month from January 2001 to December 2009 is called the

portfolio formation month. Hence, we have 108 portfolio formation months. At the start of each portfolio formation month, we compiled and identify all ETFs in existence (2,366). we obtained share outstanding, price, market capitalization, volume of trading, value weighted average return, equal weighted average return and distributed adjusted price. With the above we formed ten deciles of ETFs based on the ETF returns and liquidity.

To determine the performance of liquidity and returns, an assessment of the decile portfolios over their holding period was undertaken. This methodology is consistent with the overlapping holding periods applied by Jegadeesh and Titman (1993). They suggested that using overlapping periods increases the power of the statistical tests. The portfolios formed are then held for the next 6 months, one after the end of the formation period. Then the difference between the abnormal return of the lowest and highest deciles is determined for each overlapping 6-month holding period and tested for significance. The same method is applied for 1 and 3 months formation and holding periods.

The sample in this study consists of all ETFs in existence from January 2001 to December 2009 both locally (US) and internationally It is totaled to be 2366. The list was compiled from CRSP, Morningstar and American Stock Exchange, and all of these ETFs are included in the sample. Table 1 provides the summary statistics of the whole sample; it provides the number of ETFs in each year and categorized by the following and their designated symbols in this study:

Asset Allocation
Balanced as Bal
Corporate Bond General as CorpB

4	Diversified Emerging Market as Emkt	19	Specialty – Natural Resources as NatRes
5	Equity-Income as Eqin	20	Specialty – Precious Metals as PreMetl
6	Europe Stock as Eupa	21	Specialty – Real Estate as RelEst
7	Foreign Stock as Int'l	22	Specialty –Technology as Tech
8	Government Bond as Govt.	23	Specialty – Unaligned as Unalign
9	Growth as Large Cap	24	Specialty – Utility as Utity
10	Growth and Income as Large Cap	25	World Stock as Int'l
11	Income as Large Cap	26	Worldwide Bond as Int'l
12	Multisector Bond as MS		
13	Municipal Bond as Govt Stock		
14	Pacific Stock as Int'l		
15	Small Company as Small Cap		
16	Specialty – Communication as Comm		
17	Specialty – Financial as Finn		
18	Specialty –Health as Hlth		

We group the whole ETFs into all and sectors (specialty) and provides some sample statistics at portfolio formation months. From Table 1, it obvious that the number of ETFs has grown over the years, therefore, the deciles in more recent months contain more ETFs than the

deciles formed near the beginning of the sample period. ETFs are large as indicated by the share of the monthly returns and experience heavy trading volume. Table 1 is decomposed into price, returns, number of shares outstanding, trading volume, market capitalization and trading volume.

Table1: Descriptive Statistics

	All ETFs												Sectors								
Year	AllETFs	All	Bal	CorpB	Emkt	Eupa	Int'l	Govt	LargCap	SmCap	Eqln	Ms	Comm	Finn	Hlth	NatRes	PreMetl	RelEst	Tech	Unalign	Utity
2001	86	0	0	0	2	12	10	0	19	8	0	0	4	4	4	4	0	1	9	6	3
2002	110	0	0	0	3	13	13	0	23	8	0	0	5	5	6	7	0	3	14	7	3
2003	123	0	0	1	4	16	13	4	26	15	0	0	5	5	6	7	0	3	15	7	3
2004	131	0	0	1	6	16	13	4	30	8	0	1	5	5	6	7	0	3	15	8	3
2005	166	0	0	1	6	16	15	4	45	14	0	1	6	6	7	9	1	4	15	12	4
2006	217	0	0	1	7	17	20	4	60	20	0	1	8	10	9	12	2	4	19	17	6
2007	346	0	0	1	8	18	42	4	101	26	1	1	8	18	18	29	4	7	24	26	10
2008	534	5	0	4	20	21	75	22	136	38	1	1	8	22	21	50	7	23	30	35	15
2009	653	14	1	4	30	21	100	27	151	42	1	1	11	27	23	72	12	26	34	37	19
Descriptive Statistics Variables																					
Price		2210.5	61.8	41.225.8	41.5	59.948.1	47.3	44.3	87.0	29.3	55.1	45.8	39.1	36.8	47.6	32.0	39.6	42.3			
Returns		0.005	-0.009	0.005	0.001	-0.006	0.004	0.003	0.0006	0.001	0.001	0.004	-0.0005	-0.006	0.003	0.002	0.013	-0.005	0.002	0.002	0.002
Shrout		799	800	25101	29556	8316	35592	14348	24307	12516	727	50215	5393	22104	9675	12015	47354	1097110694	724112865		
MarketCap			14.2	6.1	2,223	1,578315	108	1154	1843	853	35.6	5087	145	434	530	465	2928	491	269.7	248	412
TradingVol		12	15	6.3	49	31	23	70	68	43	1.9	7.1	2.0	15.1	7.4	3.4	4.9	3.7	1.7	1.4	9.1

The difference between the ETF decile portfolio return and a corresponding benchmark return that is the equally weighted average returns (EWRETD) and are the abnormal return. The holding period returns (HPR) for the ETFs are calculated on a monthly compounded basis. Market benchmark holding period returns EWRETD are derived from CRSP-equally weighted index. The abnormal holding period returns (AHPR) is calculated for each ETF decile by using the following formula: $AHPR = \sum(HPR_{ik}\text{-}EWHPR_i)/N$ where i is the number of months after the formation period and k is the number of ETFs in each decile portfolio (k=0 to N). EWHPR is equally weighted holding period returns.

RESULTS

The results from Table 2 are separated and analyzed with respect to the methods of ETF portfolio formation and holding periods (6, 3 and 1 month). The results are shown for each formation and holding method for the entire sample categorized by returns. There is a difference between the results of average abnormal holding period returns of the decile containing the highest versus lowest ETFs. Following Jegadeesh and Titman (2001), Momentum does not exist when analyzing the overall portfolio of ETFs. The mean formation estimate for the winners is 31.5% while the holding period recorded a value of 0.2% for the 6 months formation and holding periods. On the other hand the mean formation periods returns for the losers are -24.25% compared to 3.3% for the holding period. In the formation and holding periods of 1 and 3 months there is evidence that momentum exist amongst the losers portfolios. There are plausible reasons for this result. The 1 and 3 months period are not enough time to factor in transaction cost. Most studies conclude that momentum does exist with ETFs.

