**Volume 17, Number 4**

**Print ISSN: 1096-3685**
**Online ISSN: 1528-2635**

# ACADEMY OF ACCOUNTING AND FINANCIAL STUDIES JOURNAL

**Kurt Jesswein**
**Editor**
**Sam Houston State University**

The *Academy of Accounting and Financial Studies Journal* is owned and published by Jordan Whitney Enterprises, Inc. Editorial content is under the control of the Allied Academies, Inc., a non-profit association of scholars, whose purpose is to support and encourage research and the sharing and exchange of ideas and insights throughout the world.

Authors execute a publication permission agreement and assume all liabilities. Neither Jordan Whitney Enterprises nor Allied Academies is responsible for the content of the individual manuscripts. Any omissions or errors are the sole responsibility of the authors. The Editorial Board is responsible for the selection of manuscripts for publication from among those submitted for consideration. The Publishers accept final manuscripts in digital form and make adjustments solely for the purposes of pagination and organization.

The *Academy of Accounting and Financial Studies Journal* is owned and published by Jordan Whitney Enterprises, Inc., 51 Blake Drive, Arden, NC 28704, USA. Those interested in communicating with the *Journal,* should contact the Executive Director of the Allied Academies at info@.alliedacademies.org.

# EDITORIAL REVIEW BOARD MEMBERS

# EDITORIAL REVIEW BOARD MEMBERS

# EDITORIAL REVIEW BOARD MEMBERS

# EDITORIAL REVIEW BOARD MEMBERS

# TABLE OF CONTENTS

# 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.

This issue is my first as the new Editor. It also includes another first. The *AAFSJ* acquired the *Issues in Contemporary Accounting Journal*. We are republishing the articles which originally appeared in the *ICAJ*. These comprise the first five articles in this issue: Professors Jie Luo, Concord University and John Brozovsky, Virginia Polytechnic Institute and State University; Professor Annie Yuansha Li, University of Massachusetts Lowell; Professors Ron Stunda, Valdosta State University and Carl Pacini, University of South Florida-St. Petersburg; Professors John Kostolansky and Brian Stanko, Loyola University Chicago; and, Professors Yousef Jahmani and William A. Dowling, Savannah State University.

Information about the Allied Academies, the *AAFSJ*, and our other journals is published on our web site, www.alliedacademies.org. In addition, we keep the web site updated with the latest activities of the organization. Please visit our site and know that we welcome hearing from you at any time.

Kurt Jesswein
Editor
Sam Houston State University

# LEAN ACCOUNTING AND INFORMATION ADJUSTMENT IN EFFICIENT INDUSTRIES: ASSIMILATION AHEAD?

**Jie Luo, Concord University**
**John Brozovsky, Virginia Polytechnic Institute and State University**

## ABSTRACT

*Generally Accepted Accounting Principles (GAAP) were originally tailored for mass-production firms. However, several important industries have recently adopted waste-minimizing technologies at odds with mass-production for their production lines. In this article we examine the typical implications of this mismatch to accounting practice and why lean accounting methods are seldom adopted by most accountants. We discuss how lean accounting and GAAP can complement each other in accounting practice and why assimilation of lean accounting adjustments by GAAP would be advantageous.*

## INTRODUCTION

Accounting professionals rely on Generally Accepted Accounting Principles (GAAP) to report firm information in statements and journals. While the GAAP is a powerful resource to professionals, it builds on assumptions about the operating nature of firms. One such assumption – that the firm uses a mass-production technology – is now questionable in several important industries, such as electronics, automotive and furniture. Many firms in those industries have adopted waste-minimizing technologies at odds with traditional mass-production. In addition, businesses in many other industries such as healthcare and construction have been following a similar path over the last several years.

Waste-minimizing technologies adopted in these industries are examples of lean manufacturing, a production method designed to meet consumer demand in the shortest possible amount of time (Carnes & Hedin, 2005; Maskell, Grasso, Baggaley, & Grasso, 2011). The popularity of this technology results from both cost savings and additional consumer satisfaction. For example, making products only when orders are received avoids costly inventory build-up, while shorter cycle times in the production process results in happier customers by getting the product in the shortest possible amount of time. Waste-minimization benefits from this production method are generally significant, yet not covered in Generally Accepted Accounting Principles (GAAP). In addition, the set of methods aimed at adjusting accounting information to the technological reality of lean manufacturing firms, named lean accounting, has not generally

been accepted by accounting professionals. In this article we discuss the typical distortions to accounting information when data from a lean manufacturing firm is processed under the GAAP. We also discuss how lean accounting can assist on correcting reported information, and we suggest possible ways to have these corrections incorporated in financial statements with perhaps wider acceptance by the practice community. Building on the facts that (1) parties interested in firm financial statements seek the most accurate information about the firm in a "language" they understand, and (2) GAAP and lean accounting are complements, we argue that lean accounting results will be gradually incorporated in the GAAP over time.

## LEAN MANUFACTURING IMPLICATIONS TO ACCOUNTING

Firms operating under lean manufacturing technology typically benefit from cost savings via waste minimization. To this end, lean manufacturing focuses its attention on value streams (Carnes & Hedin, 2005; Hilker, 2011; Maskell & Baggaley, 2006), i.e., activity flows related to the production of goods (or services) valued by consumers. Since the actual firm profits consist of summing revenue-cost gaps across products, firms usually define a value stream for each brand and for products under development to identify which products are profitable and which ones lose money. Another related goal of this narrow definition of value stream is to ease identification of inefficiencies to the firm, such as high inventory, high cycle times and other sources of waste. Thus, lean manufacturing approach tracks how the firm performs in response to product demand, uses this information to identify and resolve inefficiencies at the value stream level, and repeats this process in a continuous way to improve results further (Carnes & Hedin, 2005; Maskell & Baggaley, 2006).

In order to eliminate waste and improve results continuously, lean manufacturing needs a system of continuous data recording and unique methods of information reporting to facilitate prompt decision making by firm management at any moment in time. Lean accounting fills in this void, adjusting procedures such as cost reporting to the typical implications of lean manufacturing, such as lower inventory levels, higher production capacity, lower manufacturing lead times, waste reduction and increased inventory turnover (Maskell & Baggaley, 2006). However, if the firms' financial statements are prepared complying with GAAP, these benefits will not be properly reported.

If a firm adopts lean manufacturing technology and substantially reduces the cost of both inputs and sold products as a result of waste minimization, traditional GAAP application will result in distortions when trying to match expenses with revenues in the financial statements. Therefore, firms' reported profits could be lower when the firm actually took affirmative steps to shave production costs and reduce waste. Even though this income reduction is temporary in nature, it distorts information on cost reduction and performance, two of the main factors influencing executives' work evaluations.

Another source of tension between lean accounting and GAAP is the conventional interpretation of inventory as an asset. In a production method aimed at meeting customer demand such as lean manufacturing, inventory levels are typically insignificant. Thus, lean manufacturing implies a reshuffling of firm resources from one traditional asset (i.e. inventory) to other assets owned by the firm (e.g. cash) (Maskell et al., 2011). While lean accounting can readily account for this reality, GAAP can at best present a near-zero value for inventory with no intuitive reason for that value. Importantly, inventory valuations prepared in compliance with GAAP are often misleading for firms adopting lean manufacturing (Cunningham & Fiume, 2003; Kroll, 2004). A good example illustrating this point is deferred labor, i.e., the labor cost valuation for products held in inventory. From the lean accounting perspective, these consist of costs resulting from value steam activities (i.e. a result from producing a product that is part of a value stream) and should be treated as an expense. The reason is that lean manufacturing attempts to produce enough to exactly meet demand, so production is only a step of an up-coming product sale. However, from the GAAP perspective, deferred labor is part of the value of goods in inventory, and so it should be part of firm assets. Another related item akin to this kind of mismatch is overhead costs. As expenses related to ongoing business operation (e.g. utility bills, supplies), its value is at least partially incorporated in the products the firm commercializes. Therefore, if the GAAP standards are followed, businesses that attempt to minimize inventory will experience reductions in the inventory of its balance sheet that will be compensated by increases in the expenses side of its income statement. This artificial income reduction does not exist under the lean accounting perspective. In fact, there is scope to actually observe increases in profits as a result of efficient allocation of firm resources. For example, less money tied with inventory can be applied in more profitable applications.

Rapid technological change is often what motivates switching to production matching exactly consumer demand to avoid the rapid obsolescence of any inventory. As this obsolescence implies lower product prices over time, manufactured products stored in a warehouse are frequently sold for less than its recorded inventory value (similarly for inputs, such as electronic chips or microprocessors). That is, inventory of such goods is usually recorded at more than its true market value by the time the firm files its financial statements.

Firms operating under lean manufacturing technology frequently resort to components' standardization across products to minimize waste and reduce production costs. One risk of standardization is the possibility of massive product recall, a hazard already experienced by important lean manufacturers (e.g. Toyota)(Wakabayashi, 2010). If the practitioner resorts to impairment as a means to adjust firm assets, how should he calculate its amount in a way consistent with the lean manufacturing nature of the firm? Although several companies experienced this type of setback, the measurement of this impact on lean manufacturing firm assets has received little to no attention by the accounting profession. However, the degradation of intangible assets can be substantial since the key to the commercial success of many companies is a reputation for product quality.

## LEAN ACCOUNTING AND PROFESSIONAL RELUCTANCE

Lean accounting focuses on recording information at the value stream level in order to promptly inform firm management about each product's profitability (Brosnahan, 2008; Maskell & Baggaley, 2006). That is, in contrast to the traditional role of recording firm-level information to prepare financial statements, lean accounting operates in a dynamic environment where each value stream's cash flows are continuously recorded and made promptly available to inspire improvements. For this reason, efficiency gains such as inventory reductions can be identified as resources available for all value streams. This gain can be recorded by lean accounting as soon as the firm decides how to employ those newly available resources. To facilitate both information reporting and identification of waste sources to be eliminated, several procedures (frequently referred as "tools" in lean manufacturing jargon) have been developed over the last few decades. Here we discuss the most relevant of them as a means to illustrate why accounting practitioners acquainted with the GAAP may be reluctant to embrace lean accounting methods.

Lean accounting aims to provide information for immediate managerial decision-making. Thus, a common tool of lean accounting is value stream mapping on both current and future states. It aims at informing decision-makers about the current status of value stream components and how it is expected to unfold in the near future. The idea is to use the simplicity of value stream definition (e.g. a product line or a brand) to spot deficiencies and facilitate improvement decisions (Maskell et al., 2011). However, GAAP standards are typically oriented to report information about the firm to external parties in a periodic fashion. In addition, this information reporting is based on the firm's functional departments, not on each product line's specific information. Given this mismatch of both audience and purpose of this tool, it is hard to spark the interest of practitioners who primarily deal with GAAP.

Another process at odds with the traditional GAAP approach is lean continuous improvement (frequently referred as Kaizen system) (Cunningham, 2007). Lean manufacturing firms frequently motivate their staff to identify waste sources to continuously improve business performance. Lean accounting readily quantifies gains from continuous improvement by measuring how a value stream performed before and after a waste source was eliminated. However, the Kaizen system aims at identification and correction of inefficiencies, not at assisting on recording and processing firm data. Therefore, it is hard to have enthusiasm in the Kaizen system among accountants as it does not correlate well with the typical accounting practitioner tasks.

Another common tool used in lean manufacturing firms is the Plan-Do-Check-Act (PDCA) problem solving method (Maskell et al., 2011). This is a four-step process that addresses the waste elimination goal of lean manufacturing. In the first step ("Plan"), the decision-maker outlines the objectives and defines what procedures to follow in order to meet those objectives. In the second step ("Do"), the procedures defined in the previous step are

executed. While these procedures are implemented, data on outcomes and other measures of plan implementation performance are collected for future assessment. On the third stage ("Check"), the data collected on the previous step is examined to check if observed outcomes match the objectives defined on the first step. Finally, the "Act" step addresses any mismatches between plan objectives and observed outcomes by defining corrective measures to be implemented next. Since outcomes frequently do not agree with initial objectives, a PDCA is followed by another PDCA, where corrective measures defined in the "Act" step of the first PDCA are incorporated in the "Plan" step of the second PDCA. Lean accounting fits in by measuring and recording quantities related to plan implementation at the value stream level (e.g. cost reductions, increased product sales, marketing expenditures to boost product orders). Therefore, lean accounting is easily interpreted as a means to an end where firm decision-makers play the central role, not accountants. This fact explains some of the lack of interest of practitioners, for whom the preparation of pieces such as financial statements using GAAP standards clearly delineates the importance of accounting work.

In addition to entering conventional accounting items such as costs and revenues to each value stream, lean accounting also provides performance metrics of interest to management control (e.g. cycle times, number of workers for each production stage, available capacity, scrap rates). Consistent with the continuous improvement guideline, management control uses performance measures from lean accounting systems in a tool named Performance Measurement Linkage Chart (Maskell et al., 2011). This method links metrics from value streams for corporate reporting to the business strategy, target costs and lean improvement. Like PDCA, this tool is a means to assist on educated decision-making. Again, any accounting work of recording and reporting information plays a secondary role in the process. In contrast, balance sheets, income statements and any other piece of interest to parties external to the firm highlight the importance of accounting work crafted under the GAAP standards.

A common feature among these and other tools not discussed for the sake of exposition is that lean accounting practice plays a secondary role of assisting firm management, whereas traditional Accounting practice under the GAAP has a well-defined role of primary importance on reporting firm-related information. In addition, the practical value of lean accounting and related tools is obvious for firm decision-makers, but unknown or hardly significant for professionals trained for financial statement reporting under GAAP standards.

While these facts explain why lean accounting has made little progress on selling itself out in the accounting profession, it is clear that it can make important contributions to the quality of information reported in financial statements. Along with the interest of both investors and firm management in accurate information about its performance, this complementarity between GAAP and lean accounting are the backbone of our main prediction: the GAAP will evolve over time to incorporate lean accounting methods and information.

We ground our claim as follows. External parties (e.g. investors) demand firm financial statements as a means to obtain firm information that is as accurate as possible. Thus, if a firm

adopts lean manufacturing technology and derives benefits from waste-minimization, then the firm has incentive to disclose information embodying feedback and adjustments from lean accounting to the extent possible. However, disclosed information such as financial statements must comply with the GAAP. As more and more firms seek waste minimization as a means to improve results, there will be an increased demand for more accurate information reflecting waste-minimization results. Thus, methodologies that adjust figures for waste-minimizing outcomes (e.g. for lower inventory, cost savings) will be developed to be incorporated in the GAAP to keep it representative of an increasing number of lean businesses. The natural candidate to inspire this change is lean accounting. Thus, as both information demand (e.g. firm stakeholders) and supply (e.g. firm management) agree on having the GAAP revised, the accounting profession should gradually incorporate information provided by lean accounting tools in financial statements.

This gradual assimilation process can take a faster pace if lean accounting is properly marketed in the profession. Next we discuss possible approaches to this end, as well as related challenges.

## FUTURE LEAN ACCOUNTING PROSPECTS AND CHALLENGES

GAAP considered by business practitioners was developed to fit a mass-production model. This model has considerable differences compared to the waste-minimizing, demand-fitting model called lean manufacturing. As a considerable number of businesses have adopted lean manufacturing to shave production wastes, lean accounting emerged as a means to provide a more realistic picture of firm activity under that production model. However, several important difficulties must be faced before lean accounting is seriously considered by the most practitioners (Carnes & Hedin, 2005; Grasso, 2006). First, lean accounting is still viewed as a subfield too specific to lean manufacturing. Most business professionals whose firms do not follow this production model will view lean accounting as not worthy of attention. However, it is clear that lean accounting can provide valuable information about product profitability that is of interest to firm management. In addition, if the firm manages to improve results (e.g. reduce inventory) while not following lean manufacturing technology, it will be of interest to the firm to find a way to have these improvements reflected in financial statements.

Second, lean accounting's waste-minimizing concepts are frequently hard to sell even to business professionals. Making it easy-to-use and readily mapped into the conventional accounting standards is a must-have to make lean accounting more popular among practitioners. Lean accounting advocates should therefore focus more on clarifying how to map lean accounting results onto GAAP standards. Whatever makes a firm eliminate waste and accrue related benefits is welcome in every business, regardless of what the underlying technology is. Making this point transparent and stressing that lean accounting contributes towards this end will boost interest on finding means to incorporate lean accounting concepts into GAAP.

There are, however, other reasons why lean accounting should deserve more attention. Even though lean manufacturing is yet to be the main approach for production, it is gaining increasing popularity in many industries. Since its cost advantages are substantial despite the risks involved (e.g. standardizing product components and product recalls), it is expected that an increasing number of industries will try to fit lean manufacturing as close as possible to their own particular case to shave production wastes. Therefore, even if lean accounting were specific to lean manufacturing, technological progress and proliferation of this waste-minimizing production method would spark increased interest in accounting methods aimed at fitting reported values to the concrete needs of these new businesses.

In most firms, the production technology lies somewhere between mass production and lean manufacturing. Thus, matters such as revision of inventory values or valuation of cost savings are of interest to business in general. Of course, the degree of interest in what lean accounting has to offer depends on where one stands between mass-production and lean manufacturing. However, it is a fact that GAAP was developed to fit mass-production business. So the scope for improvement of the GAAP by considering what lean accounting has to offer is clear.

We believe that the key to the ready incorporation of any benefits of lean accounting in a way to minimize the costs of learning a new set of concepts is twofold. First, financial statements should allow for additional items accommodating differences between lean accounting and current GAAP standards. That is, whenever conventional GAAP is not a good-enough fit to evaluate specific items (e.g. cost of goods sold and inventory), an item denoted, say, "inventory adjustment" would add or subtract to the value prescribed by GAAP in order to provide a more accurate estimate. Below we illustrate this approach with a concrete example. Second, additional forms explaining exactly what feeds into the adjustment could be filed and consulted by interested business professionals if necessary. The latter not only provides a neat way to minimize confusion on interpreting financial statements but also a professional opportunity for those who obtain training in lean accounting methods.

The adjustment approach proposed above is better understood with a concrete example about the realistic case of a firm adopting lean manufacturing technology at some point in time. We focus attention on inventory, keeping in mind that adjustments could also apply in topics other than inventory discussed above. Following the value stream (VS) income statement format for lean manufacturing, proposed by (Maskell et al., 2011), we demonstrate the reconciliation of VS income statement to traditional income statement with hypothetical data (see Table 1). For the sake of exposition, we assume that firm yearly sales are constant at $1million and that the number of units sold is 2000 each year. To simplify our analysis further, we also assume that operating expenses, manufacturing overhead and the unit costs of both direct materials and labor are constant for all years. Suppose that the company starts lean manufacturing in year 2. As a result of producing just enough to meet the demand by customers, inventory becomes zero for year 2 and beyond. The net operating income decreases significantly in year 2 and 3 under the

absorption costing method, even when the sales are the same in the three years (see Table 2). The decrease is not due to poor performance, but due to inventory reduction following the adoption of lean manufacturing. The allocated overhead in Year 1's inventory is included in cost of goods sold (COGS) in Year 2. The VS income statement reports profits and performance of each value stream without previous inventory (see Table 3). For external reporting, the items "Inventory adjustment" and "Corporate allocate" adjusts GAAP net operating income. As shown in Table 3, in the first period of adopting lean manufacturing (i.e. year 2), the net operating income under conventional costing decreases. Nonetheless, net operating income under both absorption and VS income statements converge to similar value in subsequent periods when inventory reduces to an insignificant level or even zero. This example illustrates that, for the case of firms benefiting from zero inventory levels following lean manufacturing adoption, GAAP and lean accounting figures on income tend to converge despite their methodological differences. Changes in the inventory numbers carried over would be reflected in the income statement with different expenses - and therefore different income – yet convergence over time applies. As this example shows how these changes would be reflected (and therefore adjusted) in the GAAP income statement, it is clear that there is potential for the GAAP to assimilate contributions from lean accounting as discussed above.