Table 2 The mean formation and holding period performance for the entire sample of ETFs, with deciles categorized by returns

	0	1	2	3	4	5	6	7	8	9
6 Formation	0.24	-0.10	-0.06	-0.03	-0.00	0.01	0.04	0.07	0.13	0.31
	-55.73****	-29.34****	-16.16****	-7.51****	-1.39	4.88****	11.79****	20.93****	38.22****	60.75
Holding period	0.03	0.03	0.03	0.03	0,02	0.03	0.02	0.02	0.03	0.00
	4.75****	5.58****	6.28****	6.84****	5.21****	5.21****	5.96****	5.18****	6.0****	0.29
3 Formation	0.17	-0.07	-0.04	-0.02	-0.00	0.01	0.03	0.05	0.09	0.20
	-59.07.****	-33.44****	18.88****	-8.82****	-1.50	5.88****	13.83****	24.63****	42.81****	67.22****
Holding period	-0.01	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01
	-2.72***	2.86***	3.60***	4.31****	3.53***	5.22****	3.30***	4.40****	5.22****	3.55***
1 Formation	0.10	-0.04	-0.02	-0.01	-0.00	0.00	0.01	0.03	0.05	0.10
	-61.43****	-37.49****	-23.17****	-12.13****	-3.38***	5.16****	15.17****	28.14****	49.02****	73.76****
Holding period	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	-0.00
	0.62	2.46**	3.30***	3.27***	3.16***	3.43***	2.00**	1.43	-0.09	-0.80

From the start of each month from January 2001 to December 2009, all the ETFs are ranked by their market returns over the month preceding the portfolio formation month. All ETFs are equally weighted into their respective portfolio. Table 2, presents the Average formation and holding portfolio performance returns for each decile portfolio of ETFs, that are formed based upon the returns of the ETFs. The AFPR is calculated by using the following formula: AHPR = (1+R1)*(1+R2)-1. The cumulative returns were thus calculated.

The T stats. are those presented in brackets.

*= Significance at 10% level, ** = significance at 5% level, ***= significance at 1% level, **** = significance at 0.1% level

Table 3 The mean Formation and Holding period performance for the entire sample of ETFs by specialties with deciles categorized by returns

	0	1	2	3	4	5	6	7	8	9
6 Formation	-0.28	-0.13	-0.08	-0.04	-0.01	0.02	0.05	0.09	0.15	0.31
	-38.45****	-21.52****	-13.74****	-7.67****	-2.32**	2.69***	8.90****	14.95****	24.01****	37.51****
Holding period	0.03	0.02	0.22	0.04	0.03	0.02	0.01	0.01	0.02	-0.02
	2.42**	2.62***	2.77***	4.40***	4.07****	.01****	1.99**	1.58*	2.91***	-2.46***
3 Formation	-0.20	-0.09	-0.06	-0.03	-0.01	0.01	0.04	0.06	0.10	0.21
	-39.13****	-24.16****	-16.04****	-8.43****	-209****	3.51****	10.33****	17.60****	28.17****	42.52****
Holding period	-0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01
	-2.96***	2.04**	1.66**	1.57**	2.17**	2.50**	1.64**	2.82***	0.65	1.52
1 Formation	-0.12	-0.10	-0.03	-0.02	-0.01	0.01	0,02	0.04	0.06	0.12
	-40.47****	-27.53****	-18.70****	-10.86****	-3.58****	3.69	11.77****	20.41****	32.86****	45.99****
Holding period	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	-0.00
	-0.42	2.94***	1.68**	1.58**	1.07	1.46	0.33	0.25	-0.72	-1.43

From the start of each month from January 2001 to December 2009, all the ETFs are ranked by their market returns over the month preceding the portfolio formation month. All ETFs are equally weighted into their respective portfolio. Table 2, presents the average holding portfolio returns (AHPR) for each decile portfolio of ETFs, that are formed based upon the returns of the ETFs.

The AHPR is calculated by using the following formula: $AHPR = \sum(HPR_{ik}-EWHPR_i)/N$ where i is the number of months after the formation period and k is the number of ETFs in each decile portfolio (k=0 to N). EWHR is equally weighted holding period returns.

The T stats. are those presented in brackets.

*= Significance at 10% level, ** = significance at 5% level, *** = significance at 1% level, **** = significance at 0.1% level

CONCLUSION

From CRSP and Morningstar (2001-2009), this study examines the returns and liquidity behavior of 2,366 Equity Exchange Traded Funds (ETFs). ETF portfolio formation and holding periods (6, 3 and 1 months) for the entire sample and by specialties with deciles categorized by returns and liquidity were analyzed. Momentum does not exist when analyzing the overall portfolio of ETFs. The mean formation estimate for the entire ETFs winners is 31.5%, compared with the value of 0.2% for the 6 months formation and holding periods. On the other hand the mean formation periods returns for the losers are -24.25% compared to 3.3% for the holding period. In the formation and holding periods of 1 and 3 months there were evidence that momentum exist amongst the losers portfolios according to table 3. For the 1 and 3 months formation and holding periods losers continue to loss. The mean formation period for the 3 months were 21% and 1%, while 12% and 143% were observed for the I month formation and holding period respectively. There is plausible reason for this result. One could postulate that these period (1 and 3 months) were not enough time to incorporate transaction cost.

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VALUE RELEVANCE OF R&D SPENDING BY RIVALS

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ABSTRACT

Firms make use of the external technology knowledge obtained from their rivals in order to improve their productivity and profitability. The positive impact of rivals' R&D on a firm's profits is known as knowledge spillovers. On the other hand, an innovating firm will not be able to price a new product to fully capture the value of its innovation due to competition. Furthermore, there are times when a rival's innovation activities might make a firm's products obsolete. This results in negative spillovers, in which case rivals' R&D hurts a firm's performance. The interplay of knowledge and negative spillovers together determines the direction of the overall impact of rivals' R&D on the firm's stock valuation. We provide evidence that rivals' R&D is significantly and positively associated with stock valuation of firms. To our best knowledge, ours is the first study to show a positive association between R&D expenditures of rivals and firm's stock market valuation. We further show that the impact of industry R&D on stock valuation is higher in industries where R&D expenditures are dispersed among several firms compared to industries where R&D is concentrated among a few firms. Finally, we show that investors differentiate firms based on their absorptive capacity of rivals' R&D.

INTRODUCTION

Research and development (R&D) expenditures is an important productive input for a significant number of firms (Aboody & Lev, 2000). We find that corporate spending on R&D increased from $20.4 billion in 1975 to $390.4 billion in 2009 peaking at $467 billion in 2007 for all firms in COMPUSTAT database. In 2009, R&D represents 2.7 percent of total assets, 3.9 percent of total sales and 56.5 percent of capital expenditures for firms which have R&D expenditures. An interesting aspect of R&D expenditures is that R&D of a firm not only provides benefits, in terms of increased productivity and profitability to the firm, but it also provides benefits to the firm's rivals and their customers.

In this paper, we examine whether investors incorporate the productivity and profitability implications of R&D information reported by its rivals into a firm's stock value. We regress annual stock returns on firm-specific R&D, firm-specific earnings, and rivals' R&D to investigate whether rivals' R&D provides information relevant for a firm's stock value. In contrast to the prior studies, we show that R&D information from a firm's rivals is positively

associated with its stock value. We further show that magnitude of this positive association increases as rivals' R&D information available to a firm increases. Additionally, we show that the investors differentiate firms based on their absorptive capacity of rivals' R&D information.

Survey evidence shows that information concerning product development decisions is generally in the hands of rivals within twelve to eighteen months (e.g. Mansfield, 1985). The information on the detailed nature and operation of new products or processes developed by a firm is obtained by at least some of its rivals within a year. Then the question is whether firms can make use of the external technology knowledge to improve their productivity and profitability. Additional survey evidence shows that information from rivals not only suggests new R&D projects but also contributes to existing project completion (Cohen, Goto, Nagata, Nelson, & Walsh, 2002). Firms, whose research is in the areas where there is much research by other firms, produce greater number of patents and they have a higher return to R&D in terms of accounting profits and productivity (Jaffe, 1986; Los & Verspagen, 2000). These results point to knowledge spillovers from rivals.

On the other hand, evidence from Canada suggests that managers in leading technology-based industries are very concerned about the possibility of negative effects from their own R&D disclosures (Entwistle, 1999). This concern is mostly due to the possibility of competitors gaining valuable intelligence about the firm's technology and thus hurting the firm's competitive advantage. Moreover, there may be negative impacts on their customers. These impacts are negative spillovers. Accounting profits have negative elasticity with respect to the capitalized R&D pool from a firm's rivals (Jaffe, 1986). In addition, public knowledge on rivals' R&D such as patents has negative impact on the profitability of Canadian firms (Hanel & St-Pierre, 2002).

For a concrete example of spillovers, consider the case of tablet computers. Apple Inc.'s (Apple) iPad created a new product category called tablet computers. iPad users downloaded one million software applications and 250,000 electronic books on the first day that it was introduced (Wortham, 2010). This implies that, in addition to the direct profits from the sale of iPads, Apple profited from the sale of electronic books. Yet, electronic books were invented by other firms. Therefore, Apple benefited from the knowledge of the makers of electronic book readers (e.g. Amazon Kindle). This is a positive externality created by Apple's rivals' R&D. Moreover, other rivals of Apple, like Samsung and Motorola introduced tablet computers with similar characteristics to iPad (Brustein, 2011). This observation points to the idea that commercialization inevitably makes the knowledge created via R&D available to other firms thereby resulting in knowledge spillovers (Jaffe, 1996). In contrast, iPad has been cannibalizing other close product categories such as PCs, netbooks, and laptops. Deutsche Bank reports that iPad's cannibalization rate of PCs is above 30% due the superior user experience that it offers (Whitmore & Mahlberg, 2011). Thus, Apple's R&D has resulted in negative spillovers to Dell, HP, and other PC companies.

Hall, Mairesse, and Mohnen (2009) survey 50 years of economic research on R&D spillovers. They conclude that the rates of return to R&D are positive and usually higher than

those to ordinary capital. Further, social returns to R&D are almost always estimated to be substantially greater than the private returns. Our results are consistent with this conclusion.

Two prior studies show that industry R&D is negatively associated with the stock valuation of firms (Jaffe, 1986) and the announcement of a firm regarding R&D expenditures is negatively associated with abnormal returns of the other firms in its industry at the time of the announcement (Zantout & Tsetsekos, 1994). We contribute to this literature by providing evidence that the investors incorporate rivals' R&D information positively into stock values. This result is in contrast to the results of prior studies.

The remainder of the paper is organized into three sections. In the next section, we discuss the development of research hypotheses. In Section III, we provide the empirical model and the results of our analyses. And we conclude the paper in Section IV.

THE IMPACT OF RIVALS' R&D ON THE STOCK RETURNS

There is a considerable body of research that analyzes the impact of firm level R&D expenditures on firms' stock valuation and future profitability. There is evidence that investment in R&D increases future profitability; and increases in R&D expenditures lead to increased profits over a seven-year period (Sougiannis, 1994; and Lev & Sougiannis, 1996). Since stock value of a firm is a function of its future earnings, these findings imply that R&D should be positively related to the stock prices; and increases in R&D should be positively related with the stock returns.

One way to understand the valuation implications of R&D is by analyzing the stock market's reaction to the announcements made by firms regarding R&D expenditures. R&D related announcements are positively associated with stock market returns (e.g. Chan, Martin, & Kensinger 1990; Kelm, Narayanan, & Pinches, 1995; Szewczyk, Tsetsekos, & Zantout, 1996). In addition to R&D announcements by firms, researchers have studied the impact of reported level of R&D expenditures on stock prices and stock returns. R&D expenditures have positive impact on stock prices and stock returns (Hirschey, 1982, 1985; Fan & Case 2010). Furthermore, R&D capitalized at various rates is positively associated with stock prices and stock returns (Hall, 1993; Lev & Sougiannis, 1996). These findings indicate that a firm's own R&D has a positive impact on its valuation.

More recent studies further analyze the various aspects of the positive relationship between R&D expenditures and stock market values. Darrough and Ye (2007) show that loss firms have positive valuation multiplier for R&D expenditures. Franzen and Radhakrishnan (2009) show that positive relationship between R&D and stock values for loss firms does not extend to profit firms. Focusing on R&D firms which face funding constraints; Li (2011) shows that stock returns are higher for financially constrained firms. This relationship is positive among high R&D firms. Furthermore, it is much stronger among high R&D firms than among low R&D firms. Ciftci, Lev, and Radhakrishnan (2011) analyze the relationship between short-term and

long-term R&D excess returns, business risk, and information risk. They show that after controlling for business risk and information risk in the short term, high industry-adjusted R&D firms have greater excess returns than low industry-adjusted R&D firms. Although Ciftci et al. (2011) utilize industry-adjusted R&D in their analyses; they did not directly analyze the impact of industry R&D on returns. And lastly, Ciftci and Cready (2011) consider the scale effects and show that larger R&D firms have smaller future returns than the future returns of smaller R&D firms.

Firms benefit not only from their own R&D but they actively gather information about their rivals' innovation activities and make an effort to benefit from these activities. Surveys show that information concerning product development decisions is generally in the hands of rivals within twelve to eighteen months (e.g. Mansfield, 1985). The information on the detailed nature and operation of the new products or processes developed by a firm is obtained by at least some of its rivals within a year. Then the question is whether the firms can make use of the external technology knowledge to improve their productivity and profitability. R&D expenditures produce new information (Cohen & Levinthal, 1989) and firms often will not be able to prevent rivals from obtaining the benefits of their R&D projects (Bernstein & Nadiri, 1989). Knowledge spillovers are the benefits arising from the use of knowledge resulted from the R&D efforts of one firm by other firms (Griliches, 1979). Additional survey evidence provides support for knowledge spillovers: The information from rivals not only suggests new R&D projects but also contributes to existing project completion (Cohen et al., 2002). Firms, whose research is in the areas where there is much research by other firms, produce greater number of patents and they have a higher return to R&D in terms of accounting profits and productivity (Jaffe, 1986; Los & Verspagen, 2000). Economic research on R&D spillovers concludes that the rates of return to R&D are positive and usually higher than those to ordinary capital (Hall et al., 2009). Furthermore, social returns to R&D, returns to entire economy, are almost always estimated to be substantially greater than the private returns.

On the other hand, managers from Canada's leading technology-based industries are very concerned about the possibility of competitors gaining valuable intelligence about their technology from their own R&D disclosures (Entwistle, 1999). This would hurt the firm's competitive advantage. Moreover, there may be negative impacts on their customers. These concerns are consistent with competition preventing an innovating firm from pricing a new product fully to capture the value of its innovation. Research shows that accounting profits have negative elasticity with respect to the capitalized R&D pool from a firm's rivals (Jaffe, 1986). This negative impact on profits is due to the possibility that a new product may make another firm's product obsolete. Similarly, public knowledge on rivals' R&D such as patents has negative impact on the profitability of Canadian firms (Hanel & St-Pierre, 2002). These impacts are negative spillovers. A rival firm may come up with an innovative product but may not be able to price it fully due to negative spillovers. Furthermore, customers may switch to the rival's product

with superior features and similar price. For example, Apple's introduction of iPad has been hurting laptop manufacturers with a better fit to consumer needs and similar price.