**Table 1**
**Data of Operations in Three Years**

| | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| # of units produced | 2500 | 1500 | 2000 |
| # of units sold | 2000 | 2000 | 2000 |
| # of inventory | 500 | 0 | 0 |
| Unit cost of direct materials | $75 | $75 | $75 |
| Unit cost of direct labor | $50 | $50 | $50 |
| Manufacturing overhead | $250,000 | $250,000 | $250,000 |
| Operating expenses | $150,000 | $150,000 | $150,000 |

Our example suggests that lean accounting provides methodological contributions for accountants that should by no means be considered specific to the narrow world of lean manufacturing. Since waste minimization and cost shaving are indispensable approaches for a business to survive, we believe that, for the sake of lean accounting and its general interest, it should be sold to practitioners as a toolbox that will complement – rather than replace – their training under the GAAP standards.

| **Table 2**<br>**Absorption Costing Income Statement** | | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| Sales | $1,000,000 | $1,000,000 | $1,000,000 |
| Cost of goods sold | 450,000 | 550,000* | 500,000** |
| Gross profit | 550,000 | 450,000 | 500,000 |
| Operating expenses | 150,000 | 150,000 | 150,000 |
| Net operating income | $400,000 | $300,000 | $350,000 |
| ROS | 40% | 30% | 35% |
| *=($75+$50)×1,500+$250,000+$112,500; $112,500=($75+$50+$250,000÷2,500)×500<br>**=$75+$50)×2,000+$250,000 | | | |

| **Table 3**<br>**Value Stream (VS) Income Statement** | | | |
|---|---|---|---|
| | Year 1 | Year 2 | Year 3 |
| Sales | - | $1,000,000 | $1,000,000 |
| Cost of sales | | | |
| Materials | - | $120,500 | $145,000 |
| Labor | - | $150,000 | $165,000 |
| Equipment related | - | $120,000 | $120,000 |
| Occupation | - | $80,000 | $88,000 |
| Other | - | $45,000 | $57,500 |
| Total VS cost | - | $512,500 | $575,000 |
| VS profit | - | $487,500 | $425,000 |
| VS profit margin | - | 49% | 43% |
| ***Inventory adjustment*** | | ($112,500) * | $0 |
| Corporate allocate | | ($75,000) | ($75,000) |
| Net operating income | $400,000 | $300,000 | $350,000 |
| Corporate ROS | 40% | 30% | 35% |
| Note: Inventory adjustment is the difference between ending and beginning balance of inventory.<br>* includes the allocated overhead of $50,000 in the beginning balance of inventory. | | | |

Technological progress has rendered several technologies obsolete over the recent decades, and there is no reason to believe that lean manufacturing should be an exception a few decades down the road. But management tools such as the ones proposed by lean accounting can survive as long as the specific needs of business suggest continuous improvements and

adjustments. However, most professionals dealing with accounting information were trained under the conventional accounting standards spanned by GAAP (Grasso, 2006). As GAAP results from professional consensus, it has legitimacy with practitioners that new methods such as lean accounting do not yet possess. For this reason, we believe it is easier to sell lean accounting as a complement to GAAP. We suggest that, if this approach is followed, GAAP will embody the positive contributions from lean accounting over time. We believe this is part of the pattern of methodological improvement of any subject over time, where innovations defy established methods and, if pertinent, then become part of the toolbox of the established practitioners.

## REFERENCES

Brosnahan, J. P. (2008). Unleash the power of lean accounting. *Journal of Accountancy*, 206(1), 60-66.

Carnes, K. , & Hedin, S. (2005). Accounting for lean manufacturing: Another missed opportunity? *Management Accounting Quarterly*, 7(1), 28-36.

Cunningham, J. (2007). Lean application in accounting environments. In J. Stenzel (Ed.), *Lean accounting: Best practices for sustainable integration* (pp. 209-236). Hoboken, NJ: John Wiley & Sons.

Cunningham, J., & Fiume, O. J. (2003). *Real Numbers: Management Accounting in a Lean Organization*. Durham, NC: Managing Times Press.

Grasso, L. P. (2006). Barriers to lean accounting. *Cost Management*, 20(2), 6-19.

Hilker, C. (2011). Effective cost management for the lean enterprise. *Cost Management*, 25(4), 17-22.

Kroll, K. (2004). The lowdown on lean accounting. *Journal of Accountancy*, 198(1), 69-76.

Maskell, B., & Baggaley, B. L. (2006). Lean accounting: What's it all about? *Target Magazine,* 22(1), 35-43.

Maskell, B., Grasso, L. P., Baggaley, B., & Grasso, L. (2011). *Practical Lean Accounting: A Proven System for Measuring and Managing the Lean Enterprise*. Boca Raton, FL: Taylor & Francis.

Wakabayashi, D. . (2010). How lean manufacturing can backfire. *Wall Street Journal Online.* Retrieved from http://online.wsj.com/article/ SB10001424052748704343104575032910217257240.html website:

# THE ROLE OF PRODUCT MARKET COMPETITION ON ACCOUNTING CONSERVATISM: EU EVIDENCE

**Annie Yuansha Li, University of Massachusetts Lowell**

## ABSTRACT

*This paper examines whether the effects of legal and political institutions on accounting conservatism documented by prior studies (e.g., Ball et al. 2000 and Bushman and Piotroski 2006) depend on the degree of competition in the companies' product market. Employing a sample drawn from 14 European Union (EU) economies from 1999 to 2007, I document evidence that: (1) the positive association between the quality of legal institutions and accounting conservatism exists only in concentrated industries; (2) the influence of political economy on accounting conservatism only exists in competitive industries. My first finding indicates that product market competition could act as a substitute for legal institutions to drive managers to provide accounting conservatism. My second finding suggests that firms in non-competitive industries worry less about government interferences and thus do not need to speed (slow) the recognition of good (bad) news. My results are robust to a large number of robustness checks including the use of alternative measures of competition, accounting conservatism and legal/political institutions, as well as using alternative regression specifications.*

*Keywords: product market competition, accounting conservatism, legal institutions, EU, a cross-country study.*

## INTRODUCTION

Product market competition has long been regarded as an important industry-level governance mechanism in economics literature (e.g., Giroud and Mueller 2010). A large body of conservatism literature documents that good corporate governance leads to more conservative financial reporting by mitigating information asymmetry between insiders and outsider investors. Prior studies on the determinants of accounting conservatism only focus on firm- (e.g. LaFond and Roychowdhury 2008; Ahmed and Duellman 2007; Qiang 2007) and country-level factors (e.g., Bushman and Piotroski 2006; Ball et al. 2000; Ball et al. 2003; Ball et al. 2008b), while the research on industry-level determinants is relatively scant. A notable exception is a concurrent study of Dhaliwal, Huang, Khurana, and Pereira (2008), which examines the relation between product market competition and accounting conservatism in the US and documents convincing results that asymmetric timeliness of economic loss recognition increases with the competition

intensity. However, little is known about whether their results in the US (where investors are well protected) can be generalizable to countries outside the US, where considerable variations exist in investor protection institutions and financial reporting environments. More importantly, there is little knowledge about whether the institutional effects on conservative reporting depend on the degree of competition in the companies' product market. My study on a sample of EU countries attempts to fill in this research gap by examining the relation between institutions, product market competition and accounting conservatism.

More intense product market competition is related to lower profitability, greater performance volatility, and higher liquidation risk, resulting in a higher demand for accounting conservatism to achieve more efficient contracting (Irvine and Pontiff 2007; Hou and Robinson 2006). Product market competition could also affect a firm's political influence and its connections with government. When a firm in a concentrated industry is involved in litigation issues, it could utilize its political connection and lobbying ability to minimize the litigation costs. In line of this logic, we expect that product market competition is associated with higher litigation costs, leading to a greater demand for conservative accounting. Lastly, competition level affects the strategy of corporate disclosure and the flow of firm-specific information, and thus impacts on the timely recognition of good and bad news.

A growing body of literature examines whether firms in concentrated industries benefit more from good governance than do firms in competitive industries. Giroud and Mueller (2011) find the strength of the relation between long-term stock returns, firm value, as well as operating performance and corporate governance to decrease monotonically in the degree of product market competition. In the most competitive industries there is no significant relation between corporate governance and the three alternative measures of company performance. In contrast, this relation is strong, positive, and significant in non-competitive industries. This finding is corroborated in Giroud and Mueller (2010) who show that firms in non-competitive industries experience a significant drop in operating performance after the passage of business combination laws while the operating performance of firms in competitive industries remains largely unaffected. By reducing the threat of hostile takeovers, business combination laws weaken corporate governance and increase the opportunity for managerial slack. Hence, competition in the product market seems to act as a substitute for a poor corporate governance and pressure managers towards a maximization of firm value independent of the deterioration in firm's corporate governance.

Prior cross-country studies document a positive relation between legal/political institutions and accounting conservatism (Ball et al. 2000; Ball et al. 2003; Bushman and Piotroski 2006). They argue that firms in countries with stronger legal institutions face higher ''contracting'' demand for conservative financial report. In addition, strong legal institutions would boost firms' potential litigation costs of overstating economic performance and thus drive more conservative accounting. Especially, Bushman and Piotroski (2006) find that a country's legal/judicial system, securities laws, and political economy create incentives that influence

manager's behavior and that ultimately shape the properties of reported accounting numbers. This study, however, raises the question whether financial reporting by all firms benefits equally from good country-level institutions. To answer this research enquiry, I investigate deeper into industry-level governance mechanism and test whether product market competition acts as a substitute for legal institutions to drive managers to provide accounting conservatism.

Drawing on 22,289 firm-year observations from 14 economies from European Union for the 1999 to 2007 period, my results show that the positive association between legal institutions and accounting conservatism documented by prior research does not hold in the competitive industries, meanwhile, the influence of political economy on accounting conservatism only exists in competitive industries. My first finding seems to suggest that product market competition act as a substitute for legal institutions as competitive pressure imposes discipline on managers to provide accounting conservatism. Consequently, corporate governance may matter more in less competitive industries than in more competitive industries. My second finding suggests that firms in non-competitive industries worry less about government interferences and thus do not need to speed (slow) the recognition of good (bad) news.

This study contributes to the literature in a number of ways. First, my study provides new evidence on the relation between country-level governance mechanisms, competition and conservative reporting. Second, my study extends the studies by Giroud and Mueller (2011, 2010) to a cross-country setting, which allows to examine how a country's legal institutional and the industry-specific product market competition shape the quality of a firm's financial reporting. Second, my study provides empirical evidence that supports Ball et al. (2000) who argue that the increasing trend of conservatism in most countries could be due to increased international product market competition. My findings further indicate that the influence of political economy on timely loss recognition only exists in competitive industries.

## DATA AND RESEARCH DESIGN

My sample is drawn from Global Vantage database for the listed companies from 14 countries in European Union: Austria, Belgium, Finland, Denmark, Greece, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, and the UK. The sample period spans from 1999 to 2007 because of the data availability to calculate HHI. Accounting income and other financial data are from the Global Vantage Industrial/ Commercial (IC) files. Stock price data is drawn from the Global Vantage Issues files. I exclude firm-year observations without fully consolidated financial statements and those with missing values to compute dependent and independent variables. I then delete observations in regulated industries, including financial institutions (SIC 6000-6999) and government-owned companies (SIC 9000-9999). To mitigate the influence of outliers, I winsorize each variable (NI, RET, LEV, SIZE, MBR) at the 1st and 99th percentile values and delete observations with the absolute value of studentized residuals

greater than three. The final sample consists of 22,289 firm-year observations as shown in Table 1.

**TABLE 1 Sample Selection**

| Sample-Selection Process | Obs. Removed | Obs. Remaining |
|---|---|---|
| Initial sample from 1999 to 2007 in the Global Vantage database for the 14 economies in European Union | | 52,749 |
| After eliminating firms with missing values of dependent and independent variables | (23,161) | 29,588 |
| After eliminating financial institutions (SIC 6000-6999) and government-owned companies (SIC 9000-9999) | (7,290) | 22,289 |

Notes: This table presents the sample selection process and data requirements for the regressions. The final sample for these regressions consists of listed companies from 14 economies in European Union (Austria, Belgium, Finland, Denmark, Greece, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, and UK).

Table 2 summarizes the descriptive statistics by country, industry, and firm and provides the correlation matrix among the variables used in the regressions. Panel A reports the mean values of each variable for each country sample and for the total sample. The median and standard deviation of each variable are also reported for the total sample. As shown in the second column, the size of the country samples ranges from 191firm-years for Portugal to 7,346 firm-years for the UK. Accounting earnings (NI) have positive mean values except for those of Germany (-0.5%), UK (-0.5%), Portugal (-0.2%) and Sweden (-3.9%). Consistent with Bushman and Piotroski (2006), accounting earnings are negatively skewed and stock returns are positively skewed. Moreover, stock returns display greater volatility than accounting income, indicating that managers tend to smooth earnings.

Industry concentration (HHI) shows considerable variations across countries. Portugal has the highest average level of product market competition (PMC = -0.166), and Belgium has the lowest (PMC = -0.245). Leverage (LEV) and market-to-book ratio (MBR) also vary significantly across countries. Firm size shows relatively lower variation compared with other variables.

Panel A of this table presents the country-level summary statistics for the research variables. The mean values of each variable are calculated and reported for each sample country. The last three rows report the cross-country mean, median, and standard deviation. Panel B of this table presents the mean and median statistics of the research variables across the three subsamples: G1 (Lowest HHI Tercile), G2 (Median HHI Tercile), and G3 (Highest HHI Tercile). Panel C of this table presents correlation matrix of firm- and industry-level variables for 22,289 observations over the 1999-2007 period. The correlation coefficients in bold are significant at the 5-percent level. See Appendix A for variable definitions.

**Table 2 Summary statistics and correlations**

**Panel A: Country-level descriptive statistics (mean)**

| Country | Obs | *NI* | *RET* | *PMC* | *MBR* | *LEV* | *SIZE* | *LIT* |
|---|---|---|---|---|---|---|---|---|
| Austria | 476 | 0.089 | -0.022 | -0.195 | 0.906 | 1.320 | 5.932 | 0.092 |
| Belgium | 592 | 0.027 | -0.021 | -0.245 | 2.615 | 1.143 | 6.022 | 0.174 |
| Germany | 3,683 | -0.005 | 0.001 | -0.206 | 1.084 | 0.843 | 5.212 | 0.182 |
| Denmark | 765 | 0.032 | 0.173 | -0.213 | 2.104 | 0.878 | 6.952 | 0.120 |
| Spain | 639 | 0.056 | 0.151 | -0.201 | 2.742 | 0.675 | 7.150 | 0.106 |
| Finland | 728 | 0.036 | 0.011 | -0.185 | 3.047 | 0.509 | 5.578 | 0.130 |
| France | 3,651 | 0.006 | -0.004 | -0.226 | 2.753 | 0.754 | 5.564 | 0.179 |
| UK | 7,346 | -0.005 | 0.085 | -0.209 | 4.225 | 0.453 | 4.636 | 0.203 |
| Greece | 419 | 0.063 | 0.150 | -0.198 | 1.292 | 0.938 | 6.426 | 0.115 |
| Ireland | 308 | 0.007 | 0.155 | -0.182 | 6.179 | 0.554 | 5.198 | 0.097 |
| Italy | 1,002 | 0.005 | 0.053 | -0.191 | 1.794 | 0.798 | 6.111 | 0.142 |
| Netherlands | 1,014 | 0.018 | -0.013 | -0.195 | 8.486 | 0.662 | 5.841 | 0.190 |
| Portugal | 191 | -0.002 | 0.023 | -0.166 | 0.436 | 1.552 | 6.891 | 0.141 |
| Sweden | 1,475 | -0.039 | 0.107 | -0.230 | 0.452 | 0.375 | 6.764 | 0.153 |
| | 22,289 | | | | | | | |
| Mean | | 0.005 | 0.051 | -0.210 | 3.241 | 0.666 | 5.453 | 0.174 |
| Median | | 0.046 | 0.014 | -0.114 | 0.989 | 0.255 | 5.250 | 0.000 |
| Std. | | 0.351 | 0.539 | 0.225 | 7.358 | 2.126 | 2.118 | 0.379 |

**Panel B: Descriptive Statistics across three HHI groups**

| | Mean | | | Median | | | Std. | | |
|---|---|---|---|---|---|---|---|---|---|
| | G1 | G2 | G3 | G1 | G2 | G3 | G1 | G2 | G3 |
| *NI* | 0.004 | 0.006 | 0.004 | 0.048 | 0.047 | 0.044 | 0.364 | 0.278 | 0.399 |
| *RET* | 0.057 | 0.050 | 0.047 | 0.016 | 0.021 | 0.007 | 0.539 | 0.537 | 0.541 |
| *PMC* | -0.033 | -0.127 | -0.471 | -0.032 | -0.114 | -0.409 | 0.017 | 0.052 | 0.205 |
| *MBR* | 2.996 | 3.349 | 3.380 | 0.885 | 1.056 | 1.048 | 7.195 | 7.598 | 7.270 |
| *LEV* | 0.725 | 0.641 | 0.632 | 0.283 | 0.249 | 0.237 | 1.894 | 1.902 | 2.521 |
| *SIZE* | 5.342 | 5.597 | 5.420 | 5.145 | 5.433 | 5.185 | 2.051 | 2.215 | 2.077 |
| *LIT* | 0.083 | 0.214 | 0.226 | 0.000 | 0.000 | 0.000 | 0.276 | 0.410 | 0.418 |

**Panel C: Pearson (above diagonal) & Spearman rank (below diagonal) correlations**

| Variable | *NI* | *RET* | *PMC* | *MBR* | *LEV* | *SIZE* | *LIT* |
|---|---|---|---|---|---|---|---|
| *NI* | 1.000 | **0.164** | 0.003 | **0.043** | **0.060** | **0.143** | **-0.038** |
| *RET* | **0.431** | 1.000 | 0.001 | **0.121** | **-0.121** | **0.017** | **-0.014** |
| *PMC* | **0.018** | 0.005 | 1.000 | **-0.017** | 0.009 | **-0.016** | **-0.110** |
| *MBR* | **0.212** | **0.245** | **-0.051** | 1.000 | **-0.085** | **0.095** | **0.039** |
| *LEV* | -0.002 | **-0.141** | **0.027** | **-0.354** | 1.000 | **0.059** | **-0.039** |
| *SIZE* | **0.246** | **0.073** | **-0.025** | **0.232** | **0.291** | 1.000 | **-0.070** |
| *LIT* | **-0.084** | **-0.029** | **-0.164** | **0.042** | **-0.109** | **-0.076** | 1.000 |

Panel B of Table 2 reports the summary statistics of variables across three different subsamples. G1's mean (median) value of PMC is -0.033 (-0.032), indicating a high level of product market competition. G3 gathers the most concentrated industries, with mean (median) value of PMC at -0.471 (-0.409).

Panel C of Table 2 reports the correlation matrix among the industry- and firm-level variables. Consistent with prior literature, accounting earnings (NI) are positively correlated with stock returns (RET). Product market competition (PMC) is negatively associated with firm size (SIZE), indicating that product market competition shrinks the scale of firm. However, these results should be interpreted with caution, as the pairwise correlations may suffer from correlated omitted variables, which are controlled for in the regression analyses.