Therefore, the interplay of knowledge and negative spillovers together determines the direction of the overall impact of rivals' R&D on the firm's stock valuation. We expect knowledge spillovers to be more prevalent for investors than negative spillovers for the following reasons. First, Hanel and St-Pierre (2002)'s results may not be generalized since most empirical studies find opposite effects (e.g. Cincera & de la Potterie, 2001; Los & Verspagen, 2000). Hall et al. (2009) surveys 50 years of economic research on R&D spillovers. They conclude that the rates of return to R&D are positive and usually higher than those to ordinary capital. Further, social returns to R&D are almost always estimated to be substantially greater than the private returns. Second, we believe the negative elasticity of R&D with respect to market value reported by Jaffe (1986) is period specific. The time period Jaffe (1986) analyze is before 1980 – after which industry R&D increased drastically (Hall, 1993). Also since R&D spillovers were causing underinvestment problem, R&D subsidies to private firms have been a major element in the US government's technology policies since the 1980s. Moreover, for most companies patents are not an effective way of protecting a company's R&D output. Managers on average consider secrecy as the most effective way of protecting their innovation activities (Cohen, Nelson, & Walsh, 2000). Lastly, with emergence of competitive intelligence industry, even smaller firms can benefit from their rivals' R&D efforts.

We propose that industry R&D will have valuation implications to investors incremental to firm-specific earnings and R&D expense. Impact of knowledge spillovers from rivals' R&D will not be captured in current firm-specific earnings or R&D expense, two variables used in valuation models, because the dissemination of technology information takes time (Mansfield, 1985; Verspagen & Loo, 1999). As a result, our first hypothesis in alternative form is stated below:

H1: Industry R&D will be positively associated with the stock valuation.

Our next hypothesis relates to how widely the external R&D information is available to a firm. The association between industry R&D and stock valuation will vary depending on the environment in which a firm operates. If there is one firm which accounts for almost all of R&D spending in an industry, that firm can protect the details of its R&D projects relatively easily. Because R&D increases a firm's ability to exploit the existing external knowledge available to it (Cohen & Levinthal, 1989), other firms would not be able to benefit from the firm's R&D. Moreover, the firm spending on R&D would be the only source of R&D information. In contrast, if there are several firms which account for R&D spending in an industry there would be several potential sources that generate R&D information. It would be harder for firms to protect the details of their R&D projects from their rivals. Consistent with this, the firms whose research is in the areas where there is much research by other firms produce greater number of patents and

have a higher return to R&D in terms of accounting profits (Jaffe, 1986). In general, we expect that investors will value industry R&D relatively highly in industries where R&D is not concentrated among a few firms but distributed evenly across firms in the industry. Therefore, the second hypothesis in its alternative form is:

H2: The magnitude of the positive association between Industry R&D and the stock valuation will be larger for firms in industries where R&D is not concentrated among a few firms.

R&D has dual role: It does not only create new technology information but it also increases a firm's ability to exploit the existing external knowledge available to it (Cohen & Levinthal, 1989). Furthermore R&D managers see, on average, their independent R&D as the most important channel to learn about rival technology (Levin, Klevorick, Nelson, & Winter, 1987). Therefore firms which spend more on R&D will be able to exploit the external knowledge more successfully than firms which spend less. Therefore, our last hypothesis in its alternative form is:

H3: For firms which spend more on R&D, the magnitude of the positive association between Industry R&D and the stock market returns will be larger.

In the next section, we present our empirical model along with the results of the tests of our hypotheses.

EMPIRICAL MODEL AND RESULTS

Empirical Model

We investigate the value relevance of industry R&D using the following return regression model,

$$Ret_{i,t} = \beta_0 + \beta_1 EPS_{i,t} + \beta_2 RND_{i,t} + \beta_4 IndRND_{i,t} + \beta_4 Size_{i,t} + \mu_{i,t} \quad (1)$$

where Ret, our measure of stock valuation, is a firm's annual stock return starting nine months before and ending three months after its fiscal year-end for year *t* (to reflect the information provided in year *t*'s annual report); EPS is the earnings per share before extraordinary items and before R&D; RND is the R&D expense per share; and IndRND, our measure of rivals' R&D, is the average of R&D expense per share of all other firms in a firm's four-digit SIC industry; Size is the natural logarithm of the market capitalization of equity at the end of year t. We scale EPS, RND, and IndRND by split adjusted stock price from nine months before the end of fiscal year *t*. Since we measure stock returns over a long-window, we include size as a potential correlated variable that could affect the results.

We estimate our empirical model using ordinary least squares regression. We adjust the standard errors for heteroskedasticity, serial-, and cross-sectional correlation using a two-way cluster at the firm and year level which was suggested by Petersen (2009) as the preferred method for estimating standard errors using panel data. Additionally, multicollinearity is not a problem in our estimations as evidenced by condition index numbers which are smaller than twenty and Variance Inflation Factor (VIF) numbers which are less than five (Studenmund, 2011).

Sample and Descriptive Statistics

Table 1: Sample Description

Panel A: Sample Selection

Selection Criteria	Number of Observations
Compustat data from 1975 to 2009 with non-missing Earnings	425,727
Eliminate non-R&D firms	100,122
Eliminate negative Book Value firms	89,426
Eliminate penny stocks	73,669
Eliminate financial service firms	72,710
Eliminate firm years with missing stock returns	54,915
Eliminate industries with less than five firm-year observations	43,571

Panel B: Firm-Year Observations by Industry

Industry Name	SIC	Count	Percentage
Paper and Allied Products	2600 - 2699	637	1.46%
Chemicals and Pharmaceutics	2800 - 2899	7,518	17.25%
Petroleum Refining	2900 - 2999	529	1.21%
Rubber and Plastics Products	3000 - 3099	780	1.79%
Primary Metal Industries	3300 - 3399	502	1.15%
Fabricated Metal Products	3400 - 3499	909	2.09%
Machinery and Computer Equipment	3500 - 3599	6,709	15.40%
Electrical and Electronics	3600 - 3699	8,149	18.70%
Transportation Equipment	3700 - 3799	1,659	3.81%
Scientific Instruments	3800 - 3899	6,978	16.02%
Manufacturing Industries	3900 - 3999	557	1.28%
Communications	4800 - 4899	459	1.05%
Business Services	7300 - 7399	5,912	13.57%
Other		2,273	5.22%
Total		43,571	100.00%

Sample includes all firm-years between 1975 and 2009 for which the data is available on the Compustat and CRSP databases. The sample includes firms with positive R&D expense. We further require that there are at least five firms in each four-digit SIC code industry to calculate industry R&D variable. The firm-years with missing observations for the variables needed to estimate our model are deleted. Following Fama and French (1995), firms with negative book value of equity are eliminated. Financial service firms (SIC 6000-6999) are also excluded from the sample. Firms with stock price less than $1 are also eliminated to restrict the impact of large returns of penny stocks. Final sample consists of 43,571 firm years. Panel A of Table 1 provides, in detail, our sample selection criteria and ending sample size after each step.

Panel B of Table 1 provides the distribution of our sample firms among different industries. Similar to prior studies (i.e. Lev & Sougiannis, 1996), our sample is representative of R&D-intensive industries. Chemicals and Pharmaceutics, Machinery and Computer Equipment, Electrical and Electronics, Scientific Instruments, and Business Services industries each constitute more than ten percent of our sample.

The descriptive statistics are provided in Table 2. Mean (median) R&D per share is 7.33 percent (4.63 percent) of the beginning stock price. Mean value for industry R&D, measured as the average of R&D per share of all other firms in a firm's industry, scaled by beginning price is 11.69 percent. The mean (median) annual stock returns for our sample is 21.05 percent (6.54 percent). And the mean (median) earnings per share is 7.62 percent (8.03 percent) of the beginning stock price.

Table 2: Descriptive Statistics

	N	Mean	Standard Deviation	Median	Lower Quartile	Upper Quartile
Annual Return	43,571	0.2205	0.8935	0.0654	-0.2222	0.4180
EPS	43,571	0.0762	0.2393	0.0803	0.0267	0.1407
R&D per Share	43,571	0.0733	0.0903	0.0463	0.0208	0.0934
Industry R&D	43,571	0.1169	0.1430	0.0670	0.0301	0.1457
R&D Concentration	43,571	0.2814	0.1908	0.2413	0.1255	0.3828
Size	43,571	5.1149	2.0833	4.9256	3.5801	6.4881

Table 3 reports the univariate correlations between our regression variables. Top part of the table presents the Pearson correlations, while lower part presents Spearman correlations. P-values are provided under correlation values. Both earnings per share and R&D are positively and significantly correlated with stock returns. Size variable has a Pearson (Spearman) correlation of -0.1044 (-0.0736) with stock returns. Our variable of interest, industry R&D, has a Pearson (Spearman) correlation of 0.1759 (0.0492) with stock returns and the correlation is statistically significant.

Table 3: Correlations						
	Annual Return	EPS	R&D per Share	Industry R&D	R&D Concentration	Size
Annual Return	1.000	0.1256 <.0001	0.1547 <.0001	0.1759 <.0001	-0.0067 0.1647	-0.1044 <.0001
EPS	0.3620 <.0001	1.000	0.0665 <.0001	-0.0393 <.0001	0.0341 <.0001	-0.0305 <.0001
R&D per Share	0.0875 <.0001	0.2674 <.0001	1.000	0.4022 <.0001	-0.0923 <.0001	-0.2373 <.0001
Industry R&D	0.0492 <.0001	-0.0366 <.0001	0.4849 <.0001	1.000	-0.0422 <.0001	-0.4887 <.0001
R&D Concentration	0.0377 <.0001	0.1168 <.0001	-0.1374 <.0001	-0.1084 <.0001	1.000	-0.0875 <.0001
Size	-0.0736 <.0001	-0.0845 <.0001	-0.2669 <.0001	-0.6495 <.0001	-0.1183 <.0001	1.000

Results

Test of Hypothesis H1

Table 4 presents the results from the estimation of Model (1). The coefficient on EPS is 0.841 with t-statistics of 10.88 and the coefficient on RND is 0.704 with t-statistics of 7.41. The IndRND is significantly and positively associated with stock market returns evidenced by a coefficient of 0.897 with t-statistics of 15.21. This provides support our Hypothesis 1 that industry R&D is significantly and positively associated with stock valuation. As we expected, investors consider knowledge spillovers to be more prevalent than negative spillovers. Ours is the first study to show that R&D expenditures by a firm's rivals are positively associated with the firm's stock returns. This is in contrast to the findings of prior studies that R&D expenditures by other firms are negatively associated with the firm's market value (Jaffe, 1986) and announcements by a firm's rivals negatively impact the firm's stock returns at the announcement date (Zantout & Tsetsekos, 1994).

Table 4: Stock Returns and Industry R&D			
	Coefficient Estimate	t-statistics	VIF[†]
Intercept	0.0225	1.25	0
EPS	0.8410***	10.88	1.037
RND	0.7040***	7.41	1.230
IndRND	0.8970***	15.21	1.512
Size	-0.0043**	-2.01	1.322
Adjusted R^2	6.48%		
***, **, * indicates the coefficient is statistically significant at one percent, five percent and ten percent significance level, respectively (two-tailed test)			
[†]Highest condition index number is 8.29			

Test of Hypothesis H2

We established above that industry R&D is significantly and positively associated with stock returns. We now investigate how the valuation of industry R&D varies as the environment of the firm varies. The measure we use for the availability of research in a firm's industry is R&D concentration (RNDCONC). We followed the procedure of Herfindahl-Hirschman Index, a commonly accepted measure of market concentration, for our measure of R&D concentration. The R&D concentration is calculated by first dividing each firm's R&D expense by the total R&D expense in its industry. Then, we calculate the total of the square of each firm-R&D to total-R&D ratio to get the R&D concentration for that industry. In an industry, R&D concentration will be equal to one if there is only one firm that invests in R&D. This means that larger (smaller) value of concentration means there are a few (many) firms that account for the spending on R&D. To test hypothesis H2, we add interaction of RDCONC with RND and with IndRND variables to the returns model. Because stock returns are positively associated with industry R&D, hypothesis H2 predicts that the sign of the coefficient on interaction of RNDCONC with IndRND will be negative.

Table 5: Stock Returns, Industry R&D, and R&D Concentration

	Coefficient Estimate	t-statistics	VIF†
Intercept	-0.0390*	-1.76	0
EPS	0.8468***	10.45	1.042
RND	0.8458***	5.73	3.322
IndRND	1.3131***	13.38	3.933
RNDCONC	0.2156***	6.23	1.953
RNDCONCxRND	-0.7571*	-1.72	3.737
RNDCONCxIndRND	-1.3924***	-6.80	4.135
Size	-0.0044**	-2.08	1.341
Adjusted R^2	6.74%		
***, **, * indicates the coefficient is statistically significant at one percent, five percent and ten percent significance level, respectively (two-tailed test)			
†Highest condition index number is 11.87			

Table 5 presents the results from the estimation of the returns model with RNDCONC interaction variables. The coefficient estimate on IndRND is 1.3131 with t-statistics of 13.38. And the coefficient estimate on the interaction of IndRND and RNDCONC is -1.3924 with t-statistics of -6.80. This implies that mathematically overall coefficient on IndRND is (1.3131-1.3924* RNDCONC). When we evaluate this coefficient at the lower quartile value of RDCONC, 0.1255, the coefficient becomes 1.1377 which is substantially larger than the estimate of 0.897 in Table 4. On the other hand, when we evaluate this coefficient at the upper quartile value of RDCONC, 0.3828, the coefficient becomes 0.7782 which is smaller than the estimate of 0.897 in Table 4. Therefore, investors seem to place on average higher weight on industry R&D

when R&D spending is dispersed among many firms in an industry. And as R&D gets concentrated to smaller number of firms, investors place lower weight on industry R&D. These results support our hypothesis that the magnitude of the positively significant association between industry R&D and the stock market returns are larger for firms in industries where there is relatively more research compared to other industries.

Overall, the results from Table 5 provide support for hypothesis H2. Investors seem to consider the competitive environment in which a firm invests in R&D, when they incorporate the R&D information from a firm's rivals into its stock returns. In particular, investors place higher weight on industry R&D if there is more intensive research in a firm's industry by its rivals. The weight they place on industry R&D seems to approach zero as concentration approaches one. They recognize the easiness of knowledge spillovers with increased number of firms spending on R&D.