## RESEARCH DESIGN

My primary research design follows Bushman and Piotroski (2006) and investigates the relation between economic income, as measured by stock returns, and accounting income, conditional on country-level institutions that can influence the demand for an earnings number which incorporates gains and losses in a timely manner. I estimate the following basic regression model:

Basu (1997) model:

$$\begin{aligned} Nit = {} & a0 + b1\,Dt + b2\,RETt + b3\,Dt * RETt + b4\,COUNTRY + b5\,COUNTRY * Dt + b6\,COUNTRY * RETt + \\ & b7\,COUNTRY * Dt * RETt + b8\,SIZEt + b9\,SIZEt * Dt + b10\,SIZEt * RETt + b11\,SIZEt * Dt * RETt + \\ & b12\,LEVt + b13\,LEVt * Dt + b14\,LEVt * RETt + b15\,LEVt * Dt * RETt + b16\,MBRt + b17\,MBRt * Dt + \\ & b18\,MBRt * RETt + b19\,MBRt * Dt * RETt + b20\,LIT * Dt + b21 LIT * RETt + b22\,LIT * Dt * RETt + \\ & \text{Industry and Year Fixed Effects} + \xi \end{aligned} \tag{1}$$

Where COUNTRY represents the country-level data on legal and political institutions: following prior literature, I proxy for the quality of legal institution with a dummy variable, COMMON, which takes on a value of one for UK or Irish legal origin, and zero for French, German or Scandinavian legal origin. This common law versus civil law distinction is the main empirical proxy for cross-country institutional differences used in Ball et al. (2000) . Prior literature (e.g., Bushman and Piotroski 2006; La Porta et al. 1999) has also established that political economy affects accounting conservatism. I hence include two measures of government involvement used in Bushman and Piotroski (2006): risk of expropriation (RISKEXP) and state-owned enterprises (SOE). Among them, RISKEXP proxies for the risk of outright confiscation of firm's wealth or forced nationalization by the state (La Porta et al., 1999). Countries are classified as having a high risk of expropriation based upon whether the country's average rating is equal to or less than median country-level rating; SOE is the share of country-level output supplied by state-owned enterprises. Countries are classified as high state ownership based upon whether the country's most recent rating is greater than or equal to the median country-level observation.

NI is net income before extraordinary items, deflated by beginning of period prices (MVEt-1). D is an indicator variable equal to one if RET is less than zero, and zero otherwise. RET is holding period market-adjusted return, including dividends, over the firm's fiscal accounting year. I also include three firm-level control variables: firm size (SIZE), leverage (LEV), and market-to-book ratio (MBR). Ball, Kothari, and Nikolaev (2011) show that a simple inclusion of firm fixed effects mitigates the bias in conservatism coefficients of the Basu's (1997) return model and controls for the potential effect of firm-specific omitted variables. I thus include firm and year fixed effects. The measurement and sources of the variables are detailed in Appendix A.

Similar to Giroud and Mueller (2011) and Giroud and Mueller (2010), I decompose industries into three equal-sized groups according to whether the HHI lies in the bottom, medium, or top tercile of its empirical distribution. The three subgroups are labeled as Lowest HHI Tercile (G1), Median HHI Tercile (G2) and Highest HHI Tercile (G3), respectively. Dividing full sample into subsamples serves to mitigate the concern that product market competition is endogenously determined and that the association between product market competition and accounting conservatism varies with competition intensity. I then regress equation (1) in three PMC subsamples and compare their coefficients of our key variables. PMC is the measure of product market competition, which equals minus one multiplied by HHI. To calculate HHI, I get the sales data of both public firms and private firms from the Bureau van Dijk (BvD) Orbis, which would more accurately reflect the extent of product market competition than ratios constructed using data only from Global Vantage, which is comprised almost entirely of publicly-traded firms (Ali et al. 2009).

## EMPIRICAL ANALYSIS

My multivariate tests are estimated using ordinary least squares (OLS). In all the regressions, I report robust t-statistics after correcting for firm clustered standards errors that are likely to be present in the panel data (Petersen 2009).I first investigate the average effect of legal institutions on accounting conservatism across all industries. The results are reported in Column (1) of Table 3.

To examine the effects of product market competition on the association between legal/political institutions and accounting conservatism, I run regressions in the full sample and three subgroups with different levels of competition intensity, with Column (2) representing the most competitive industries and Column (4) the most concentrated industries. I use Common Law (COMMON) and Shareholder Rights (SRIGHTS) to proxy for legal institutions, and use Risk of Expropriation (RISK) and State-owned Enterprises (SOE) to proxy for political economy and present the results in Panel A, B, C and D of Table 3 respectively.

As shown in Table 3, the coefficients on D*RET are significant in all 16 regressions, indicating the existence of accounting conservatism when legal and political institutions are

weak. This is not surprising since accounting conservatism is innate in the accounting discipline and is driven by many different factors, such as contracting, shareholder litigation, taxation, and accounting regulation (Watts 2003a, 2003b). Consistent with Bushman and Piotroski (2006), the coefficients on COUNTRY*D*RET (b7) are significant in the full sample for all the regressions. Specifically, a positively significant association between legal institution and accounting conservatism (coefficient of 0.059 in Panel A and 0.057 in Panel B) indicates that common law legal origin and strong shareholder protection are associated with more timely reporting of accounting income, particularly in terms of incorporating economic losses; a negative and significant relation between political economy and accounting conservatism (coefficient of -0.198 in Panel C and -0.196 in Panel D) suggests the practice of less timely disclosure of bad news as losses in countries with strong government influence.

**Table 3 Regression results for accounting conservatism**

| Variable | (1) All firms | (2) Lowest HHI Tercile | (3) Median HHI Tercile | (4) Highest HHI Tercile |
|---|---|---|---|---|
| **Panel A: Country =Common Law (COMMON)** | | | | |
| RET | 0.021 | 0.004 | -0.005 | 0.012 |
| | (0.683) | (0.077) | (-0.075) | (0.512) |
| D*RET | 0.372*** | 0.657*** | 0.382*** | 0.215** |
| | (7.139) | (6.051) | (4.643) | (2.462) |
| Country*RET | -0.031*** | -0.010 | -0.008 | -0.055*** |
| | (-3.631) | (-0.449) | (-0.299) | (-5.383) |
| **Country *D*RET** | **0.059*** | **-0.097** | **-0.014** | **0.172***** |
| | **(2.145)** | **(-1.501)** | **(-0.436)** | **(3.769)** |
| MBR*RET | -0.000*** | -0.000 | -0.000** | -0.000 |
| | (-4.046) | (-0.964) | (-2.888) | (-1.198) |
| MBR*D*RET | -0.001** | -0.001** | -0.000 | -0.000** |
| | (-2.186) | (-2.520) | (-0.178) | (-2.329) |
| LEV*RET | 0.045*** | 0.135** | -0.033 | 0.009 |
| | (3.167) | (2.279) | (-0.621) | (0.228) |
| LEV*D*RET | -0.081 | -0.405** | 0.130* | -0.067 |
| | (-1.515) | (-2.982) | (1.962) | (-1.769) |
| SIZE*RET | 0.006 | 0.002 | 0.012 | 0.015** |
| | (0.933) | (0.347) | (0.930) | (2.631) |
| SIZE*D*RET | -0.026*** | -0.019 | -0.053*** | -0.010 |
| | (-3.153) | (-1.587) | (-3.270) | (-0.636) |
| LIT*RET | -0.010 | -0.128** | 0.039 | -0.044* |
| | (-0.469) | (-2.586) | (1.243) | (-1.783) |
| LIT*D*RET | -0.072 | 0.092 | -0.097 | -0.057 |
| | (-1.694) | (0.971) | (-1.612) | (-0.969) |
| D | -0.001 | 0.104*** | -0.039 | -0.009 |
| | (-0.039) | (3.043) | (-1.500) | (-0.184) |
| Country*D | 0.015 | -0.030* | 0.013 | 0.028 |
| | (1.753) | (-2.060) | (0.836) | (1.695) |
| MBR | 0.000*** | 0.000*** | 0.000 | 0.000 |
| | (3.302) | (3.339) | (1.419) | (0.366) |
| MBR*D | -0.000 | -0.000** | 0.000 | -0.000 |
| | (-0.490) | (-2.305) | (1.128) | (-0.735) |
| LEV | 0.008 | 0.000 | 0.007 | 0.014 |
| | (0.526) | (0.007) | (0.479) | (0.509) |
| LEV*D | -0.020 | -0.130** | 0.044 | -0.064** |

| **Table 3 Regression results for accounting conservatism** | | | | |
|---|---|---|---|---|
| Variable | (1)<br>All firms | (2)<br>Lowest HHI Tercile | (3)<br>Median HHI Tercile | (4)<br>Highest HHI Tercile |
| | (-0.567) | (-2.496) | (1.142) | (-2.483) |
| SIZE | 0.012*** | 0.014*** | 0.008 | 0.014** |
| | (4.804) | (4.318) | (1.645) | (2.799) |
| SIZE*D | 0.000 | 0.002 | -0.004 | 0.006 |
| | (0.007) | (0.276) | (-0.595) | (1.069) |
| LIT | -0.027 | 0.008 | -0.038 | -0.068* |
| | (-1.709) | (0.240) | (-1.757) | (-1.966) |
| LIT*D | -0.028 | -0.042* | -0.005 | -0.043 |
| | (-1.683) | (-1.976) | (-0.233) | (-1.468) |
| Intercept | 0.116*** | 0.145*** | 0.055* | 0.072 |
| | (3.180) | (4.927) | (1.923) | (1.420) |
| No. of Obs. | 22,289 | 7,436 | 7,417 | 7,436 |
| Adj. R-squared | 0.093 | 0.278 | 0.155 | 0.071 |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| **Difference of Country*D*RET: (4)-(2) p=0.008*** (4)-(3) p=0.009*** | | | | |
| **Panel B: Legal institution (LI) =shareholder rights (SRIGHTS)** | | | | |
| RET | 0.020 | 0.005 | -0.008 | 0.013 |
| | (0.670) | (0.096) | (-0.146) | (0.524) |
| D*RET | 0.375*** | 0.650*** | 0.371*** | 0.228** |
| | (7.331) | (6.059) | (4.713) | (2.657) |
| LI*RET | -0.030*** | -0.011 | -0.004 | -0.057*** |
| | (-4.662) | (-0.489) | (-0.191) | (-5.536) |
| **LI *D*RET** | **0.057*** | **-0.092** | **0.002** | **0.161***** |
| | **(2.077)** | **(-1.421)** | **(0.048)** | **(3.051)** |
| MBR*RET | -0.000*** | -0.000 | -0.000*** | -0.000 |
| | (-4.039) | (-0.959) | (-3.073) | (-1.209) |
| MBR*D*RET | -0.001** | -0.001** | -0.000 | -0.000** |
| | (-2.188) | (-2.554) | (-0.228) | (-2.251) |
| LEV*RET | 0.045*** | 0.135** | -0.033 | 0.009 |
| | (3.167) | (2.273) | (-0.627) | (0.227) |
| LEV*D*RET | -0.081 | -0.405** | 0.130* | -0.067 |
| | (-1.514) | (-2.982) | (1.970) | (-1.767) |
| SIZE*RET | 0.007 | 0.002 | 0.012 | 0.015** |
| | (1.035) | (0.347) | (1.038) | (2.697) |
| SIZE*D*RET | -0.027*** | -0.018 | -0.051*** | -0.013 |
| | (-3.265) | (-1.521) | (-3.331) | (-0.793) |
| LIT*RET | -0.010 | -0.128** | 0.040 | -0.044* |
| | (-0.474) | (-2.585) | (1.271) | (-1.803) |
| LIT*D*RET | -0.071 | 0.090 | -0.096 | -0.055 |
| | (-1.690) | (0.955) | (-1.604) | (-0.943) |
| D | -0.002 | 0.100** | -0.045* | -0.007 |
| | (-0.092) | (2.945) | (-1.859) | (-0.133) |
| Country*D | 0.017* | -0.025 | 0.022 | 0.025* |
| | (2.043) | (-1.713) | (1.485) | (1.803) |
| MBR | 0.000*** | 0.000*** | 0.000 | 0.000 |
| | (3.416) | (3.374) | (1.458) | (0.387) |
| MBR*D | -0.000 | -0.000** | 0.000 | -0.000 |
| | (-0.505) | (-2.341) | (1.088) | (-0.681) |
| LEV | 0.008 | 0.000 | 0.007 | 0.014 |
| | (0.524) | (0.005) | (0.476) | (0.508) |
| LEV*D | -0.020 | -0.130** | 0.044 | -0.064** |

| **Table 3 Regression results for accounting conservatism** | | | | |
|---|---|---|---|---|
| Variable | (1)<br>All firms | (2)<br>Lowest HHI Tercile | (3)<br>Median HHI Tercile | (4)<br>Highest HHI Tercile |
| | (-0.565) | (-2.496) | (1.143) | (-2.485) |
| SIZE | 0.012*** | 0.014*** | 0.007 | 0.014** |
| | (4.780) | (4.298) | (1.723) | (2.789) |
| SIZE*D | -0.000 | 0.002 | -0.003 | 0.005 |
| | (-0.008) | (0.350) | (-0.551) | (0.998) |
| LIT | -0.027 | 0.008 | -0.038* | -0.068* |
| | (-1.711) | (0.234) | (-1.776) | (-1.967) |
| LIT*D | -0.027 | -0.042* | -0.005 | -0.043 |
| | (-1.676) | (-1.997) | (-0.225) | (-1.459) |
| Intercept | 0.117*** | 0.147*** | 0.055* | 0.072 |
| | (3.214) | (5.001) | (1.968) | (1.433) |
| No. of Obs. | 22,289 | 7,436 | 7,417 | 7,436 |
| Adj. R-squared | 0.093 | 0.278 | 0.155 | 0.071 |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| **Difference of Country*D*RET: (4)-(2) p=0.003*** (4)-(3) p=0.023**** | | | | |
| **Panel C: Country =Risk of expropriation (RISK)** | | | | |
| RET | -0.075** | -0.092** | -0.105* | -0.027 |
| | (-2.284) | (-2.179) | (-1.801) | (-0.673) |
| D*RET | 0.618*** | 1.071*** | 0.587*** | 0.323** |
| | (6.853) | (4.571) | (4.766) | (2.934) |
| Country*RET | 0.068*** | 0.082** | 0.088*** | -0.004 |
| | (3.959) | (2.699) | (4.471) | (-0.119) |
| **Country *D*RET** | **-0.198**** | **-0.457**** | **-0.208*** | **0.009** |
| | **(-2.844)** | **(-2.885)** | **(-1.953)** | **(0.139)** |
| MBR*RET | -0.000*** | -0.000 | -0.000*** | -0.000* |
| | (-4.206) | (-0.940) | (-3.544) | (-1.780) |
| MBR*D*RET | -0.000* | -0.001** | 0.000 | -0.000* |
| | (-1.895) | (-2.392) | (0.104) | (-2.076) |
| LEV*RET | 0.045*** | 0.134** | -0.035 | 0.011 |
| | (3.166) | (2.255) | (-0.663) | (0.276) |
| LEV*D*RET | -0.082 | -0.404** | 0.131* | -0.070* |
| | (-1.512) | (-2.964) | (1.979) | (-1.913) |
| SIZE*RET | 0.010* | 0.005 | 0.015 | 0.019*** |
| | (1.778) | (1.045) | (1.399) | (3.235) |
| SIZE*D*RET | -0.033*** | -0.018 | -0.055*** | -0.022 |
| | (-3.636) | (-1.451) | (-3.959) | (-1.148) |
| LIT*RET | -0.012 | -0.132** | 0.040 | -0.044 |
| | (-0.532) | (-2.567) | (1.282) | (-1.744) |
| LIT*D*RET | -0.068 | 0.092 | -0.093 | -0.053 |
| | (-1.592) | (0.951) | (-1.593) | (-0.925) |
| D | 0.072 | 0.181** | 0.022 | 0.090 |
| | (1.741) | (2.371) | (0.328) | (1.555) |
| Country*D | -0.064 | -0.095 | -0.055 | -0.084*** |
| | (-1.637) | (-1.384) | (-0.798) | (-3.272) |
| MBR | 0.000*** | 0.000*** | 0.000 | 0.000 |
| | (3.473) | (3.468) | (1.326) | (0.482) |
| MBR*D | -0.000 | -0.000** | 0.000 | -0.000 |
| | (-0.224) | (-2.266) | (1.228) | (-0.299) |
| LEV | 0.008 | 0.001 | 0.008 | 0.013 |
| | (0.553) | (0.019) | (0.541) | (0.504) |
| LEV*D | -0.021 | -0.131** | 0.042 | -0.064** |

| **Table 3 Regression results for accounting conservatism** | | | | |
|---|---|---|---|---|
| Variable | (1)<br>All firms | (2)<br>Lowest HHI Tercile | (3)<br>Median HHI Tercile | (4)<br>Highest HHI Tercile |
| | (-0.603) | (-2.471) | (1.122) | (-2.580) |
| SIZE | 0.011*** | 0.014*** | 0.007* | 0.013** |
| | (4.389) | (4.383) | (1.917) | (2.672) |
| SIZE*D | -0.001 | 0.004 | -0.004 | 0.004 |
| | (-0.202) | (0.539) | (-0.750) | (0.697) |
| LIT | -0.026 | 0.009 | -0.038* | -0.067* |
| | (-1.677) | (0.259) | (-1.777) | (-1.932) |
| LIT*D | -0.027 | -0.045* | -0.003 | -0.041 |
| | (-1.656) | (-2.135) | (-0.141) | (-1.406) |
| Intercept | 0.120*** | 0.140*** | 0.049 | 0.086* |
| | (3.519) | (4.628) | (1.725) | (2.108) |
| No. of Obs. | 22,289 | 7,436 | 7,417 | 7,436 |
| Adj. R-squared | 0.093 | 0.278 | 0.156 | 0.071 |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| **Difference of Country*D*RET: (4)-(2) p=0.021** (4)-(3) p=0.046**** | | | | |
| **Panel D: Country =High State-owned Enterprises (SOE)** | | | | |
| Variable | (1)<br>All firms | (2)<br>Lowest HHI Tercile | (3)<br>Median HHI Tercile | (4)<br>Highest HHI Tercile |
| RET | -0.002 | 0.000 | -0.014 | -0.029 |
| | (-0.071) | (0.003) | (-0.282) | (-1.051) |
| D*RET | 0.430*** | 0.615*** | 0.384*** | 0.352** |
| | (7.986) | (6.183) | (6.396) | (2.878) |
| Country*RET | 0.013 | 0.004 | 0.030 | -0.002 |
| | (0.632) | (0.100) | (0.977) | (-0.101) |
| **Country *D*RET** | **-0.196*** ** | **-0.340*** ** | **-0.167** ** | **-0.072** |
| | **(-5.170)** | **(-4.897)** | **(-2.350)** | **(-0.864)** |
| MBR*RET | -0.000*** | -0.000 | -0.000** | -0.000* |
| | (-4.277) | (-0.801) | (-2.885) | (-1.863) |
| MBR*D*RET | -0.001** | -0.002** | -0.000 | -0.001*** |
| | (-2.864) | (-2.755) | (-0.200) | (-3.552) |
| LEV*RET | 0.045*** | 0.138** | -0.035 | 0.010 |
| | (3.130) | (2.327) | (-0.654) | (0.251) |
| LEV*D*RET | -0.081 | -0.407** | 0.132* | -0.069* |
| | (-1.491) | (-2.985) | (1.966) | (-1.896) |
| SIZE*RET | 0.009 | 0.002 | 0.014 | 0.019** |
| | (1.335) | (0.265) | (1.182) | (2.787) |
| SIZE*D*RET | -0.035*** | -0.018 | -0.057*** | -0.026 |
| | (-3.846) | (-1.298) | (-3.924) | (-1.364) |
| LIT*RET | -0.009 | -0.129** | 0.042 | -0.043 |
| | (-0.425) | (-2.384) | (1.351) | (-1.690) |
| LIT*D*RET | -0.078* | 0.082 | -0.101 | -0.058 |
| | (-1.880) | (0.814) | (-1.686) | (-0.992) |
| D | 0.014 | 0.092** | -0.030** | 0.015 |
| | (1.063) | (2.432) | (-2.195) | (0.301) |
| Country*D | -0.030 | -0.022 | -0.031 | -0.037* |
| | (-1.139) | (-0.651) | (-0.703) | (-1.872) |
| MBR | 0.000*** | 0.000*** | 0.000 | 0.000 |
| | (3.676) | (3.445) | (1.260) | (0.721) |
| MBR*D | -0.000 | -0.000** | 0.000 | -0.000 |
| | (-0.696) | (-2.624) | (1.163) | (-0.885) |
| LEV | 0.008 | 0.000 | 0.008 | 0.013 |

| **Table 3 Regression results for accounting conservatism** | | | | |
|---|---|---|---|---|
| Variable | (1)<br>All firms | (2)<br>Lowest HHI Tercile | (3)<br>Median HHI Tercile | (4)<br>Highest HHI Tercile |
| | (0.558) | (0.016) | (0.529) | (0.460) |
| LEV*D | -0.020 | -0.130** | 0.043 | -0.064** |
| | (-0.578) | (-2.487) | (1.117) | (-2.501) |
| SIZE | 0.012*** | 0.014*** | 0.008 | 0.013** |
| | (4.248) | (4.820) | (1.763) | (2.473) |
| SIZE*D | -0.002 | 0.003 | -0.005 | 0.003 |
| | (-0.428) | (0.442) | (-0.768) | (0.471) |
| LIT | -0.026 | 0.008 | -0.037 | -0.067* |
| | (-1.696) | (0.225) | (-1.701) | (-1.897) |
| LIT*D | -0.029 | -0.048* | -0.004 | -0.044 |
| | (-1.670) | (-1.981) | (-0.181) | (-1.476) |
| Intercept | 0.113*** | 0.126*** | 0.044 | 0.084* |
| | (3.386) | (4.960) | (1.540) | (2.012) |
| No. of Obs. | 21,561 | 7,128 | 7,235 | 7,198 |
| Adj. R-squared | 0.092 | 0.282 | 0.154 | 0.069 |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| **Difference of Country*D*RET: (4)-(2) p=0.037** (4)-(3) p=0.086*** | | | | |

This table presents the regression results from estimating equation (1) in subsamples. Column (1) present the results for the full sample. Cloumn (2), (3) and (4) report the results for firms located in the lowest HHI terciles, median HHI terciles, and highest HHI terciles, respectively. HHI (Herfindahl-Hirschman Index) is the measure of product market competition, which is calculated as the sum of squared market share. A lower HHI indicates higher product market competition. Variable definitions are detailed in Appendix A. This table presents robust (clustered by country) t-statistics (*** p<0.01, ** p<0.05, * p<0.10).