Test of Hypothesis H3

We examine whether investors can differentiate firms based on their ability to exploit external R&D available to them. Cohen and Levinthal (1989) show that a firm's ability to exploit external R&D increases as they spend more on R&D which is also consistent with the findings of Levin (1987) that on average R&D managers rate private R&D as the most effective channel of learning about rival technology. Based on these results, we add the interaction of RND and IndRND into Model (1) to test whether investors account for a firm's increased ability to appropriate rival R&D information when they spend more on R&D.

Table 6: Stock Returns, Industry R&D, and Interactions

	Coefficient Estimate	t-statistics	VIF†
Intercept	0.0581***	3.08	0
EPS	0.8395***	10.86	1.041
RND	0.3858***	3.01	2.614
IndRND	0.7419***	9.80	2.303
RNDxIndRND	1.3005***	2.72	3.739
Size	-0.0066***	-3.11	1.376
Adjusted R^2	6.58%		
***, **, * indicates the coefficient is statistically significant at one percent, five percent and ten percent significance level, respectively (two-tailed test)			
†Highest condition index number is 9.70			

Table 6 presents the results from the estimation of Model (1) with RND and IndRND interaction variable added to the estimation. The results presented in Table 6 support our hypothesis H3 that the weight placed on industry R&D by investors is higher when a firm's own spending on R&D is higher as evidenced by the positive and significant coefficient estimate on RND and IndRND interaction variable. Specifically, the coefficient estimate on RND and

IndRND interaction variable is 1.3005 with t-statistics of 2.72. The coefficient estimate on the interaction variable is considerably the coefficient estimate (0.7419 with t-statistics of 9.80) on IndRND. This indicates that investors recognize a firm's own R&D as an important channel to learn about rivals' R&D activity.

Overall, the results from Table 6 provide support for hypothesis H3. The investors seem to differentiate firms in terms of their absorptive capacity when they incorporate the R&D information from a firm's rivals into its stock returns. The weight placed on industry R&D by investors when valuing a firm increases, as a firm's own R&D expense increases.

Overall

Lastly, to draw final conclusions, we estimate Model (1) including all of our variables of interest. Table 7 presents the results from the estimation. Results confirm our conclusions from the prior analyses. The IndRND is significantly and positively associated with stock market returns evidenced by a coefficient of 1.1556 with t-statistics of 10.69. The coefficient estimate on the interaction of IndRND and RNDCONC is -1.3389 with t-statistics of -6.58. And finally, the coefficient estimate on RND and IndRND interaction variable is 1.1409 with t-statistics of 2.43. Hence, industry R&D is positively associated with stock returns. Investors consider the competitive environment when they value R&D spending of rivals of a firm. Investors also understand the role a firms' own R&D in learning about rivals' R&D spending.

Table 7: Stock Returns, Industry R&D, Interactions and R&D Concentration

	Coefficient Estimate	t-statistics	VIF[†]
Intercept	-0.0045	-0.21	0
EPS	0.8444***	10.44	1.045
RND	0.5866***	3.67	4.920
IndRND	1.1556***	10.69	4.832
RNDxIndRND	1.1409**	2.43	3.766
RNDCONC	0.2063***	6.15	1.987
RNDCONCxRND	-0.7996*	-1.82	3.796
RNDCONCxIndRND	-1.3389***	-6.58	4.118
Size	-0.0065***	-3.11	1.400
Adjusted R^2	6.83%		

***, **, * indicates the coefficient is statistically significant at one percent, five percent and ten percent significance level, respectively (two-tailed test)

[†]Highest condition index number is 13.61

CONCLUSION

Prior research shows that firms follow their rivals' R&D activities and gather information about their innovations. Firms can make use of the external technology knowledge obtained from their rivals to improve their productivity and profitability which is known as knowledge spillovers. It has been shown that firms whose research activities are in the areas where there is much research by other firms produce greater number of patents and have a higher return to R&D in terms of accounting profits. Moreover, spillovers contribute to the productivity and profitability of firms. On the other hand, an innovating firm will not be able to price a new product to fully recover the value of its innovation due to competition. In addition, a rival's innovation activities might make the firm's products obsolete. This is referred as negative spillover. The interplay of knowledge and negative spillovers will determine the direction of the overall impact of rivals' R&D on the firm's stock valuation.

We provide evidence that the industry R&D is significantly and positively associated with stock returns of firms. Therefore investors recognize the impact of knowledge spillovers on productivity and profitability. And knowledge spillovers are more prevalent than negative spillovers for the investors. To our best knowledge, our study is the first study to show a positive association between R&D expenditures of rivals and firm's stock market valuation. We further show that the coefficient of industry R&D is higher when R&D expenditures are dispersed among several firms in an industry compared to an industry where R&D is concentrated among a few firms. Finally, we show that investors differentiate firms based on their absorptive capacity. In other words, the coefficient of industry R&D is higher for firms which spend more on R&D.

In summary, investors seem to understand the benefits firms receive from the R&D of their rivals. Consequently, they place a positive value on industry R&D when they value firms. They also seem to understand the different aspects of industry R&D such as the concentration of research in an industry and the firms' absorptive capacity of external R&D.

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FINANCIAL INSTRUMENT CREDIT IMPAIRMENT MODELS - A RIFT IN THE CONVERGENCE OF IASB AND FASB ACCOUNTING STANDARDS

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ABSTRACT

In 2006 the International Accounting Standards Board (IASB) and the U.S. Financial Accounting Standards Board (FASB) agreed on a series of cooperative projects that would not only improve International Financial Reporting Standards (IFRS) and U.S. Generally Accepted Accounting Principles (GAAP), but also would bring IFRS and GAAP closer to convergence. Since then the boards have made significant progress toward accounting standard convergence and their commitment to convergence was reaffirmed in an IASB-FASB joint report dated April 5, 2012. One of the remaining convergence projects entails financial instrument credit impairment, which is of significant importance to the financial services industry, the global financial markets, and the global economy. The boards jointly developed a "three-bucket credit impairment model" to address this issue and both invited comments on the model from their stakeholders. Then in August 2012, the FASB decided unilaterally to adopt the current expected credit loss (CECL) model to account for financial instrument credit impairment. The IASB continues to support the jointly developed three-bucket credit impairment model. The FASB's decision is a significant step in its efforts to improve financial industry accounting, but also represents a step away from the convergence of accounting standards worldwide. This paper provides a closer look at the differences between the IASB three-bucket model and the FASB's CECL model and explores the implications of this newly developed "rift" in the efforts to converge accounting standards internationally.

INTRODUCTION

Differences in accounting standards across countries and capital markets pose a barrier to the international free flow of capital due to the lack of comparability of financial statements. Because of this issue, in 2006 the International Accounting Standards Board (IASB) and the U.S. Financial Accounting Standards Board (FASB) agreed on a series of short-term and long-term cooperative projects that would (1) improve International Financial Reporting Standards (IFRS) and U.S. Generally Accepted Accounting Principles (GAAP) and (2) bring IFRS and GAAP closer to convergence (IASB-FASB, February 27, 2006). This agreement was an extension of an

earlier 2002 memorandum of understanding between the IASB and FASB that formalized their commitment to convergence of international and U.S. accounting standards.

On April 5, 2012, the IASB and FASB issued a joint report on the convergence of accounting standards, which stated that the boards were close to completing their agreed-upon projects. This joint report also revealed that the IASB and FASB were working to quickly reach converged solutions for the remaining projects and that "the boards are continuing their efforts to achieve a single set of high quality, global accounting standards . . ." (IASB-FASB, April 5, 2012). Consequently, it seemed that convergence of accounting standards was proceeding smoothly.

The remaining IASB-FASB convergence projects involve financial instruments, leases, revenue recognition, and insurance projects. An issue to be addressed within the financial instruments project is that of financial instrument credit impairment which is of significant importance to the global financial markets. At the urging of the G20 leaders, the FASB and the IASB have been working on developing an expected credit loss impairment model, which is a forward-looking approach to account for credit losses. The result of their work is a jointly developed model, described as a "three-bucket" (three categories) expected loss approach that reflects the deterioration in the credit quality of financial assets (FASB, June 15, 2011).

Both the IASB and the FASB issued documents on the topic of impairment of financial instruments that detailed the three-bucket model and invited comments from stakeholders. In their April 5, 2012 joint report, the IASB and FASB state that "Stakeholders responded that reaching a common impairment solution is very important." The IASB and FASB also realize the importance of convergence on this issue and affirm that "Reaching a converged solution is of the utmost importance." Consequently, “The IASB and the FASB . . . continue to jointly develop a common impairment model" (IASB-FASB, April 5, 2012, p. 8).

After the issuance of the April 5, 2012 joint report, the FASB continued to conduct stakeholder outreach activities regarding the three-bucket impairment model. The purposes of these outreach activities were twofold: to gather stakeholder feedback regarding whether (1) the three-bucket model would be operable, auditable and understandable, and (2) the draft guidance for the three-bucket model provided by the FASB was sufficiently clear. In their July 2012 feedback summary report of the three-bucket impairment model, the FASB concluded that, based on stakeholder feedback, further clarification of the principles of the model was necessary. The report also noted that stakeholder feedback, in general, indicated concern regarding the operability of the model and concern that comparability may be reduced if the model was implemented as currently proposed.

In August 2012, four months after the IASB-FASB joint report on convergence, the FASB unilaterally proposed the "Current Expected Credit Loss Model" (CECL Model) due to concerns expressed by stakeholders in the July 2012 feedback summary of the original model proposed jointly by the two boards. The FASB model is expected to be formally proposed in an

exposure draft by the end of 2012. The IASB continues to support the jointly developed three-bucket credit impairment model.

The FASB's decision is a significant step in its efforts to improve financial industry accounting, but also represents a step away from attempts to converge accounting standards worldwide. This paper provides a closer look at the differences between the IASB three-bucket model and the FASB's CECL model and explores the implications of this newly developed "rift" in the efforts to converge accounting standards internationally.

The rest of this paper is organized as follows. Section 2 provides an overview of the issues that led to the discussion of the credit impairment models. Section 3 summarizes the rationale behind the three-bucket model and the FASB CECL model and summarizes the similarities and differences across the two approaches. Section 4 discusses the impasse regarding this issue, its implications for accounting standard convergence and concludes the paper.

A BRIEF HISTORY OF THE ALLOWANCE FOR CREDIT LOSSES AND THE FINANCIAL SERVICES INDUSTRY

FAS 5 (ASC 450) "*Accounting for Contingencies"* (FASB, March 1973) and FAS 114 (ASC 310) "*Accounting by Creditors for Impairment of a Loan - An Amendment of FASB Statement 5 and 15"* (FASB, May 1993) established the accounting guidelines in the U.S. for loan losses. FAS 114 established guidelines on loss estimation for loans that are identified for individual valuation. In general, individually evaluated loans are impaired when, on the basis of *current* information and events, it is probable that a creditor will be unable to collect all amounts due (both principal and interest) according to the contractual terms of the loan agreement. The impairment amount that should be included in the loan-loss reserve is measured by either (1) present value of expected future cash flows, (2) fair value of collateral less cost to sale, or (3) observable market price of the loan. Options (2) and (3) are permitted as practical expedients. FAS 5 provides guidance on loan loss estimation for groups of smaller or homogeneous loans (including loans selected for review under FAS 114 and determined not to be impaired). Loan-loss is accrued when information available prior to the issuance of the financial statements indicates that (1) it is probable that an asset has been impaired or a liability has been incurred at the date of the financial statements, and (2) the amount of the loss can be reasonably estimated. Both statements emphasize that the amount of an institution's loan loss reserves should be based on past events (triggering event) and must reflect current economic conditions. In this "*incurred loss model*", the loan loss reserve allowance and related expense for loan losses are recognized only when the losses: "(1) are inherent in banks' existing loan portfolios; and (2) are both 'probable' and 'capable of reasonable estimation' based on available information" (NYU Stern, 2009, p. 96).

The recent financial crisis highlighted the importance of disclosure of the allowance for credit losses and the deterioration in the value of the portfolios of investments held by financial institutions. Many in the accounting and financial services industries feel that the U.S. GAAP current incurred loss model resulted in the recognition of losses too late. Consequently, many believe that incorporation of additional information, such as forecasts, into the incurred loss model would improve the accounting for credit losses (Ernst and Young, 2012).

Because of the propensity of banks to understate loan loss reserves during good economic times, the reserves generally are too low to absorb loan losses when the economy declines (U.S. Department of the Treasury, 1991). The timing of the recognition of losses also tends to peak during economic downturns, resulting in both high levels of charge-offs and large reserve for credit impairment buildup which, in turn, reduces market confidence in the financial services sector (American Bankers Association, 2012). Consequently, the incurred loss model may be procyclical in implementation, meaning that it contributes to economic or financial fluctuations. In fact, some critics of the incurred loss model blame it for exacerbating the severity and length of the recent financial crisis (American Bankers Association, 2012). Regardless of whether bank managers take these actions to defer regulatory action or to inflate their own performance, the current method of valuing financial instruments and estimating credit impairment losses is less than ideal and all stakeholders agree that improvements to the accounting for financial instrument credit impairment is necessary (American Bankers Association, 2012). Consequently, the IASB and the FASB agreed to undertake a joint project to develop a new standard that incorporates more forward-looking information into the model that is used to value loans and estimate loan losses.

COMPETING FINANCIAL INSTRUMENT CREDIT IMPAIRMENT MODELS

IASB Three-Bucket Model

The guiding principle behind the joint IASB-FASB project to develop a new credit impairment model was to "reflect the general pattern of deterioration of credit quality of loans" (FASB, June 15, 2011, p. 2) or, in other words, a model that can capture the expected, not the incurred, losses. The resulting joint, three-bucket model is based on expected credit losses and is responsive to changes in information that impact credit expectations. The pattern of deterioration of credit quality is captured through the use of three "buckets" that represent increasing levels of deterioration of credit quality of loans or other financial assets (IASB-FASB, June 15, 2011).