However, the regression results are very different across subgroups. In Column (2) and Column (3), the coefficients for COUNTRY*D*RET are insignificant in all the 4 regressions (-0.097 and -0.14 in Panel A; -0.092 and 0.002 in Panel B). While only in Column (4), the coefficients for COUNTRY*D*RET is significantly positive, suggesting the positive association between the quality of legal institutions and accounting conservatism documented by prior studies does not hold in the competitive industries. Moreover, I also compare the coefficient differences of COUNTRY*D*RET among the three subgroups. As shown at the bottom of Pane A and B, the p-values of b7 differences between Column (2) and Column (4) and between Column (3) and Column (4) are significantly positive (0.008 and 0.009 in Panel A; 0.003 and 0.023 in Panel B), indicating that b7 is only functioning in the highest HHI tercile subgroup (i.e., Column (4)). Overall, the empirical results in Panel A and B of Table 3 provide evidence that legal institutions as determinants of accounting conservatism function very limitedly in competitive industries.

Likewise, the regression results across competition level subgroups are very different when political involvement is used as the country-level institutional variable: In Column (2) and (3), Pane C and D of Table 3, the coefficients for COUNTRY*D*RET are significantly negative in all the regressions (-0.457 and -0.208 in Panel C; -0.34 and -0.167 in Panel D). Whereas in Column (4), the coefficients for COUNTRY*D*RET interaction term is insignificant, suggesting

the negative association between government involvement and accounting conservatism documented by prior studies exists only in the competitive industries. Moreover, I also compare the coefficient differences of COUNTRY*D*RET among the three subgroups. As shown at the bottom of Pane C and D, the p-values of b7 differences between Column (2) and Column (4) and between Column (3) and Column (4) are significantly positive (0.021 and 0.046 in Panel C; 0.037 and 0.086 in Panel D), indicating that b7 is less pronounced in concentrated industries (i.e., high HHI tercile subgroup). Overall, the empirical results in Panel C and D of Table 3 suggest that the influence of political economy on accounting conservatism only exist in competitive industries.

An important concern is that the Basu's (1997) model used for my main empirical tests may be affected by the different extent of market efficiency around the world. To alleviate this concern, I employ Ball and Shivakumar' model (2006, 2005) to examine the asymmetric timeliness of earnings without reference to security prices. These results (untabulated) based on Ball and Shivakumar' model (2006) corroborate the findings in our main analyses.

I conduct a number of other robustness checks: First, in addition to HHI using 3-digit SIC codes used for the main tests, we re-calculate HHI using 4-digit SIC code, 5-digit NAICS code, and 6-digit NAICS code. Moreover, I also adopt two typical industry measures, a four- and an eight-firm concentration ratio, as alternative industry concentration measures. Empirical tests using these alternative industry measures produce consistent results. Second, to accommodate the potential nonlinear relation, I transform HHI into a fractional rank variable, and re-estimate all the regressions. The results remain qualitatively unchanged. Third, as the sample size varies across countries, we apply weighted least squares (WLS) procedures, placing an equal weight on each country sample. The (untabulated) results are similar to those reported in main tables.

## CONCLUSION

Conservatism is a fundamental accounting principle with important economic roles. A great number of prior studies report that good corporate governance is associated with more conservative reporting. Recent studies, however, show that firms in less competitive industries benefit more from good corporate governance than firms in more competitive industries, and hence a competitive product market acts as a substitute for an efficient corporate governance structure (e.g., Giroud and Mueller, 2011, 2010; Ammann et al. 2011). The purpose of this study is to examine the role played by product market competition and whether financial reporting by all firms benefit equally from good country-level institutions.

My results show that the positive association between legal institutions and accounting conservatism documented by prior research does not hold in the competitive industries, meanwhile, the influence of political economy on accounting conservatism only exists in competitive industries. My first finding seems to suggest that product market competition act as a substitute for legal institutions as competitive pressure imposes discipline on managers to

provide accounting conservatism. Consequently, corporate governance may matter more in less competitive industries than in more competitive industries. My second finding suggests that firms in non-competitive industries worry less about government interferences and thus do not need to speed (slow) the recognition of good (bad) news. My investigation extends Giroud and Mueller (2011, 2010) to a cross-country setting, which allows to examine how a country's legal institutional and the industry-specific product market competition shape the quality of a firm's financial reporting. The findings of this study provide empirical evidence for Ball et al. (2000)'s argument that the increasing trend of conservatism in most countries could be due to increased international product market competition.

## REFERENCES


Ahmed, A., B. Billings, R. Morton, and M. Stanford-Harris. 2002. The role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review* 77 (4):867-890.

Ahmed, A., and S. Duellman. 2007. Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of Accounting and Economics* 43 (2-3):411-437.

Ali, A., S. Klasa, and E. Yeung. 2009. The limitations of industry concentration measures constructed with Compustat data: Implications for finance research: *Review of Financial Studies* 22 (10): 3839-3871.

———. 2010. Industry concentration and corporate disclosure policy. Working paper, University of Texas at Dallas, *SSRN eLibrary*.

Ammann, M., D. Oesch, and M. Schmid. 2011. Product Market Competition, Corporate Governance, and Firm Value: Evidence from the EU Area. *European Financial Management*

Baginski, S. P., K. S. Lorek, G. L. Willinger, and B. C. Branson. 1999. The relationship between economic characteristics and alternative annual earnings persistence measures. *The Accounting Review* 74 (1):105-120.

Ball, R., R. M. Bushman, and F. P. Vasvari. 2008a. The debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research* 46 (2):247-287.

Ball, R., S.P. Kothari, and V. Nikolaev, 2011. On Estimating conditional conservatism. Working paper.

Ball, R., S. P. Kothari, and A. Robin. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of Accounting and Economics* 29 (1):51.

Ball, R., A. Robin, and G. Sadka. 2008b. Is financial reporting shaped by equity markets or by debt markets? An international study of timeliness and conservatism. *Review of Accounting Studies* 13 (2):168-205.

Ball, R., A. Robin, and J. S. Wu. 2003. Incentives versus Standards: Properties of accounting income in four east Asian countries, and implications for acceptance of IAS. *Journal of Accounting and Economics* 36 (1-3):235–270.

Ball, R., and L. Shivakumar. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of Accounting and Economics* 39 (1):83-128.

———. 2006. The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research* 44 (2):207-242.

Basu, S. 1997. The Conservatism Principle and the Asymmetric Timeliness of Earnings. *Journal of Accounting and Economics* 24 (1):3-37.

Beaver, W., and S. Ryan. 2004. Conditional and unconditional conservatism. *Review of Accounting Studies* 38:127-148.

Bushman, R. M., J. Piotroski, and A. Smith. 2007. Capital allocation and timely accounting recognition of economic losses.

Bushman, R. M., and J. D. Piotroski. 2006. Financial reporting incentives for conservative accounting: The influence of legal and political institutions. *Journal of Accounting and Economics* 42 (1-2):107-148.

Chari, A., and N. Gupta. 2008. Incumbents and protectionism: The political economy of foreign entry liberalization. *Journal of Financial Economics*.

Claessens, S., and L. Klapper. 2005. Bankruptcy around the world: explanations of its relative use. *American Law and Economics Review* 7 (1):253-283.

Clarke, R. 1983. Collusion and the incentives for information sharing. *The Bell Journal of Economics*:383-394.

Clinch, G., and R. Verrecchia. 1997. Competitive disadvantage and discretionary disclosure in industries. *Australian Journal of Management* 22:125-138.

Darrough, M. 1993. Disclosure policy and competition: Cournot vs. Bertrand. *The Accounting Review*:534-561.

Darrough, M., and N. Stoughton. 1990. Financial disclosure policy in an entry game. *Journal of Accounting and Economics* 12 (1-3):219-243.

DeFond, M., M. Hung, and R. Trezevant. 2007. Investor protection and the information content of annual earnings announcements: International evidence. *Journal of Accounting and Economics* 43 (1):37-67.

Dhaliwal, Huang, Khurana, and Pereira. 2008. Product market competition and accounting conservatism. Working paper.

Dietrich, J., K. Muller, and E. Riedl. 2007. Asymmetric timeliness tests of accounting conservatism. *Review of Accounting Studies* 12 (1):95-124.

Djankov, S., O. Hart, T. Nenova, and A. Shleifer. 2006. Efficiency in bankruptcy.

Eaton, B. C., and R. G. Lipsey. 1981. Capital, commitment, and entry equilibrium. *Bell Journal of Economics* 12 (2):593-604.

Evans, I., JH, and S. Sridhar. 2002. Disclosure-disciplining mechanisms: capital markets, product markets, and shareholder litigation. *Accounting Review*:595-626.

Gal-Or, E. 1985. Information sharing in oligopoly. *Econometrica: Journal of the Econometric Society*:329-343.

Gaspar, J. M., and M. Massa. 2006. Idiosyncratic volatility and product market competition. *The Journal of Business* 79 (6):3125-3152.

Giroud, X., and H. Mueller. 2011. Corporate governance, product market competition, and equity prices. *Journal of Finance* 66 (2): 563-600.

Giroud, X., and H. Mueller. 2010. Does corporate governance matter in competitive industries? *Journal of Financial Economics* 95(3): 312-331

Givoly, D., C. Hayn, and A. Natarajan. 2007. Measuring reporting conservatism. *The Accounting Review* 82 (1):65-106.

Hail, L., and C. Leuz. 2006. International differences in the cost of equity capital: Do legal institutions and securities regulation matter? *Journal of Accounting Research* 44 (3):485-531.

Holthausen, R. W., and R. L. Watts. 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics* 31 (1-3):3-75.

Hou, K., and D. T. Robinson. 2006. Industry concentration and average stock returns. *The Journal of Finance* 61 (4):1927-1956.

Hribar, P., and D. Collins. 2002. Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research*:105-134.

Irvine, P. J., and J. Pontiff. 2007. Idiosyncratic return volatility, cash flows, and product market competition. *Review of Financial Studies* Forthcoming.

Karuna, C. 2007. Industry product market competition and managerial incentives. *Journal of Accounting and Economics* 43 (2-3):275-297.

Khan, M., and R. Watts. 2007. Estimation and validation of a firm-year measure of conservatism. *Working Paper*.

Kim, B., and M. Pevzner. 2008. Accounting conservatism and future earnings bad news: An empirical investigation.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer. 2006. What works in Securities Laws? *The Journal of Finance* 61 (1):1-32.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer, 1999. Corporate ownership around the world. *The Journal of Finance* 54: 471-517.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1998. Law and Finance. *Journal of Political Economy*.

Lafond, R., and S. Roychowdhury. 2008. Managerial ownership and accounting conservatism. *Journal of Accounting Research* 46 (1):101-135.

Lev, B. 1983. Some economic determinants of time-series properties of earnings. *Journal of Accounting and Economics* 5:31-48.

Li, J. 2009. Accounting conservatism and debt contract: Efficient liquidation and covenant renegotiation.

Morck, R., B. Yeung, and W. Yu. 2000. The information content of stock markets: why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58 (1-2):215-260.

Mueller, D. C. 1977. The persistence of profits above the norm. *Economica* 44 (176):369-380.

Olsen, C., and J. Dietrich. 1985. Vertical information transfers: The association between retailers' sales announcements and suppliers' security returns. *Journal of Accounting Research*:144-166.

Petersen, M. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1):435.

Qiang, X. 2007. The effects of contracting, litigation, regulation, and tax costs on conditional and unconditional conservatism: Cross-sectional evidence at the firm level. *The Accounting Review* 82 (3):759-796.

Raith, M. 2003. Competition, risk, and managerial incentives. *The American Economic Review* 93 (4):1425-1436.

Roychowdhury, S., and R. Watts. 2007. Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting. *Journal of Accounting and Economics* 44 (1-2):2-31.

Vander Bauwhede, H., and V. Gent. 2008. The impact of conservatism on the cost of debt: Conditional versus unconditional conservatism. *Working Paper*.

Wagenhofer, A. 1990. Voluntary disclosure with a strategic opponent. *Journal of Accounting and Economics* 12 (4):341-363.

Watts, R., and J. Zimmerman. 1986. *Positive Accounting Theory*: Prentice-hall Englewood Cliffs, NJ.

Watts, R. L. 2003. Conservatism in accounting Part I: Explanations and implications. *Accounting Horizons* 17 (3):207-222.

Watts, R. L. 2003. Conservatism in accounting Part II: Evidence and Research Opportunities. *Accounting Horizons* 17 (4): 287-301.

Wittenberg-Moerman, R. 2008. The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics* 46 (2-3):240-260.

Zhang, J. 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics* 45, 27-54..

## APPENDIX A VARIABLE DEFINITIONS

| Variable | Definition |
|---|---|
| Country Variables | |
| COMMONt | Indicator variable equal to one if the country has a common law tradition (e.g., UK or Ireland), and zero for civil law legal origin (e.g., French, German or Scandinavian legal tradition). |
| SRIGHTS | Indictor variable equal to one if the country has higher shareholder rights than the sample country median, zero otherwise. Source: La Porta et al. (1998). |
| RISKEXP | Risk of expropriation, which is the risk of outright confiscation of firm's wealth or forced nationalization by the state (Bushman and Piotroski 2006; La Porta et al., 1999). Indicator variable that is equal to one if countries are classified as having a high risk of expropriation based upon whether the country's average rating is equal to or less than median country-level rating. |
| SOE | State-owned enterprises, which is the share of country-level output supplied by state-owned enterprises (Bushman and Piotroski 2006). Indicator variable that is equal to one if countries are classified as high state ownership based upon whether the country's most recent rating is greater than or equal to the median country-level observation. |
| Industry Variables | |
| HHIt | Herfindahl-Hirschman index is the sum of the squared market shares of the firms competing in each industry-country sample. Industry membership is classified by the three-digit SIC code. This data is obtained from Bureau van Dijk (BvD) Orbis. |
| PMCt | Index of product market competition, which is calculated as minus one multiplied by the HHIt. |
| DIFFt | DIFF is equal to the sales/operating costs for each industrial segment: operating costs include the cost of goods sold; selling, general, and administrative expenses; and depreciation, depletion, and amortization. Industry segment is classified by the three-digit SIC code. DIFF measures the extent of product substitutability in the industry. |
| MKTSIZEt | Natural logarithm of industry sales (industry sales is computed as the sum of segment sales for firms operating in the industry). Industry segment is classified by the three-digit SIC code. |
| ENTCOSTt | Natural logarithm of the weighted average of the gross value of the cost of property, plants, and equipment for firms in an industry, weighted by each firm's market share in the industry. Industry membership is classified by the three-digit SIC code. |
| CONC4t | Proportion of sales in the industry accounted for by the four largest firms (by sales) in the industry (industry sales are computed as in MKTSIZE above). |
| CONC8t | Proportion of sales in the industry accounted for by the eight largest firms (by sales) in the industry (industry sales are computed as in MKTSIZE above). |

Firm Variables

| | |
|---|---|
| RETt | Holding period market-adjusted return, including dividends, over the firm's fiscal accounting year. This data is draw from Standard and Poor's Global Vantage Issues files. |
| MVEt | Market value of equity at the end of a given fiscal year, defined as number of shares outstanding times closing price available for the last month of the fiscal year. This data is gathered from Standard and Poor's Global Vantage Issues files. |
| NIt | Net income before extraordinary items (IC data 32), deflated by beginning of period prices (MVEt-1). This data is draw from Standard and Poor's Global Vantage Industrial /Commercial files. |
| Dt | An indicator variable equal to one if RET is less than zero; zero otherwise. |
| CFOt | Operating cash flow, deflated by beginning of period prices (MVEt-1). This data is draw from Standard and Poor's Global Vantage Industrial /Commercial files. |
| ACCRUALSt | Total accruals, deflated by the average total assets, defined as Net income before extraordinary items minus cash flow from operating activities, scaled by the average total assets. This data is draw from Standard and Poor's Global Vantage Industrial /Commercial files. |
| NCFOt | An indicator variable equals to one if CFOt is less than zero; zero otherwise. |
| LEVt | Leverage is the total debt deflated by the average total assets. |
| SIZE | Firm size is the natural logarithm of the total assets (in millions of U.S. dollars) at the end of fiscal year t. |
| MBRt | Market-to-book ratio is the market value of equity divided by the book value of equity. |
| LITt | `LIT is coded one if a firm is in a litigious industry - SIC codes 2833–2836, 3570– 3577, 3600–3674, 5200–5961, and 7370 - and zero otherwise. |
| FASSET | Book value of fixed assets scaled by the average total assets. |
| ΔSALESt | Change in sales scaled by the average total assets. |

# THE SHAREHOLDER WEALTH EFFECTS OF AUDITOR CHANGES AND AUDITOR OPINIONS: DOES A DIFFERENCE EXIST IN A PRE-SOX VERSUS POST-SOX ENVIRONMENT?

**Ron Stunda, Valdosta State University**
**Carl Pacini, University of South Florida-St. Petersburg**

## ABSTRACT

*In 2002, Congress enacted the Sarbanes-Oxley Act (SOX) in response to various fraud scandals. SOX implementation may have led to a rise in auditor switches, a shift in the risks and increase in the costs associated with auditing, a rise in auditor conservatism in the issuance of unqualified audit reports and a shift in investor reactions to qualified audit reports. We examine investor reaction to auditor switches for both unqualified and qualified opinion firms in an unexpected earnings disclosure context in both pre- and post-SOX environments. We find no difference exists in investor reaction for unqualified opinion firms with or without auditor switches in pre- and post-SOX environments. Investors demonstrate significant negative share price responses to qualified opinions in a post-SOX environment (with or without an auditor change). The results indicate that investors' perceptions of a qualified opinion changed after SOX took effect. Investors place more value on an unqualified opinion in a post-SOX environment. This may be due to shifts in auditor thresholds and litigation risks.*

## INTRODUCTION

In July 2002, Congress enacted the Sarbanes-Oxley Act (SOX) in response to various corporate scandals including Enron, WorldCom, Tyco, and Global Crossing. Some of the major provisions of SOX include:

-The requirement that executive officers certify all Form 10-K and 10-Q reports filed with the Securities and Exchange Commission (SEC);
-The requirement that the CEO and CFO draft a written statement to accompany all financial statements that the latter present fairly the financial condition and results of the company's operations;

-The affirmation by the CEO and CFO that they have evaluated the effectiveness of the firm's internal controls and report any deficiencies or material weaknesses in such controls;
-The section 404 requirement of a report by management on the company's internal controls;
-An assessment of internal controls and be reviewed by the firm's auditors;
-A prohibition against an auditor providing certain non-auditing services during the time that firm performs auditing services;
-The establishment of the Public Company Accounting Oversight Board (PCAOB), which is responsible for the promulgation of auditing standards for public companies and performance of inspections of auditors of public firms;
-A tighter Form 8-K filing deadline (four instead of five days); and
-The imposition of harsher penalties for corporate criminal fraud.

Between 2003 and 2006, 5325 auditor switches occurred among U.S. publicly traded firms. This number represents over 40 percent of U.S. public companies during that time period (Grothe and Weirich 2007). The trend among U.S. firms has been to switch away from the Big Four toward smaller audit firms (Owens-Jackson et al. 2008). The majority of firms that have switched away from Big Four auditors were smaller companies (with less than $75 million in market capitalization) (Grothe and Weirich 2007; Owens-Jackson et al. 2008). In about 65 percent of auditor switching cases, client firms dismissed their auditors. In the remaining 35 percent of cases, auditors resigned (Grothe and Weirich 2007).

SOX implementation may not have led to only more auditor switches, but also to changes in investor reactions to auditor switches. Auditor switches can result in negative or positive share price reactions, depending upon whether the switch is a dismissal or resignation and the circumstances surrounding the switch (Stefaniak et al. 2009). Auditor switches can also result in trading volume reactions.

Moreover, the risks associated with auditing increased significantly in the post-SOX period. SOX altered the regulatory regime of auditing by shifting the oversight of audit firms from the AICPA to the PCAOB. Also, Auditing Standard No. 2 lowers the risk threshold by mandating that the auditor examine all internal controls that could impact the occurrence of fraud that could have a material impact on the financial statements (Griffin and Lont 2010). "This standard also results in higher costs for auditors regarding significant deficiencies 'in internal controls' and 'reasonable assurance' that 'no material weakness' exists by defining a deficiency as significant and a weakness as material 'if there is more than a remote likelihood' that a material misstatement will not be prevented or detected (Griffin and Lont 2010). Also, the insurance and other liability-related costs increased significantly in the post-SOX period (Rama and Read 2006).

Increased auditor risks and costs may have led to a rise in auditor conservatism in the issuance of audit reports. Auditing firms may have implicitly raised the threshold for issuance of an unqualified audit opinion by overhauling and improving the audit process (Bryan-Low 2003). Hence, SOX may have brought about a change in the implications of a qualified audit report. Investors' concerns over and reaction to a qualified audit report may have significantly changed after SOX.

This study examines investor reaction to auditor switches for both qualified and unqualified opinion firms in an unexpected earnings disclosure context for both pre- and post-SOX periods. Extant research on market reaction to auditor switches and qualified opinions, with few exceptions, focuses only on the pre-SOX period. Also, prior research considers investor reaction to auditor switches and qualified opinions on a separate basis.

## LITERATURE REVIEW

### Market Reaction to Auditor Switches

Our analysis considers research from both before and after the primary implementation of SOX in August 2004. Fried and Schiff (1981) document some evidence of a negative market reaction to auditor switches between 1972 and 1975 based on a 21-week window. These researchers found no statistically significant share price reaction for a 49-week window. Fried and Schiff (1981) did not find a significant difference in share price reaction between auditor switches and those switches accompanied by a disagreement disclosure. On the other hand, Smith and Nichols (1982) indicate that share price reactions are more negative for firms that change auditors with reported disagreements than for firms with no reported disagreements (for the period 1973 to 1979). Nichols and Smith (1983) document no significant share price reactions to auditor switches between 1973 and 1979 for an eight-week window.

Smith (1988) documents a significant negative share price reaction, using a one-week event window, for a sample of 515 auditor changes between 1973 and 1982 when a new auditor has not yet been appointed. Eichenseher et al. (1989) found negative share price reactions for 88 OTC firms and auditor switches from Big 8 to non-Big 8 firms between 1979 and 1982 for a five-week window. These researchers also document a positive association between management ownership of stock that exceeds 50 percent and the magnitude of negative share price reaction. Klock (1994) finds support for the hypothesis of no significant security price reaction associated with switching auditors for a sample of 50 client firms in 1986-1987. Johnson and Lys (1990) note that auditor switches are not associated with significant share price reactions during trading periods surrounding the Form 8-K filing during the period 1973 to 1982.

Whisenant et al. (2003) document a significant negative market reaction for 1,264 auditor changes stemming from disclosures of reportable events (118) between 1993 and 1996 for three-day and seven-day event windows. Knechel et al. (2007) examine 318 auditor switches from

2000 to 2003. Their results provide strong evidence of a positive share price reaction when firms switch from a nonspecialist Big 4 auditor to a specialist Big 4 auditor. These researchers also found a significant negative market reaction when client firms change from a specialist Big 4 auditor to a nonspecialist Big 4 auditor.

In sum, studies produced mixed market results to auditor switches prior to implementation of SOX. Many pre-SOX studies lacked a consistent application for measuring market reaction to auditor changes while others used varying measurement periods, often times short in length.

**Market Reaction to Qualified Opinions**

The four types of audit opinions are unqualified, qualified, disclaimer and adverse. As noted above, receipt of other than an unqualified opinion may lead to an auditor switch (Chow and Rice 1982a). The academic literature suggests that receipt of a qualified opinion influences investors' expectations of future cash flows and earnings of the client firm and results in both share price and trading volume reactions. Qualifications may result in either positive or negative market responses, depending on whether the qualification reflects less or more severe news than anticipated (Dodd et al. 1984).

Chow and Rice (1982b) found that qualified audit opinions have negative impacts on stock prices. These researchers discovered, however, that stock price effects differ across types of qualified opinions. "Asset realization" qualifications had a greater negative impact than "uncertainty" qualifications. Dodd et al. (1984) indicate that disclosures of 'subject to' audit opinions have little impact on share prices. Their results show that many firms experienced negative abnormal returns before the release of qualified opinions.

Ameen et al. (1994) found no significant market reaction for a sample of 177 qualified OTC firm audit reports for the period 1974-1988 surrounding the disclosure of the qualified audit opinion. This study also found that the market reacts to the circumstances, positive or negative, underlying the qualification, prior to the audit report release. Chen et al. (2000) examined share price reactions on the Shanghai stock exchange to qualified audit opinions of 96 firms from 1995-1997. These researchers found significant negative share price reactions to the disclosure of qualified audit opinions.

Griffin and Lont (2010) compare market reactions to qualified opinions for pre- and post-SOX periods. In the post-SOX period, mean excess returns were -4.20 percent for event days -1 to +3. The SOX partition date used is July 25, 2002 (before SOX implementation), therefore results may be a bit misleading. Martinez et al. (2008) assessed the share price reaction of 129 client firms in the Spanish capital markets in pre-SOX and post-SOX time frames to qualified audit reports. Study results showed no significant share price responses to release of qualified audit reports. Al-Thuneibat et al. (2008) document no significant share price reaction for 42 Jordanian firms with qualified opinions between the two time periods.

In sum, empirical study results are mixed with regard to stock price responses to the disclosure of qualified audit reports. In addition, extant literature comparing pre and post SOX periods regarding the market impact on qualified opinions are scant.

## HYPOTHESES

SOX mandates resulted in increased audit hours and effort, higher audit costs, and increased audit fees (Raghunandan and Rama 2006; Ebrahim 2010). As noted above, researchers have documented increases in auditor changes after SOX. Studies of stock price responses to auditor changes, particularly in a pre-SOX environment, are mixed. Investor reactions to auditor switches may have changed since SOX implementation due to shifts in auditor thresholds and litigation risk (Griffin and Lont 2010; Huang et al. 2009). Insight may be obtained for auditor switches by examining client firm years that did and did not involve auditor changes for unqualified opinions. This gives rise to the first hypothesis:

*H1: The share price responses to unexpected earnings in a pre-SOX versus post-SOX environment for unqualified opinion firm years with or without an auditor switch are not significantly different.*

Receipt of other than an unqualified opinion may affect investors' expectations of future cash flows and earnings of client firms and results in share price reactions. Studies of share price responses to qualified audit reports in a pre-SOX environment are mixed. This could be the result of offsetting market reactions to client firms that both retained and switched auditors. We may enhance our understanding of qualified audit opinions in pre- and post-SOX environments by examining market reactions to such reports for client firms that did and did not switch auditors. This gives rise to the second hypothesis:

*H2: The share price responses to unexpected earnings in a pre-SOX versus post-SOX environment for qualified opinion firm years with or without an auditor switch are not significantly different.*

## SAMPLE SELECTION

The aim of this study is to investigate the share price behavior of publicly traded firms to unqualified and qualified audit opinions in the absence and presence of auditor changes in pre-SOX versus post-SOX environments. Following Chang et al. (2010), we use August 2004 as the partition date between a pre- and post-SOX environment. We exclude the year 2004 from our analysis to eliminate potential confounding events. The pre-SOX period is 1998-2003 and the post-SOX period is 2005-2010. The Electronic Data Gathering Analysis and Retrieval System (EDGAR) was used to identify firm years with unqualified opinions and those with qualified opinions. Table 1 provides a breakdown of unqualified and qualified opinion firm years and the same firm years involving an auditor switch.

| **Table 1. Firm Years' Sample Summary<br>Source: EDGAR Database** | | |
|---|---|---|
| | Pre-SOX<br>1998-2003 | Post-SOX<br>2005-2010 |
| Unqualified Opinion Firm Years | 31,900 | 29,400 |
| Qualified Opinion Firm Years | 6,413 | 6,529 |
| Unqualified Opinion Firm Years With Auditor Switch | 9,418 | 12,224 |
| % Of Unqualified Opinion Firm Years With Auditor Switch | 29.5 | 41.6 |
| Qualified Opinion Firm Years With Auditor Switch | 1,398 | 2,067 |
| % Of Qualified Opinion Firm Years With Auditor Switch | 21.8 | 31.7 |

The data in Table 1 is consistent with the findings of Grothe and Weirich (2007), Owens-Jackson et al. (2008), and Ettredge et al. (2011) noted above. Namely, the data illustrate a rise in the number of auditor switch firm years in the post-SOX environment. We also see a fairly significant rise in the percentage of unqualified and qualified opinion firm years involving an auditor switch in the post-SOX period (qualified-41.6% vs. 29.5%; qualified-31.7% vs. 21.8%).

In an effort to obtain more detail on the character of auditor switches, we analyzed Form 8-Ks for unqualified and qualified opinions involving auditor switches in the pre- and post-SOX periods. We compiled the data on client firms that appears in Table 2. A client firm's Form 8-K must have included a discernible reason for an auditor change to be in Table 2.

Data in Table 2 show increases in client firms switching auditors for the pre- and post-SOX periods. Unqualified opinion firms switching auditors increased from 475 in the pre-SOX period to 806 in the post-SOX period. Qualified opinion firms changing auditors rose from 307 in the pre-SOX period to 435 in the post-SOX period. Interestingly, resignations as a percentage of unqualified opinion firms decreased (30.9% to 26.3%) in the post-SOX period but increased (28.3% to 31.7%) in the post-SOX period for qualified opinion firms. This demonstrates a proactive approach by auditing firms to disassociate themselves from clients receiving qualified opinions in the post-SOX period. This may support the notion of a change in the implications of a qualified audit report in the post-SOX period.

| **Table 2. Sample Summary for Client Firms Switching Auditors<br>Source: SEC Form 8-K** | | | | |
|---|---|---|---|---|
| | Pre-SOX 1998-2003 | % | Post SOX | % |
| **Unqualified Opinion Firms Switching Auditors:** | | | | |
| Dismissals | 328 | 69.1 | 594 | 73.7 |
| Resignations | 147 | 30.9 | 212 | 26.3 |
| Total | 475 | | 806 | |
| **Qualified Opinion Firms Switching Auditors:** | | | | |
| Dismissals | 220 | 71.7 | 297 | 68.3 |
| Resignations | 87 | 28.3 | 138 | 31.7 |
| Total | 207 | | 435 | |

## METHODOLOGY

### Hypothesis One

The purpose of the test of the first hypothesis is to assess the relative information content of unexpected earnings of the share prices of unqualified opinion firms in a pre-SOX versus post-SOX environment with or without an auditor switch. The Dow Jones News Retrieval Service was used to identify the date each client firm released earnings data for the relevant period. The earnings release date is day 0 or the event date. The regression model used is as follows:

$$CARit = ai + b1\ dp\ UEit + b2\ ds\ UEit + b3\ dp1\ UEit + b4\ ds1\ UEit + b5\ Rmt + b6\ MVit + eit$$

Coefficient b1 is the response coefficient for measuring the effect of unexpected earnings on security prices for unqualified opinion firms pre-SOX. Coefficient b2 is the response coefficient measuring the impact of unexpected earnings on security prices for unqualified opinion firms post-SOX. Coefficient b3 is the response coefficient measuring the effect of unexpected earnings on security prices for unqualified opinion firms with an auditor switch in the pre-SOX period. Coefficient b4 is the response coefficient measuring the impact of unexpected earnings on security prices for unqualified opinion firms with an auditor switch post-SOX. Coefficient b5 represents the market return for an equally weighted Center for Research on Security Prices (CRSP) portfolio. Coefficient b6 is the response coefficient for the client firm size variable proxied by market value of equity. Variable b5 and b6 are assessed since they indicate significance in some prior studies.

Unexpected earnings (UEit) is measured as the difference between the management earnings forecast (MFit) and security market participants' earnings expectations proxied by consensus analysts' forecasts per Investment Brokers' Estimate Service (IBES)(EXit). Unexpected earnings are scaled by the client firm's stock price (Pit) 180 days prior to the forecast:

$$UEit = \frac{MFit - EXit}{Pit}$$

The abnormal return for each sample firm (ARit) is compiled for event days -1, 0, and +1. This way the model can capture any significant changes in market expectations. Market model parameters were estimated based on trading data for the period 180 days prior to the event date until 91 days prior to the event date. Abnormal returns for days -1, 0, and +1 were summed to calculate cumulative abnormal returns (CARit).

Ordinary least squares (OLS) regression was used to test the model for hypothesis one (as well as the other three hypotheses). Cross-sectional dependence and heteroskedasticity are not

likely to be present in stock return metrics since sample firms are not affected by common event dates and membership in the same industry (Binder 1985; Bernard 1987; Grammatikos and Yourougou 1990).

**Hypothesis Two**

The objective of the test of H2 is to evaluate the relative information content of unexpected earnings of the security prices of qualified opinion firms in both pre-SOX and post-SOX environments with or without an auditor switch. The regression model used is as follows:

$$CARit = ai + b1\ dp\ UEit + b2\ ds\ UEit + b3\ dp1\ UEit + b4\ ds1\ UEit + b5\ Rmt + b6\ MVit + eit$$

Coefficients b1 through b4 are the same as those for H1 except they are for qualified opinion firms. Unexpected earnings (UEit) is measured in the same manner as it is for H1. Other model parameters are defined as they are in H1.

## EMPIRICAL RESULTS

Table 3 summarizes the results for statistical tests of H1. Dp, ds, Dp1, and ds1 all produced significant positive abnormal returns ($p \leq .05$ using a one-tail test). These results do not reject the null hypothesis H1. It appears no distinction exists in investor reaction to unexpected earnings for client firms with unqualified opinions. Investor reaction does not differ for client firms in pre-SOX and post-SOX environments. Moreover, auditor switches do not lead to a differential market reaction. For unqualified opinion firms, market reaction to unexpected earnings does not seem to vary significantly for the pre-SOX versus post-SOX periods. Positive market reaction appears related to unexpected earnings.

The H1 model was tested for multicollinearity using variance inflation factors (VIF). Whenever a set of multiple regression variable are employed, there is a probability of the presence of multicollinearity within the set of independent variables which may be problematic from an interpretive standpoint. To assess the presence of multicollinearity, the VIF is utilized. Values exceeding 10 are often regarded as indicating multicollinearity. The VIF for this equation was 2.1 indicating the absence of multicollinearity.

Table 4 displays the results for tests of H2; dp and dp1 yielded statistically insignificant abnormal returns ($p > .10$ using a one-tail test). Investors do not demonstrate a significant share price response to unexpected earnings of client firms with qualified opinions in a pre-SOX environment. Ds and ds1 show statistically significant negative abnormal returns ($p \leq .01$ using a one-tail test). Investors demonstrate a significant negative unexpected earnings reaction to qualified opinions in a post-SOX environment.

| **Table 3. Results for Hypothesis 1** | | | |
|---|---|---|---|
| Coefficient | Value | Z- stat | P-value [a] |
| a | 0.08 | 0.62 | $p > 0.10$ |
| $b_1$ | 0.20 | 1.63 | $p \leq 0.05$ |
| $b_2$ | 0.27 | 1.79 | $p \leq 0.05$ |
| $b_3$ | 0.15 | 1.51 | $p \leq 0.05$ |
| $b_4$ | 0.11 | 1.56 | $p \leq 0.05$ |
| $b_5$ | 0.30 | 0.39 | $p > 0.10$ |
| $b_6$ | 0.18 | 0.45 | $p > 0.10$ |

Model: $CAR_{it} = a_i + b_1\, dp\, UE_{it} + b_2\, ds\, UE_{it} + b_3\, dp_1\, UE_{it} + b_4\, ds_1\, UE_{it} + b_5\, R_{mt} + b_6\, MV_{it} + e_{it}$

where:

a = intercept term;
$UE_{it}$ = unexpected earnings for firm i in time t;
Dp = dummy variable equal to 1 if unqualified opinion pre-SOX firm, 0 otherwise;
Ds = dummy variable equal to 1 if unqualified opinion post-SOX firm, 0 otherwise;
$dp_1$ = dummy variable equal to 1 if unqualified opinion pre-SOX firm with auditor change, 0, otherwise;
$ds_1$ = dummy variable equal to 1 if unqualified opinion post-SOX firm with auditor change, 0, otherwise;
$R_{mt}$ = the market return for day t computed as the return for a CRSP equally weighted portfolio;
$MV_{it}$ = market value of equity as proxy for client firm size; and
$e_{it}$ = error term for firm i time t.

| **Table 4. Results for Hypothesis Two** | | | |
|---|---|---|---|
| Coefficient | Value | Z- stat | P-value [a] |
| a | 0.09 | 0.82 | $p > 0.10$ |
| $b_1$ | 0.22 | 0.69 | $p > 0.10$ |
| $b_2$ | -0.11 | -2.21 | $p \leq 0.01$ |
| $b_3$ | 0.13 | 0.79 | $p > 0.10$ |
| $b_4$ | -0.14 | -2.28 | $p \leq 0.01$ |
| $b_5$ | 0.19 | 0.44 | $p > 0.10$ |
| $b_6$ | 0.27 | 0.76 | $p > 0.10$ |

Model: $CAR_{it} = a_i + b_1\, dp\, UE_{it} + b_2\, ds\, UE_{it} + b_3\, dp_1\, UE_{it} + b_4\, ds_1\, UE_{it} + b_5\, R_{mt} + b_6\, MV_{it} + e_{it}$

where:

$a_i$ = intercept term;
$UE_{it}$ = unexpected earnings for firm i in time t;
dp = dummy variable equal to 1 if qualified opinion pre-SOX firm, 0 otherwise;
ds = dummy variable equal to 1 if qualified opinion post-SOX firm, 0 otherwise;
$dp_1$ = dummy variable equal to 1 if qualified opinion pre-SOX firm with auditor change, 0 otherwise;
$ds_1$ = dummy variable equal to 1 if qualified opinion post-SOX firm with auditor change, 0 otherwise;
$R_{mt}$ = the market return for day t computed as the return for a CRSP equally weighted portfolio;
$MV_{it}$ = market value of equity as proxy for client firm size; and
$e_{it}$ = error term for firm i time t.