When a non-credit impaired financial asset is acquired or originated, it is initially placed into bucket 1. Bucket 1 contains an allowance for credit losses equal to a minimum of twelve months' worth of credit losses. One of three methods may be used to estimate the amount of the allowance to include in bucket 1:

1. Twelve months worth of expected credit losses (the minimum allowance for bucket 1),
2. A time-proportional amount of remaining lifetime expected credit losses, or
3. Twelve months' worth of expected credit losses based on initial expectations plus the full remaining lifetime effect of any changes in expected credit losses (IASB-FASB, June 15, 2011).

The first method, although operationally simple, is less responsive to changes in information regarding the deterioration of credit quality compared to methods 2 and 3. The second method is more responsive to changes in information than method 1; however, it may be difficult to rationalize why method 2 apportions future expectations to prior time periods. The third method is probably the most conceptually sound because it represents the original expectation of losses plus the full effect of changes in remaining lifetime expectations (IASB-FASB, June 15, 2011).

If the credit quality of a financial asset deteriorates and it is reasonably possible that the payments as specified in the loan contract will not be collected, then the criteria for transferring the asset to bucket 2 or bucket 3 is met, the asset is transferred into one of those categories, and the firm recognizes an impairment allowance equal to the lifetime expected losses for the financial asset. If expected credit losses from the financial asset are not individually identifiable, then the asset is transferred to bucket 2. However, if the expected credit losses from the financial asset are individually identifiable, then the asset is transferred to bucket 3. If the credit quality of the financial asset later improves to the extent that it no longer meets the criteria for transfer to bucket 2 or 3, then the asset is transferred back to bucket 1 and the allowance for credit impairment will be reduced to reflect whichever of the three estimation methods for bucket 1 is being used.

FASB Current Expected Credit Loss (CECL) Model

As previously noted, feedback from FASB stakeholders regarding concerns about the understandability, operability and auditability of the three-bucket model and whether it would be an appropriate measure of risk led the FASB to develop an alternative expected credit loss model which the FASB calls the "Current Expected Credit Loss Model" (CECL) (FASB, August 29, 2012). The FASB model avoids some of the practicability issues associated with the three-bucket model such as transfers of financial assets back and forth between different buckets based on deterioration of credit quality (Orenstein, 2012), but retains the some of the primary characteristics of the three-bucket model such as the concept of expected credit loss and the current recognition of the effects of credit deterioration on collectability expectations (FASB, August 29, 2012).

The FASB CECL model operates as follows. For every financial statement reporting date, a firm records a credit impairment allowance based on its current estimate of the expected credit losses on its financial assets. The estimate of expected credit losses reflects management's

current estimate of the payments that the entity does not expect to collect on its financial assets and represents neither a "worst case" nor a "best case" scenario. Methods for deriving this estimate that are based on the probability of default expectations, loss rates, and discounted expected cash flows would be acceptable to the FASB. The income statement of the firm will reflect an item that represents the credit deterioration (or improvement) in the estimate of

> *. . . expected credit losses resulting from, but not limited to, changes in the credit risk of assets held by the entity, changes in historical loss experience for assets like those held at the reporting date, changes in conditions since the previous reporting date, and changes in reasonable and supportable forecasts about the future. As a result, the balance sheet reflects the current estimate of expected credit losses at the reporting date and the income statement reflects the effects of credit deterioration (or improvement) that has taken place during the period (FASB, August 29, 2012, p. 2).*

The FASB states that the key difference between the CECL Model and the IASB three-bucket model is that the basic estimation objective under the CECL model is consistent from period-to-period, unlike the three-bucket model, so there is no need to have transfers of financial assets from bucket-to-bucket that determine the measurement objective in each period. In addition, the CECL model has no requirement that losses be limited to a specific period of time, such as the twelve-month allowance associated with bucket 1 of the three-bucket model (FASB, August 29, 2012). Consequently, the FASB believes that their CECL model retains that key features of the three-bucket model, but will be easier to understand and implement.

IS ACCOUNTING STANDARDS CONVERGENCE AT A CROSSROADS?

The global economy and the ease with which capital now flows across national borders has created the demand and necessity for a set of quality accounting standards with worldwide acceptance. Two accounting standard-setting bodies have taken up this challenge: the International Accounting Standards Board (IASB) and the U.S. Financial Accounting Standards Board (FASB). The IASB has the objective of developing such a set of accounting standards and has seen numerous countries adopt its International Financial Reporting Standards (IFRS). The FASB, on the other hand, develops accounting standards, Generally Accepted Accounting Principles (GAAP), to be used in the United States.

Not long after the IASB took over the responsibility for setting international accounting standards from the International Accounting Standards Committee in 2001, the IASB and FASB issued a memorandum of understanding stating their commitment to developing a set of high quality, worldwide accounting standards. This commitment to convergence of accounting standards was furthered by their 2006 agreement to work collaboratively on a series of short-term and long-term projects. In April 2012, the boards issued a report stating that they were close to completing their convergence projects. However, in August 2012, the FASB decided to develop its own model of financial instrument credit impairment based on feedback it received

from stakeholders who stated that the joint IASB-FASB three-bucket model was not understandable, easily operable or auditable. Consequently, it seems that the convergence of accounting standards has come to a halt, at least temporarily. Or has it?

Answering this question requires delving into other joint IASB-FASB projects. Currently, the IASB and FASB are working on jointly developing accounting standards on revenue recognition, insurance contracts, and leases and have already developed joint standards related to numerous other accounting issues. So why have the FASB and IASB failed to reach a consensus standard for financial instrument credit impairment when this is an issue that is of critical importance to the world economy? The best answer probably is that the disagreement exists because it is such a critical issue that is under consideration and that much is at stake. The IASB and FASB originally developed a complex solution to the issue. The FASB's stakeholders then raised the issue that it doesn't matter how good the solution is if it's not understandable, operable, or auditable. Consequently, the FASB developed an alternative solution that retains many of the key features of the IASB model, but is easier to understand, implement and audit. Critics of the FASB model, however, have pointed out weaknesses of the CECL model that include the facts that (1) management can manipulate the CECL model quite easily because the amounts of the allowances and losses will be management's estimates, and (2) the CECL model doesn't make sense because it violates economic logic and accounting conventions (Selling, 2012). Surely the IASB is aware of the issues surrounding the CECL model as well. As a result, the FASB will not accept the IASB model because of its complexity and the IASB likely will not accept the FASB model because of its inherent flaws. Therefore we probably have an impasse related to accounting standards convergence, but, luckily, just on the issue of financial instrument credit impairment.

The question now becomes "What next?" Various outcomes are possible, including the following scenarios.

> The IASB, the FASB, or both decide to compromise and move their model(s) closer to that of the competing model and possibly restart the dialogue with the other board,
>
> The IASB, the FASB, or both decide that the problems with their model(s) outweigh the benefits and scrap their current model(s) and possibly restart the dialogue with the other board, or
>
> Neither the IASB nor the FASB compromise their model and proceed to issue substantially different accounting standards on the issue of financial instrument credit impairment.

The ideal outcome is that both boards reach a common understanding on the issue of financial instrument credit impairment and jointly develop a model that is acceptable to all stakeholders. However, if an agreement cannot be reached and a common model is not developed, then the immediate objective will be to control the size of the "rift." Requiring financial statement issuers to fully disclose which model of credit impairment is used along with

information regarding significant estimates might be a possible solution. Regardless of the outcome, it appears that, other than the issue of financial instrument credit impairment, convergence of accounting standards is proceeding as planned.

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