The presence or absence of an auditor change appears not to be associated with share price responses. Such a reaction lends support to the proposition that the meaning or implication of a qualified opinion for investors changed in a post-SOX environment. A change in the regulatory framework under SOX may have raised the threshold for issuance of an unqualified audit report and increased the negative consequences of a qualified audit opinion. This is consistent with the stated public policy objectives of SOX.

The H2 model was tested for multicollinearity using variance inflation factors (VIF). The VIF for this equation was 2.4, again indicating the absence of multicollinearity.

## CONCLUSIONS

This study analyzes the impact of the Sarbanes-Oxley Act on investors' reactions to qualified and unqualified opinions with and without auditor changes, in pre- and post-SOX environments. Arguably, SOX implementation increased the risks associated with auditing. A rise in risks may have led to an increase in auditor conservatism in the issuance of audit opinions. Investor reactions seem to confirm these assertions.

Specific study results indicate the following: 1. Auditor switches do not lead to a differential market reaction for unqualified opinion firms, for the pre-SOX versus post-SOX periods. Both study periods show a positive market impact for unqualified audit opinion firms. This is important since prior studies focus primarily on the market reaction to auditor changes and the impact on an unqualified opinion in a pre-SOX environment. As noted earlier, these studies have shown mixed results. This study has provided empirical evidence of the market impact due to the combination of auditor change and unqualified opinions in both pre and post SOX environments, and the results have been consistent. 2. Investors demonstrate a significant negative market reaction to qualified opinions in a post-SOX environment. The presence or absence of an auditor change appears not to be associated with share price responses. This result indicates that a change in the regulatory framework under SOX may have increased the negative consequences of a qualified audit opinion. This is consistent with the stated public policy objectives of SOX.

## REFERENCES

Al-Thuneibat, A.A., B.A. Khamees, and N.A. Al-Fayoumi (2008). The effect of qualified auditors' opinions on share prices: Evidence from Jordan. *Managerial Auditing Journal* 23(1): 84-101.

Ameen, E.C., K. Chen, and D. Guffey (1994). Information content of qualified audit opinions for over-the-counter firms. *Journal of Business Finance & Accounting* 21(7): 997-1011.

Anderson, D., D. Stokes, and I. Zimmer (1993). Corporate takeovers and auditor switching. *Auditing: A Journal of Practice & Theory* 12(1): 65-73.

Bernard, V. (1987). Cross-sectional dependence and problems in inference in market-based accounting research. *Journal of Accounting Research* 25 (Spring): 1-48.

Binder, J. (1985). Measuring the effects of regulation with stock price data. *Rand Journal of Economics*16 (Summer): 167-183.

Bryan-Low, C. (2003). Accounting firms aim to dispel cloud of corporate fraud. *Wall Street Journal* (May 27): C1.

Chang, H., C.S. Agnes Cheng, and K. Reichelt (2010). Market reaction to auditor switching from Big 4 to third-tier small accounting firms. *Auditing: A Journal of Practice & Theory* 29(2): 83-114.

Chen, C., X. Su and R. Zhao (2000). An emerging market's reaction to initial modified audit opinions: Evidence from the Shanghai stock exchange. *Contemporary Accounting Research* 17(3): 429-455.

Chow, C. and S. Rice (1982). Qualified audit opinions and auditor switching. *The Accounting Review* 57(April): 326-335.

Chow, C. and S. Rice (1982). Qualified audit opinions and share prices-an investigation. *Auditing: A Journal of Practice & Theory* 1(2): 35-53.

Dodd, P., N. Dopuch, R. Holthausen, and R. Leftwich (1984). Qualified audit opinions and stock prices. *Journal of Accounting and Economics* 6: 3-38.

Ebrahim, A. (2010). Audit fee premium and auditor change: The effect of the Sarbanes-Oxley act. *Managerial Auditing Journal* 25(2): 102-121.

Eichenseher, J., M. Hagigi, and D. Shields (1989). Market reaction to auditor changes by OTC companies. *Auditing: A Journal of Practice & Theory* 9(1): 29-40.

Eichenseher, J. and D. Shields (1983). The correlates of CPA firm change for publicly held corporations. *Auditing: A Journal of Practice & Theory* 2(2): 23-37.

Ettredge, M., J. Heintz, C. Li, and S. Scholz (2011). Auditor realignments accompanying implementation of SOX 404 ICFR reporting requirements. *Accounting Horizons* 25(1): 17-39.

Fried, D. and A. Schiff (1981). CPA switches and associated market reactions. *The Accounting Review* 56(April): 326-341.

Geiger, M., K. Raghunandan, and D.V. Rama (1998). Costs associated with going concern modified audit opinions: An analysis of auditor changes, subsequent opinions, and client failures. *Advances in Accounting* 16: 127-139.

Grammatikos, T. and P. Yourougou (1990). Market expectations of the effects of the Tax Reform Act of 1986 on banking organizations. *Journal of Banking and Finance* 14 (December): 1171-1187.

Griffin, P. and D. Lont. 2010. Do investors care about auditor dismissals and resignations? What drives the response? Auditing: A Journal of Practice & Theory 29(2): 189-214.

Grothe, M. and T. Weirich (2007). Analyzing auditor changes. *The CPA Journal (December):* 15-23.

Hackenbrack, K. and C. Hogan (2005). Client retention and engagement level pricing. *Auditing: A Journal of Practice & Theory* 24(1): 7-20.

Huang, H.W., K. Raghunandan, and D. Rama (2009). Audit fees for initial audit engagements before and after SOX. *Auditing: A Journal of Practice & Theory* 28(1): 171-190.

Johnson, W.B. and T. Lys (1990). The market for audit services: Evidence from voluntary auditor changes. *Journal of Accounting and Economics* 12(*January*): 281-308.

Klock, M. (1994). The stock market reaction to a change in certifying accountant. *Journal of Accounting, Auditing, and Finance* 9(2): 339-347.

Knechel, W.R., V. Naiker, and G. Pacheco (2007). Does auditor industry specialization matter? Evidence from market reaction to auditor switches. *Auditing: A Journal of Practice & Theory* 26(1): 19-45.

Lennox, C. (2000). Do companies successfully engage in opinion shopping? Evidence from the UK. *Journal of Accounting and Economics* 29(3): 321-337.

Martinez, M.C.P., A.V. Martinez, and M.A. Benau (2008). Reactions of the Spanish capital market to qualified audit reports. *European Accounting Review* 13(4): 689-711.

Nichols, D.R. and D. Smith (1983). Auditor credibility and auditor changes. *Journal of Accounting Research* 21(2): 534-544.

Public Company Accounting Oversight Board (2004). *An audit of internal control over financial reporting performed in conjunction with an audit of financial statements.* Auditing Standard No. 2. Washington, D.C.: PCAOB.

Raghunandan, K. and D. Rama (2006). SOX section 404 material weakness disclosures and audit fees. *Auditing: A Journal of Practice & Theory* 25(1): 99-114.

Smith, D. (1988). An investigation of securities and exchange commission regulation of auditor change disclosures: The case of accounting series release no. 165. *Journal of Accounting Research* 26(1): 134-145.

Smith, D. and D. Nichols (1982). A market test of investor reaction to disagreements. *Journal of Accounting and Economics* 4(2): 109-120.

Stefaniak, C., J. Robertson, and R. Houston (2009). The causes and consequences of auditor switching: A review of the literature. *Journal of Accounting Literature* 28: 47-121.

Whisenant, J.S. and S. Sankaraguruswamy, and K. Raghunandan (2003). Market reaction to disclosure of reportable events. *Auditing: A Journal of Practice & Theory* 22(1): 181-194.

# CROSS-SECTIONAL ANALYSIS OF OPERATING LEASE LIABILITIES BY INDUSTRY AND FIRM SIZE

**John Kostolansky, Loyola University Chicago**
**Brian Stanko, Loyola University Chicago**

## ABSTRACT

*Over the past several years, the Financial Accounting Standards Board and International Accounting Standards Board have undertaken a project to revise previously issued leasing standards. A draft of the new standard is scheduled to be "re-exposed" for comment in the first quarter of 2013 but the Boards have yet to determine an implementation date. Some believe it will be no earlier than 2015 assuming that the revisions can be agreed upon. Several recent studies have highlighted the impact that capitalizing leases will have on a single industry or on a few large companies. In contrast, this paper examines the impact of the new leasing standard across industries by size of the firm, showing that the relative impact on assets and liabilities is in reverse proportion to firm size.*

## INTRODUCTION

Most observers of the Financial Accounting Standards Board expect that a new lease accounting standard will soon require the capitalization of operating leases. In August 2010, the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) jointly issued exposure drafts for a proposed new lease accounting standard. These documents have been discussed extensively and the Boards plan to re-expose another draft in the first quarter of 2013. Under the proposed standard, operating leases will not only be recognized in the balance sheet, but the resulting assets and liabilities will be measured under "the longest possible lease term that is more likely than not to occur" (FASB Proposed Accounting Standards Update, Leases, p. 2). At the date of initial application, which has yet to be determined, measurement of the resulting assets and liabilities will be based upon the remaining lease payments (FASB Exposure Draft, Leases, p. 123).

Earlier studies of the effects of capitalizing operating leases in the U.S. relied on small, paired samples of companies with and without operating leases (Imhoff, Lipe, and Wright 1991) or on small samples of firms in particular industries such as airlines and grocery (Imhoff, Lipe, and Wright 1993) and retail (Mulford 2007). These studies determined that capitalizing the leases would have significant effect. Similar conclusions were also found in the U.K. (Beattie et al 1998), in New Zealand (Bennet and Bradbury 2003), and in Germany (Fülbier et al 2008).

More recently, Bryan et al (2010) employed a large sample of nearly 6,000 firms to estimate the effects of capitalizing operating leases on the return of asset ratio and the debt-to-capital ratio across eight broad industries. The Bryan study and all of the earlier studies employed a discount rate of 8% or higher. Given the recent declines in interest rates, multiple discount rates were employed by Kostolansky and Stanko (2011) and Kostolansky et al (2012) to estimate the range of the potential impact on financial metrics across industries. The present study extends these previous efforts using a large sample of firms from the Compustat North America Fundamental Annual database. Whereas previous studies did not consider the impacts of capitalization in relation to firm size, the present study explores the relative impact that capitalization will have in relationship to both firm size and industry.

## RESEARCH METHOD

We obtained data for 5,827 firms with fiscal years ending between 1/1/2011 and 12/31/2011 from the Compustat North America database. One or more data points were missing for 2,007 of these firms. We decided to reconstruct the data for the 888 firms with assets over $3 billion. We successfully obtained the missing data from the annual report 10-K or annual report to shareholders for 870 of these firms. We discarded the 18 firms from the unsuccessful searches and we likewise discarded 1,137 companies with missing data and assets under $3 billion. This resulted in a final sample of 4,672 firms with assets ranging from $ .1 million to over $3,000,000 million in more than 50 major industries.

In seeking the lease payment information that was missing from Compustat, we first looked to the leasing footnote disclosures governed by FASB standards. The standards require the disclosure of the minimum lease payments for each of the next five years and a single amount for all payments beyond the fifth year. We found that some firms did not disclose the required lease information in the leasing footnote. When this occurred, we then looked to the Management Discussion and Analysis (MD&A) disclosures in the annual report 10-K.

The SEC requires MD&A disclosures of contractual lease obligations for the following time frames: less than 1 year, 1 - 3 years, 4 - 5 years, and more than 5 years. Since our estimation process was based upon knowing the next five individual payments, we interpolated the SEC disclosures to accommodate this. Specifically we split the amount for '1 – 3 years' in half to estimate the payments in years 2 and 3. We likewise split the amount for '4 - 5 years' to estimate the lease payments in years 4 and 5. Some firms provided incomplete leasing disclosures in both the footnotes and in the MD&A, but in tandem the two individual disclosures enabled us to compute the payment information missing in Compustat.

Finally our sample included over 140 foreign firms with missing Compustat data. This occurred when the firm reported in a foreign currency, or had omitted some lease disclosures, or both. We reconstructed any missing payments in the same fashion described above. Then we

translated the foreign currency amounts to U.S. dollars using the exchange rate for each respective balance sheet date.

We examined the impact of capitalization using multiple discount rates. Given the continuing decline in interest rates since our previous studies, we used rates of 3%, 5% and 7% for the present study. We again analyzed the sample firms by industry but we also segmented the sample into four approximately equal groups: 1) assets under $100 million, 2) assets from $100 million to less than $500 million, 3) assets from $500 million to less than $2,500 million, and 4) assets from $2,500 million to $4,292 million. This cross section of firms of all sizes enabled us to focus attention on how the new leasing standard would affect smaller firms relative to larger firms across all industries.

To approximate the effect of capitalizing operating leases, we adapted the approach originally developed by Imhoff, Lipe, and Wright. Specifically, we identified the individual lease payments for next five years and we assumed that lease payments would continue thereafter at an amount equal to the average of the first five payments until the remaining sum was fully amortized. For example, assume that the lease disclosure disclosed the future payments as $200, $190, $180, $170 and $160 (for the next five years respectively) and $450 thereafter. The average of the five individual payments is $180 and we assumed that there would 2.5 additional payments of $180 in years 6 and 7 and a half payment of $90 in year 8. We estimate the lease-related asset and liability to be the present value of the remaining lease payments which is consistent with exposure draft requirements noted previously.

## RESULTS

Tables 1 through 3 provide the results of our analysis. Given the wide range of outcomes across industries, we calculated the average percentage change in assets and liabilities as both the simple average and the median. The median values provide a much less skewed estimate of the capitalization impact. Additionally, SIC codes 60 to 67 include financial institutions, securities and commodities brokers, insurance companies, non-depository financial institutions, as well as holding and other investment offices. These firms tend to be highly leveraged and the impact of leasing on their balance sheet is atypically small. Most of these firms have assets over $2,500 million. Thus, for the fourth quartile of firms with assets over $2,500 million, we provide results with and without firms in SIC codes 60 to 67.

### Impact on Total Liabilities

The estimated percentage increase in total liabilities is calculated by dividing the company's capitalized operating lease liability by its total liabilities (without the capitalized operating leases). Table 1 illustrates the average increase in total liabilities across all firms. As noted in Table 1, the average increase in total liabilities for the entire sample of 4,672 firms

ranges from 19.51% (using a 7% discount rate) to 22.55% (using a 3% discount rate). The median impact on total liabilities for the entire sample, however, is much less significant. The median increase in total liabilities for the entire sample ranges from 5.32% (using a 7% discount rate) to 5.96% (using a 3% discount rate). Our data revealed that a relatively small number of firms will experience large percentage increases in liabilities. This situation is also revealed by the disparity between the mean and median measures.

**Firm Size Considerations**

As noted earlier, we divided our sample of 4,672 firms into four quartiles. The four quartiles are divided as follows:

Assets < $100M (1,062 firms)
Assets > $100M and <$500M (982 firms)
Assets > $500M and <$2,500M (1,032 firms)
Assets > $2,500M(1,596 firms)

When we expand our analysis to consider firm size, the results are interesting. As Table 1 illustrates, firms with assets below $100 million will be negatively impacted the most. The average increase in total liabilities for our first quartile of 1,062 firms ranges from 33.24% (using a 7% discount rate) to 37.74% (using a 3% discount rate). The median increase in total liabilities is again much less significant. The median increase in total liabilities for this quartile ranges from 11.56% (using a 7% discount rate) to 12.80% (using a 3% discount rate).

Switching the focus to the largest firms, we see that the percentage change in total liabilities is much smaller. The average increase in total liabilities for the fourth quartile of 1,596 firms ranges from 6.82% (using a 7% discount rate) to 8.16% (using a 3% discount rate). The median increase in total liabilities for this group ranges between 2.06% (using a 7% discount rate) to 2.74% (using a 3% discount rate). Further, if we eliminate SIC codes 60 to 67 containing highly leveraged financial entities, we see the impact on the remaining 1,141 firms to be more significant. The average increase in total liabilities for these firms ranges between 8.92% (using a 7% discount rate) and 10.61% (using a 3% discount rate). Either way, the percentage impact on total liabilities is much less significant for large firms versus small firms.

**Impact on Total Assets**

The proposed lease standard requires that firms report ‘right of use’ assets equal to the amount of the capitalized lease obligation. We calculate the estimated percentage increase in total assets by dividing the amount of the capitalized lease obligation by the company’s total

assets (excluding the 'right of use' assets). Table 2 illustrates the average increase in total assets across all firms.

**TABLE 1**
**Percentage Increase in Total Liabilities**
**When Operating Lease Are Capitalized Using Selected Discount Rates**

| | 3% | 5% | 7% |
|---|---|---|---|
| All firms (4,672 firms) | | | |
| Average percentage increase | 22.55% | 20.92% | 19.51% |
| Median percentage increase | 5.96% | 5.62% | 5.32% |
| Quartile 1 (1,062 firms) | | | |
| Assets < $100M | | | |
| Average percentage increase | 37.74% | 35.34% | 33.24% |
| Median percentage increase | 12.80% | 12.30% | 11.56% |
| | | | |
| Quartile 2 (982 firms) | | | |
| Assets > $100M and <$500M | | | |
| Average percentage increase | 30.30% | 28.18% | 26.31% |
| Median percentage increase | 11.01% | 10.39% | 9.70% |
| Quartile 3 (1,032 firms) | | | |
| Assets > $500M and <$2,500M | | | |
| Average percentage increase | 21.79% | 20.04% | 18.54% |
| Median percentage increase | 7.17% | 6.73% | 6.27% |
| Quartile 4 | | | |
| Assets > $2,500M (1,141 firms)<br>SIC codes 60 to 69 omitted | | | |
| Average percentage increase | 10.61% | 9.70% | 8.92% |
| Median percentage increase | 3.86% | 3.60% | 3.36% |
| Assets > $2,500M (1,596 firms) | | | |
| Average percentage increase | 8.16% | 7.43% | 6.82% |
| Median percentage increase | 2.74% | 2.24% | 2.06% |

As noted in Table 2, the average increase in total assets for the entire sample of 4,672 firms ranges from 8.56% (using a 7% discount rate) to 9.94% (using a 3% discount rate). The median impact is much less significant. Note that the percentage change in total assets is much smaller than the percentage change in total liabilities since total assets exceed total liabilities for most firms.

| TABLE 2<br>Percentage Increase in Total Assets<br>When Operating Lease Are Capitalized Using Selected Discount Rates | | | |
|---|---|---|---|
| | 3% | 5% | 7% |
| All firms (4,672 firms) | | | |
| Average percentage increase | 9.94% | 9.20% | 8.56% |
| Median percentage increase | 2.95% | 2.75% | 2.60% |
| Quartile 1 (1,062 firms) Assets < $100M | | | |
| Average percentage increase | 16.33% | 15.28% | 14.36% |
| Median percentage increase | 5.66% | 5.40% | 5.14% |
| Quartile 2 (982 firms) Assets > $100M and <$500M | | | |
| Average percentage increase | 11.18% | 10.36% | 9.64% |
| Median percentage increase | 3.78% | 3.57% | 3.33% |
| Quartile 3 (1,032 firms) Assets > $500M and <$2,500M | | | |
| Average percentage increase | 10.10% | 9.27% | 8.56% |
| Median percentage increase | 3.53% | 3.29% | 3.09% |
| Quartile 4 Assets > $2,500M (1,141 firms) SIC codes 60 to 69 omitted | | | |
| Average percentage increase | 6.18% | 5.65% | 5.19% |
| Median percentage increase | 2.30% | 2.16% | 2.02% |
| Assets > $2,500M (1,596 firms) | | | |
| Average percentage increase | 4.75% | 4.33% | 3.97% |
| Median percentage increase | 1.46% | 1.36% | 1.25% |

## Firm Size Considerations

When we consider firm size and the percentage change in total assets, we see that firms with total assets less than $100 million are again affected more adversely. Table 2 illustrates that the average increase in total assets for the first quartile of 1,062 firms ranges from 14.36% (using a 7% discount rate) to 16.33% (using a 3% discount rate). The median increase in total assets for this group ranges from 5.14% (using a 7% discount rate) to 5.66% (using a 3% discount rate).

Alternatively, the average impact on total assets for the fourth quartile of the largest firms ranges from 3.97% (using a 7% discount rate) to 4.75% (using a 3% discount rate). The median impact on total assets for this group ranges from 1.25% (using a 7% discount rate) to 1.46% (using a 3% discount rate). Eliminating SIC codes 60 to 67 that include financial entities, we see the impact on the remaining 1,141 firms is more significant but still less than the impacts on smaller firms.

## Impact on Total Liabilities by Firm Size and Industry Group

Table 3 reports the percentage change in total liabilities when we consider firm size and industry group. The results illustrate the variation in impact across industries and across firms according to size.

**TABLE 3**
**Average Percentage Change in Total Liabilities by Major 2-Digit SIC Industry Group and Firm Size Using a 5% Rate to Discount the Lease Payments**

| | All firms | Assets < $100M | Assets ≥ $100M & < $500M | Assets ≥ $500M and < $2,500M | Assets ≥ $2,500 |
|---|---|---|---|---|---|
| Chemicals And Allied Products | | | | | |
| Number of firms | 461 | 211 | 117 | 54 | 79 |
| Avg percentage increase | 28.66% | 46.39% | 20.18% | 11.99% | 5.32% |
| Median percentage increase | 6.43% | 9.53% | 6.61% | 6.27% | 3.47% |
| Largest percentage increase | 3650.65% | 3650.65% | 357.90% | 155.45% | 36.62% |
| Business Services | | | | | |
| Number of firms | 512 | 168 | 138 | 126 | 80 |
| Avg percentage increase | 20.95% | 25.84% | 23.74% | 17.95% | 10.63% |
| Median percentage increase | 12.17% | 14.09% | 15.06% | 10.71% | 6.48% |
| Largest percentage increase | 253.34% | 207.39% | 253.34% | 140.50% | 65.01% |
| Electronic Except Computer Eq. | | | | | |
| Number of firms | 370 | 120 | 103 | 77 | 70 |
| Avg percentage increase | 17.22% | 33.34% | 13.37% | 8.75% | 4.57% |
| Median percentage increase | 7.37% | 12.33% | 9.69% | 6.42% | 3.82% |
| Largest percentage increase | 903.34% | 903.34% | 71.00% | 47.23% | 20.23% |
| Measuring Instruments | | | | | |
| Number of firms | 273 | 123 | 68 | 44 | 38 |
| average | 20.07% | 28.20% | 18.65% | 12.45% | 5.13% |
| median | 9.36% | 14.95% | 12.43% | 8.79% | 4.32% |
| largest | 178.30% | 178.30% | 112.72% | 100.44% | 21.37% |
| Machinery And Computer Eq. | | | | | |
| Number of firms | 212 | 49 | 53 | 54 | 56 |
| Avg percentage increase | 10.78% | 17.39% | 13.56% | 8.67% | 4.39% |
| Median percentage increase | 5.83% | 14.21% | 9.28% | 4.81% | 3.62% |
| Largest percentage increase | 88.78% | 77.34% | 70.53% | 88.78% | 22.33% |
| Electric, Gas, And Sanitary Services | | | | | |
| Number of firms | 206 | 7 | 8 | 9 | 182 |
| Avg percentage increase | 3.70% | 18.25% | 14.01% | 6.84% | 2.53% |
| Median percentage increase | 1.11% | 4.56% | 5.32% | 1.74% | 0.98% |
| Largest percentage increase | 95.79% | 95.79% | 47.01% | 22.99% | 32.67% |
| Depository institutions | | | | | |
| Number of firms | 183 | 0 | 0 | 1 | 182 |
| Avg percentage increase | 0.52% | | | 0.27% | .52% |
| Median percentage increase | 0.44% | | | | .44% |
| Largest percentage increase | 3.96% | | | | 4.00% |
| Oil And Gas Extraction | | | | | |
| Number of firms | 175 | 24 | 28 | 54 | 69 |
| Avg percentage increase | 4.48% | 17.75% | 4.98% | 2.73% | 3.57% |
| Median percentage increase | 1.49% | 5.19% | 1.60% | 1.33% | 1.37% |
| Largest percentage increase | 124.55% | 124.55% | 37.30% | 1884.00% | 36.26% |
| Holding and Investment Offices | | | | | |

**TABLE 3**
**Average Percentage Change in Total Liabilities by Major 2-Digit SIC Industry Group and Firm Size Using a 5% Rate to Discount the Lease Payments**

| | All firms | Assets < $100M | Assets ≥ $100M & < $500M | Assets ≥ $500M and < $2,500M | Assets ≥ $2,500 |
|---|---|---|---|---|---|
| Number of firms | 172 | 18 | 20 | 46 | 88 |
| Avg percentage increase | 7.14% | 21.87% | 18.64% | 4.73% | 2.77% |
| Median percentage increase | 1.54% | 7.25% | 10.68% | 1.43% | 1.01% |
| Largest percentage increase | 220.42% | 220.42% | 111.45% | 50.68% | 30.09% |
| Communications | | | | | |
| Number of firms | 167 | 18 | 33 | 39 | 77 |
| Avg percentage increase | 17.66% | 38.21% | 32.05% | 11.50% | 9.80% |
| Median percentage increase | 5.89% | 9.73% | 13.86% | 4.72% | 4.28% |
| Largest percentage increase | 346.61% | 342.07% | 346.61% | 111.10% | 111.90% |
| Insurance Carriers | | | | | |
| Number of firms | 132 | 2 | 10 | 24 | 96 |
| Avg percentage increase | 1.35% | 1.51% | 2.95% | 2.22% | 0.85% |
| Median percentage increase | 0.61% | 1.51% | 1.20% | 0.75% | 0.51% |
| Largest percentage increase | 14.55% | 2.99% | 10.76% | 14.55% | 11.04% |
| Transportation Equipment | | | | | |
| Number of firms | 106 | 13 | 22 | 21 | 50 |
| Avg percentage increase | 12.67% | 63.28% | 10.86% | 6.12% | 3.06% |
| Median percentage increase | 3.59% | 18.27% | 4.97% | 4.21% | 2.12% |
| Largest percentage increase | 591.94% | 591.94% | 79.55% | 24.58% | 20.80% |
| Food and Kindred Products | | | | | |
| Number of firms | 100 | 22 | 16 | 20 | 42 |
| Avg percentage increase | 4.63% | 21.71% | 21.11% | 10.25% | 3.56% |
| Median percentage increase | 2.17% | 9.50% | 5.97% | 6.83% | 3.27% |
| Largest percentage increase | 61.81% | 176.54% | 197.96% | 43.42% | 8.30% |
| Security, Commodity Brokers… | | | | | |
| Number of firms | 97 | 20 | 14 | 21 | 42 |
| Avg percentage increase | 15.45% | 23.23% | 37.97% | 13.93% | 4.99% |
| Median percentage increase | 5.67% | 17.13% | 36.35% | 11.52% | 1.79% |
| Largest percentage increase | 145.90% | 58.51% | 145.90% | 43.99% | 44.67% |
| Wholesale Trade-durable Goods | | | | | |
| Number of firms | 87 | 15 | 18 | 32 | 22 |
| Avg percentage increase | 12.52% | 16.01% | 14.58% | 12.22% | 8.89% |
| Median percentage increase | 8.48% | 4.08% | 10.20% | 9.16% | 6.75% |
| Largest percentage increase | 88.64% | 88.64% | 56.31% | 71.07% | 24.30% |
| Miscellaneous Retail | | | | | |
| Number of firms | 73 | 12 | 28 | 17 | 16 |
| Avg percentage increase | 53.31% | 45.14% | 56.73% | 43.41% | 63.98% |
| Median percentage increase | 22.31% | 13.64% | 29.16% | 17.68% | 59.51% |
| Largest percentage increase | 251.42% | 251.42% | 250.76% | 180.37% | 213.26% |
| Engineering Management Services | | | | | |
| Number of firms | 71 | 25 | 21 | 15 | 10 |
| Avg percentage increase | 29.93% | 41.49% | 24.22% | 30.49% | 12.17% |

**TABLE 3**
**Average Percentage Change in Total Liabilities by Major 2-Digit SIC Industry Group and Firm Size Using a 5% Rate to Discount the Lease Payments**

| | All firms | Assets < $100M | Assets ≥ $100M & < $500M | Assets ≥ $500M and < $2,500M | Assets ≥ $2,500 |
|---|---|---|---|---|---|
| Median percentage increase | 19.95% | 19.95% | 24.78% | 24.96% | 10.48% |
| Largest percentage increase | 395.87% | 395.87% | 64.43% | 86.38% | 26.75% |
| Health Services | | | | | |
| Number of firms | 70 | 20 | 16 | 18 | 16 |
| Avg percentage increase | 41.18% | 28.61% | 55.37% | 65.88% | 14.89% |
| Median percentage increase | 13.01% | 10.46% | 19.40% | 16.17% | 7.17% |
| Largest percentage increase | 630.71% | 106.60% | 369.93% | 630.71% | 50.73% |

## Most Significant Industry Impact

As can be seen in Table 3, the "Miscellaneous Retail" industry, comprised of 73 firms, was the most severely impacted group. Using a 5% discount rate, the average increase in total liabilities when capitalizing operating leases, was 53.31%. Firms with assets less than $100 million, however, saw a 45.14% average percentage increase in total liabilities - with the largest percentage increase in total liabilities at 251.42%. However, firms with assets greater than $2,500 million saw an average percentage increase of 63.98%, which is at odds with the majority of our findings across other industries. The smaller firms in most industries were more greatly impacted than the larger firms.

"Health Services" comprised of 70 firms, was the next most severely impacted industry at 41.18%. Once again, some contradictory evidence surfaced. Firms with assets less than $100 million saw a 28.61% average percentage increase in liabilities. Firms with assets greater than $500 million but less than $2, 500 million, on the other hand, saw an average percentage increase of 63.98%. Other industry groups with significant liability change (greater than 25%) due to operating lease capitalization were "Engineering, Accounting, Research, Management and Related Services" (29.93%) and "Chemicals and Allied Products" (28.66%). In each of these industries, however, firms with assets less than $100 million were impacted more than larger firms within the same industries.

## Least Significant Industry Impact

As we again review Table 3, the "Depository Institutions" group, comprised of 183 firms, was the least impacted group. The average increase in total liabilities when capitalizing operating leases using the 5% discount rate was only .52%. "Insurance Carriers" comprised of 132 firms, was next, showing an average increase in total liabilities of 1.35%. Other industry groups whose liabilities would be affected less than 5% were "Electric, Gas, and Sanitary Services" (3.7%) and

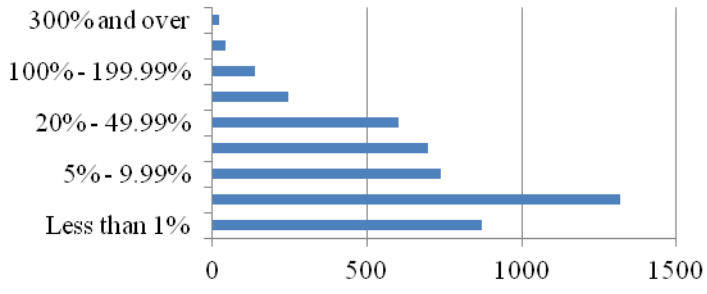
"Oil and Gas Extraction" (4.48%). In each of these industries, firms with assets less than $100 million were impacted more negatively than firms within the same industries with increased size.

## CONCLUSION

For several years now, the Financial Accounting Standards Board and International Accounting Standards Board have attempted to revise existing leasing standards. With a draft of the new standard scheduled to be "re-exposed" for comment in the first quarter of 2013, a new rule on lease accounting appears to be not just likely, but a certainty. The only question is when will the mandate become effective? This paper examined the impact of the new leasing standard across industries and by firm size, showing that the relative impact on assets and liabilities is essentially in reverse proportion to firm size. Contrary to what might have been expected, smaller firms finance a significantly greater portion of their assets using operating leases. While the public focus has been on how some large firms in the retail industry will be impacted, this study has revealed that the significant increases in assets and liabilities will occur among the smaller firms.

The majority of firms and industries within our sample will be significantly affected by the proposed change in the leasing standard. Chart 1 shows the frequency distribution for the percentage increase in liabilities of the 4,672 firms in our sample. It shows that over 200 firms will experience a liability increase of 100% or more and that over half the firms will experience an increase of over 5% in their liabilities. Thus, the impact of the rule change is wide-reaching and significant. Now we know that smaller firms will not only be affected—they will experience a bigger relative increase in liabilities than the larger firms.

**CHART 1**
**Number of Firms and Percentage Increase in Total Liabilities From Capitalizing Operating Leases at 5% Firms and Increase in Liabilities**



## REFERENCES

Beattie, V., Edwards, K., and Goodacre, A. (1998). The Impact of Constructive Operating Lease Capitalization on Key Accounting Ratios. *Accounting and Business Research* 28: 233-254.

Bennet, B. K. and Bradbury, M. E. (2003). Capitalizing Non-Cancelable Operating Leases. *Journal of International Financial Management and Accounting* 14: 101-114

Bryan, S., Lilien, S., and Martin, D. (2010). The Financial Statement Effects of Capitalizing Operating Leases. *The CPA Journal* August 2010: 36 – 41.

Financial Accounting Standards Board. Proposed Accounting Standards Update, Leases (Topic 840), (August 17, 2010).

Fülbier, R. U., Silva, J. L., and Pferdehirt, M. H. (2008). Impact of Lease Capitalization on Financial Ratios of Listed German Companies. *Schmalenbach Business Review* 60: 122-144.

Imhoff, E. A., Lipe, R. C., and Wright, D. W. (1991). Operating Leases: Impact of Constructive Capitalization. *Accounting Horizons* 5: 51-63.

Imhoff, E. A., Lipe, R. C., and Wright, D. W. (1993). The Effects of Recognition versus Disclosure on Shareholder Risk and Executive Compensation. *Journal of Accounting, Auditing, and Finance* Vol. 8, Issue 4:335-368.

Kostolansky, J. and Stanko, B. (2011). *The Joint FASB/IASB Lease Project: Discussion and Industry Implications*. Journal of Business and Economics Research Vol. 9, Number 9: 29 – 36.

Kostolansky, J., Altschuler, D. and Stanko, B. (2012). *Financial Reporting Impact of the Operating Lease Classification*. Journal of Applied Business Research Vol. 28, Number 6:1509-1513.

Mulford, Charles W. (2007). The Effects of Lease Capitalization on Various Financial Measures: An Analysis of the Retail Industry. *Georgia Tech Financial Analysis Lab*.

# CHARACTERISTICS OF LARGE ACCELERATED FILERS WITH INTERNAL CONTROL WEAKNESSES

**Yousef Jahmani, Savannah State University**
**William A. Dowling, Savannah State University**

## ABSTRACT

*In this paper, we examine a sample of large accelerated filers (experimental group) with internal control weaknesses to identify the characteristics of these firms. We matched the sample with firms with good internal control from the same sectors. These firms are required to report on effective of their internal control. Data for these firms were collected for the 2007 and 2008 Six variable were tested; firm's size as measured by total assets, return on assets, debt/equity ratio, restructuring, number of segments and revenue growth. ANOVA and logistic regression techniques were used. The results show that large accelerate filers with internal control weaknesses are smaller and less profitable. When firms with severe internal control weaknesses (experimental) segregated and tested against control group, the results show that experimental group are smaller, less profitable and to some extent have more segments.*

*Key words: internal control weaknesses, Large accelerated filers, Sarbanes-Oxley Act,*

## INTRODUCTION:

Sarbanes-Oxley of 2002 (SOX) imposed several requirements on public companies among them the establishment of effective internal control. Recognizing the difficulty of compliance with the requirement, its implementation was postponed by the Securities and Exchange Commission (SEC) more than one time. For the purpose of filing, the SEC classified companies as small firms, non-accelerated filers and accelerated filers. In December 2005, the SEC created new category called "large accelerated filers" which was generally defined as companies with a worldwide market value of outstanding voting and non-voting common equity held by non-affiliates of at least 700 million dollars. Large accelerated filers are required establish effective internal control and to report on it for the fiscal year ending on or after December 15, 2006 under Section 302 and Section 404 of SOX (Leech, 2003).

According to the Committee of Sponsoring Organization (COSO) of the Treadway Commission, internal control is "a process affected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives" (COSO, 1992).

Public Company Accounting Oversight Board in its Auditing Standard No. 2 identifies three types of control deficiencies. These are:

A control deficiency exists when the design or operation of a control does not allow management or employees, in the normal course of their performing assigned functions, to prevent or detect misstatements on a timely basis (AS No. 2 paragraph 8).

A significant deficiency is a control deficiency or combination of control deficiencies that adversely affects the entity's ability to initiate, authorize, record, process, or report external financial data reliably in accordance with generally accepted accounting principles such that there is more than a remote likelihood that a misstatement of the company's annual or interim financial statement that is more than inconsequential will not be prevented or detected (AS No. 2 paragraph 9).

A material weakness in the internal control is a significant deficiency or combination of significant deficiencies that results in more than likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected (AS No. 2 paragraph 10).

In this paper, we only focus on the last type that is material weakness.

Effective internal control helps companies in providing reliable financial statements, safeguarding the company's assets, promoting efficient operations, and complying with laws and regulations.

Ashbaugh-Skaife *it al.* (2006) examined the determinants of internal control deficiencies prior to the SOX mandated audits. They found that firms with internal control deficiencies tended to be complex, were more often engaged in mergers and takeover, held more inventory and were fast growing. Kinney and McDaniel (1989); Doyle, Ge, and McVay (2007b); and Ashbaugh-Skaife, Collins, and Kinney (2007) point out that weak internal controls are likely to increase the probability of material errors in accounting disclosures and/or lead to low quality accounting accruals from intentional earnings management and unintentional accounting errors. Previous research used samples of firms that either disclosed material deficiency prior to the Section 404 required mandatory disclosure, Ashbaugh-Skaife, Collins, and Kinney (2007) or that disclosed material weaknesses during 404 mandatory disclosures Doyle, Ge, and McVay (2007a).

This research uses a sample of firms that disclosed internal control weakness after it became mandatory. Therefore, the purpose of the paper is to examine the characteristics of the large accelerated filer with internal control weaknesses. The Remainder of this paper is organized as follows, the next section covers related literature and Securities and Exchange Commission (SEC) firms classifications, section three covers hypothesis development and sample selection section four results analysis and finally summary and conclusion.

## RELATED LITERATURE

Bryan and Lilien (2005) attempted to identify the characteristics of firms declaring a material deficiency and to determine the effects of the declaration of a material deficiency on the firm's stock price in the interval around and on the date of disclosure. The researchers identified a sample of 161 firms across 19 industrial categories that declared the existence of a material deficiency. Bryan and Lilen found that within their industry categories firms that had declared a material deficiency were smaller, weaker and had higher equity risk (betas) relative to the mean values within the industry. Interestingly Bryan and Lilien (2005) found that there was significant price variation in the three-day period around the announcement of the material deficiency (two days prior to the announcement and including the date of the announcement). Returns for the day of the announcement were significantly negative however the returns for the three day period were not significantly different from zero. Particularly relevant to this study, Bryan and Lilen found that in the case examined the existence of earnings management on the part of the firm. Specifically, they found that the market responded to "guidance" on the part of the firm through the provision of pro forma earnings in setting market expectations rather than the announcement of material deficiencies. The authors concluded that since the market responded to firm originated guidance rather than declared material deficiencies and restated earnings, the provision of guidance was evidence of earnings management on the part of the firm.

Doyle, Ge and McVay (2007a) also examined the simultaneity of material weaknesses and firm attributes. The firm characteristics studied were size, age, financial health, financial reporting complexity, number of reported segments and existence of foreign currency transactions, rapid growth (merger and acquisition as well as sales growth), restructuring charges and corporate governance. Their sample included 970 firms that reported at least one material weakness in the August 2002 to August 2005 interval. Doyle et al. (2007a) found that the presence of at least one material weakness was negatively associated with the characteristics of size, age, and financial strength. The presence of a material weakness was found to be positively associated with complexity, growth and the existence of and scale of restructuring charges. The research also categorized material weaknesses into account–specific weaknesses and company-level weaknesses. Those firms with account-specific weaknesses were found to be larger, older and in better financial health than those reporting company-level weaknesses. Additionally firms with account-specific weaknesses tended to have higher rates of growth and were more segmented. Those firms reporting account-specific weakness with respect to complexity (segmentation) were larger, older and financially weaker than the average Compustat firm. Whereas firms with company-level weaknesses were said to be deficit in the resources and/or experience necessary to maintain effective control systems. For the latter group, Doyle *et al* (2007a) found that these firms were younger, smaller and financially weaker and reported losses more often than those reporting account-specific weaknesses.

Our paper defers from Doyle *et al*. (2007a) paper in three ways. First, their sample represents all companies that are required to file 10-Ks with the SEC. These include large accelerated filers, accelerated filers, non-accelerated filers, and small companies. Our sample consists only of large accelerated filers. Given that establishing and maintaining internal control is costly, large accelerated filers are assumed to have enough resources to establish and maintain effective internal control while smaller firms have no such advantage. Doyle *et el*. (2007a) find that firms with internal control weaknesses are more likely to be smaller, less profitable, more complex, growing rapidly, or undergoing restructuring. It is possible that large accelerated filers have different determinants of internal control weaknesses or some of the determinants found by Doyle *et al*. (2007a) are not valid for this group under consideration. Second, Doyle *et al*. (2007a) selected their sample from firms disclosing weaknesses in their internal control during the period from August 2002 to August 2005. During this period, the SEC extended the implementation of internal control requirements to November 15, 2004 for large accelerated filers and accelerated filers while for non-accelerated filers and small firms were deferred to later dates. In the population used by Doyle *et al.* (2007a), most of the firms identified as having internal control weaknesses voluntarily disclosed such information raising the issue of self-selection. Finally, the majority of the firms had little or no experience in establishing and maintaining effective internal control. Where such is the case, internal control weaknesses maybe attributed to the lack of experience. Our sample represents firms disclosing internal control weaknesses from January 2006 to January 2008. It is assumed that all firms have acquired the necessary experience prior to this period.

In the following section we present several hypotheses that we intend to test along with a brief explanation. Firms that experience substantial increases in revenues in a short period of time may need adjustments to sustain the unexpected increase in revenue. The adjustments may include increases in personnel, modification and adjustment of processes, and adjustment of and changes in technology to meet the increased demand on a timely basis. All such changes imply a need for increased managerial control. Some firms have ignored this fact and have even overridden or ignored existing controls. Kinney and McDaniel, (1990), Stice (1991), and Ashbaugh-Skaife, *et al*. (2007) indicated that fast growing firms may outgrow their existing controls and may take time to establish new and better controls. In order to establish and implement new and more effective controls additional personnel, processes, and technology are required. Therefore, our first hypothesis is:

H1: *Firms that experience sudden increases in their revenues tend to have internal control weaknesses.*

The establishment of effective of internal controls as stipulated by SOX Sections 302 and 404, requires additional resources to implement. It is assumed that large firms, whether measured by market capitalization or total assets, are more likely to have the resources, expertise and technology, and to enjoy economies of scale and can therefore, more likely satisfy SOX

requirements. In contrast, smaller firms are more likely to lack these necessary components to mobilize to fulfil the requirements of SOX Sections 302 & 404. Therefore, among those firms categorized the large accelerated filers, we expect the smaller firms within this group to have weak internal controls vis-a-vis the larger firms. Namely, we expect the lower layer smaller firms to have weaknesses in their internal control. Hence, our second hypothesis is:

H2: *Small firms within large accelerated filers' category tend to have internal control weakness.*

All firms operate in a dynamic environment and need to adapt by continually restructuring their operations to improve efficiency and reduce their costs with the goal of being able to more effectively compete in the market. Consequently, they may be required to eliminate unnecessary and unprofitable operations, departments, terminate employees, dispose of groups of assets or segments, and/or acquire new subsidiaries. These changes may not be accompanied simultaneously by the required changes in appropriate controls. Moreover, such restructuring may also require a firm to make complex estimates of accruals and adjustments (Dechow and Ge 2006). Thus, a consequence of restructuring may be that some processes are without controls or that the existing controls may become ineffective. Thus we posit the following:

H3: *Firms that restructure their operations are expected to have weakness in their internal control.*

The total debt/equity ratio is a measure of the relative proportions of shareholder's equity and debt used to finance a firm's assets. The mean value of the ratio differs from industry to industry but in general it should be less than 1, although though for capital intensive industry like auto industry it may reach 2. A high debt/equity ratio generally means that a company has an aggressive financing policy (high degrees of financial leverage). High financial leverage may lead to volatile earnings as a result of modest change in revenue. For short-term debt, a firm has to satisfy its obligations from current assets. For long-term debt, the firm has to pay periodic interest and the principal when it becomes due. If firms have a high debt/equity ratio, they may need to find and mobilize the majority of their resources to meet these obligations leaving little or nothing to meet other needs including those necessary for effective internal control. This is the basis of our fourth hypothesis:

H4: *Firms that have high debt/equity ratio tend to have weak internal control*

Profitability is a necessary condition for survival. Increasing profits provide firms with more resources to devote to meeting its needs including the allocation of resources necessary for effective internal control. If a firm incurs loss or if its rate of return is very low, it will have limited its ability to mobilize resources to establish good internal controls. DeFord and Jiambalvo (1991) finds that financial reporting errors are negatively associated with firm's performance while Krishnan (2005) finds that the existence of a loss is positively associated with

weak internal control in firms that change auditors. Therefore, we expect that firms with a low rate of return (ROA) on assets where ROA as a measure of financial health, to have weaknesses in their internal control. This is captured in our fifth hypothesis:

H5: *Firms with low or negative rate of return on assets compared with other firms tend to have weaknesses in their internal control.*

It is easier for a single segment firm to establish and monitor internal controls than it is for a multi-segmented firm. These multi-segmented firms have need for sophisticated internal control systems. The more segmented a firm has, regardless of the basis for segmentation ( geographical or line of business), the more difficulties the firm will have in consolidating information for financial statements, as some segments or divisions may well operate in different institutional and legal environments. Thus, it is more likely that firms with multi-segments will have weak internal control. Thus, our sixth and final hypothesis is:

H6: *Firms with more segments tend to have weak internal control.*

## SAMPLE SELECTION AND METHOD OF ANALYSIS

The Securities and Exchange Commission (SEC) categorizes firms that are required to file 10-Ks, into four categories based on firm size: large accelerated, accelerated, non-accelerated, and small reporting companies. Both accelerated filers and large accelerated filers are required to file a report on the effectiveness of their internal controls and provide control attestation of their 10-K. Large accelerated filers must file their annual reports on Form 10-K within 75 days for fiscal years ending before December 15, 2006 and 60 days for fiscal years ending on or after December 15, 2006. Beginning with fiscal years ending on or after November 15, 2004 the Management Report and the Control Attestation were to become a part of that annual report.

Large accelerated filers generally include companies with an aggregate market value of voting and non-voting common equity held by non-affiliates of the issuer (referred to as "public float") of more than $700 million as of the last business day of the issuer's most recently completed second fiscal quarter. The definition of a large accelerated filer is based, in part, on the requirements for registration of primary offerings for cash on Form S-3. Previous researchers selected their samples from companies across all four categories. Since the small firms and non-accelerated filers were not required to report on the effectiveness of their internal controls during the period under consideration, they were excluded from our sample. Accelerated filers, on the other hand, have fewer resources than large accelerated filers and there is a question as to whether or not they will be able to maintain effective internal controls. Therefore, in the current research the authors chose large accelerated filers as their population of interest.

Sample selection consists of two phases; first the database search; and second, the screening process of the 10-Ks. The Accounting Research Manager is the database used to search for companies with internal control weaknesses. The database contains 1851 companies identified as large accelerated filers. The authors searched the database for large accelerated filers with material weaknesses disclosed in their 10-Ks between January, 2006 and January, 2008. This period was chosen for two reasons; first to avoid the recession period as a confounding variable; and second, the earlier period was excluded on the assumption that during that period these companies would not have sufficient experience to maintain effective internal controls. Three terms were used to search the database; "material weaknesses", "a deficiency or a combination of deficiencies" and "adverse opinion". The first two terms produced mixed results while the third one resulted in 183 firms that had the term in their 10-Ks.

Phase two began by individually screening each 10-K, specifically the management report on internal controls and the auditor opinion on effectiveness on internal controls. The final sample consists of 96 companies that disclosed material weaknesses in their 10-K and management report. Other companies had either effective internal control, were duplicates, lack sufficient data or were late in filing their previous 10-Ks in the period under consideration. Table 1 shows the distribution of these companies across each business sector. It is worth noting that more than one third of the experimental group comes from the technology sector. This finding is consistent with previous research (Bulkeley *et. al*, 2005). It may be difficult for technology firms to establish and monitor good internal control due to the fact that most of the controls in these firms are invisible. If some controls are either missing or are ineffective, they will not be detected. It is noteworthy that approximately 99% of both experimental and control groups were audited by big four.

Table 2 classifies the firms according to the type of internal control weaknesses. It is noteworthy that one third of these firms have weaknesses at the company level or in revenue recognition process. Anderson & Yohn (2002) argue that revenue recognition may be perceived by investors to be more intentional than restatements related to expense items. Firms appear to manage their earnings through the manipulation of revenue recognition. Dole *et. al*. (2007a) finds that firms with financial difficulty might decide to have internal control weaknesses over revenue recognition to be able to manage earnings. The same conclusion might apply to firms with internal control weakness at the firm level.

**Table 1**
**Distribution of firms to different sector**

| Sector | Experimental | Control | Sector | Experimental | Control |
|---|---|---|---|---|---|
| Basic material | 6 | 6 | Service | 13 | 13 |
| Consumer goods | 8 | 8 | Tech | 33 | 33 |
| Healthcare | 19 | 19 | Utilities | 5 | 5 |
| Industrial goods | 13 | 13 | | | |
| Total | | | | | 97 |

| Table 2<br>Classification of Firms according to their type of weaknesses | | | | | |
|---|---|---|---|---|---|
| Type of Weakness | No | %* | Type of Weakness | No | % |
| Revenue Recognition | 10 | 10.3 | Stock compensation | 18 | 18.5 |
| Control environment | 23 | 23.7 | Complex transactions | 25 | 25.7 |
| Tax | 42 | 43.3 | Segregation of duties | 8 | 8.2 |
| Trained Personnel | 30 | 31 | Other accounts | 28 | 28.8 |
| **Many firms have more than one type of weakness; therefore the number of firms and the percentage are more than 97 and 100% respectively.* | | | | | |

The control group with effective internal controls was obtained to match the same number from each sector in the experimental group. We used the term "large accelerated filers" to search for control group. As we mentioned above, the database has annual reports for 1851 large accelerated filers. The auditor's reports included in these annual reports were used to identify the firms that received unqualified opinion for their internal control. The second step was to collect the same number of firms in each sector to match the experimental group. Once this requirement was satisfied, we collected the same variables collected for experimental group. Thus, the final sample includes 97 companies with strong or effective internal controls that represent the control group and 97 companies with weak or ineffective internal controls that comprise the experimental group.

We obtained the firms' data on the following: total assets for the year of disclosure, and total revenues for the year of disclosure and previous year, and the number of business segments. Return on assets was computed by obtaining net income for disclosure year scaled by average total assets. Restructuring charges were scaled by total assets for the same year, the ratio reflecting the size of restructuring. The debt/equity ratio was computed for the same year. We also collected income from operations and cash flows from operating activities adjusted for extraordinary items for both experimental and control groups. All these variables were obtained from 10-Ks of both experimental and control groups. Tables (1, & 2) show sector classification, and type of internal control weaknesses for both experimental and control groups.

## EMPIRICAL RESULTS OF ONE-WAY ANOVA TEST

Table 3 presents the descriptive statistics for both the experimental and control groups. The mean value for total assets for the experimental group is approximately $5 billion compared to the approximate $17 billion value for the control group. Clearly firms with internal controls weaknesses tend to be much smaller than firms with good internal controls.

The mean value for the return on total assets for the experimental group is 4.51% relative to 7.29% for the control group. This illustrates that the experimental group is less profitable than the control group. The difference in mean values for the other variables is much less striking.

Table 4 presents the Levene Test of Homogeneity of Variance. The assumption for homogeneity of variance for the return on total assets, the debt/equity ratio, restructuring, the number of segments and the change in sales revenue is valid. The level of significance is greater than 5% for each of them with the exception of total assets. However, both the Welch and the Brown-Forsythe test show that the means for both total assets and the return on assets variables are different for our experimental and control groups.

**Table 3**
**Descriptive Statistics for both Experimental and Control Groups**

| | | N | Mean (000) | Std. Deviation (000) | Std Error (000) | 95% Confidence Interval for Mean Lower Bound (000) |
|---|---|---|---|---|---|---|
| Assets | .00 | 97 | 17276095 | 29695295 | 3015100 | 11291168 |
| | 1.00 | 97 | 5273082 | 9408127 | 955251 | 3376925 |
| | Total | 194 | 11274589 | 22778337 | 1635389 | 8049059 |
| RetOnAssets | .00 | 97 | .0729 | .05336 | .00542 | .0622 |
| | 1.00 | 97 | .0451 | .08323 | .00845 | .0283 |
| | Total | 194 | .0590 | .07111 | .00511 | .0489 |
| DebtEquity | .00 | 97 | 1.7226 | 4.06341 | .41258 | .9037 |
| | 1.00 | 97 | 1.6353 | 2.68929 | .27306 | 1.0933 |
| | Total | 194 | 1.6790 | 3.43689 | .24675 | 1.1923 |
| Restructuring | .00 | 97 | .0026 | .00669 | .00068 | .0013 |
| | 1.00 | 97 | .0028 | .00645 | .00066 | .0015 |
| | Total | 194 | .0027 | .00656 | .00047 | .0018 |
| Segments | .00 | 97 | 3.1959 | 2.06478 | .20965 | 2.7797 |
| | 1.00 | 97 | 2.7938 | 1.85931 | .18878 | 2.4191 |
| | Total | 194 | 2.9948 | 1.96998 | .14144 | 2.7159 |
| ChaneInSale | .00 | 97 | .1739 | .24045 | .02441 | .1254 |
| | 1.00 | 97 | .1945 | .30275 | .03074 | .1335 |
| | Total | 194 | .1842 | .27287 | .01959 | .1456 |

**Table 4**
**Test of Homogeneity of Variances**

| | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|
| Assets | 27.937 | 1 | 192 | .000 |
| RetOnAssets | 1.127 | 1 | 192 | .290 |
| DebtEquity | .047 | 1 | 192 | .828 |
| Restructuring | .011 | 1 | 192 | .917 |
| Segments | .013 | 1 | 192 | .909 |
| ChaneInSale | .847 | 1 | 192 | .358 |

The results of one way ANOVA support our prediction of mean differences for only the total assets and the return on total assets variables. Table 5 shows the results of ANOVA tests. The F test for both total assets and the return on total assets are significant with an F (1, 192) =14.402, *P=.00*, for total assets and an F (1, 192) = 7.689, *P= 00*, for the return on total assets. The F-tests for the debt/equity ratio, restructuring, number of segments and change in sales revenue are found to be not significant.

**Table 5**
**ANOVA Results for both Experimental and Control Groups**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assets | Between Groups | 6987507020152607 | 1 | 6987507020152607 | 14.402 | .000 |
| | Within Groups | 93151049618032400 | 192 | 485161716760585 | | |
| | Total | 100138556638185008 | 193 | | | |
| RetOnAssets | Between Groups | .038 | 1 | .038 | 7.689 | .006 |
| | Within Groups | .938 | 192 | .005 | | |
| | Total | .976 | 193 | | | |
| DebtEquity | Between Groups | .370 | 1 | .370 | .031 | .860 |
| | Within Groups | 2279.383 | 192 | 11.872 | | |
| | Total | 2279.753 | 193 | | | |
| Restructuring | Between Groups | .000 | 1 | .000 | .035 | .851 |
| | Within Groups | .008 | 192 | .000 | | |
| | Total | .008 | 193 | | | |
| Segments | Between Groups | 7.840 | 1 | 7.840 | 2.031 | .156 |
| | Within Groups | 741.155 | 192 | 3.860 | | |
| | Total | 748.995 | 193 | | | |
| ChaneInSale | Between Groups | .021 | 1 | .021 | .276 | .600 |
| | Within Groups | 14.350 | 192 | .075 | | |
| | Total | 14.370 | 193 | | | |

**Table 6**
**Robust Tests of Equality of Means**

| | | Statistic[a] | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| Assets | Welch | 14.402 | 1 | 115.080 | .000 |
| | Brown-Forsythe | 14.402 | 1 | 115.080 | .000 |
| RetOnAssets | Welch | 7.689 | 1 | 163.519 | .006 |
| | Brown-Forsythe | 7.689 | 1 | 163.519 | .006 |
| DebtEquity | Welch | .031 | 1 | 166.562 | .860 |
| | Brown-Forsythe | .031 | 1 | 166.562 | .860 |
| Restructuring | Welch | .035 | 1 | 191.745 | .851 |
| | Brown-Forsythe | .035 | 1 | 191.745 | .851 |
| Segments | Welch | 2.031 | 1 | 189.929 | .156 |
| | Brown-Forsythe | 2.031 | 1 | 189.929 | .156 |
| ChaneInSale | Welch | .276 | 1 | 182.637 | .600 |
| | Brown-Forsythe | .276 | 1 | 182.637 | .600 |

## LOGISTIC REGRESSION

The results of logistic regression reinforce the results of ANOVA. The mean differences in total assets and the return on total assets variables are significant. The Wald test for the difference in total assets means is 9.67 and *P=00* and for the difference in return on total assets variables is 6.30 and *P*=01 while the Wald tests for the mean difference in the remaining variables are not significant (Table 7).

**Table 7**
**Variables in the Equation**

| | | B | S.E. | Wald | df | Sig. | Exp(B) |
|---|---|---|---|---|---|---|---|
| Step 1[a] | Assets | .000 | .000 | 9.686 | 1 | .002 | 1.000 |
| | RetOnAssets | -6.593 | 2.627 | 6.298 | 1 | .012 | .001 |
| | DebtEquity | -.008 | .044 | .036 | 1 | .850 | .992 |
| | Restructuring | 4.997 | 23.768 | .044 | 1 | .833 | 148.014 |
| | Segments | -.037 | .082 | .206 | 1 | .650 | .964 |
| | ChaneInSale | .293 | .574 | .261 | 1 | .609 | 1.341 |
| | Constant | .872 | .356 | 5.992 | 1 | .014 | 2.391 |

a. Variable(s) entered on step 1: Assets, RetOnAssets, DebtEquity, Restructuring, Segments, ChaneInSale.

The Omnibus tests of the model coefficients are significant*, P=00.* The Chi-square of Hosmer-Lemeshow goodness of fit is 10.27 and *P*=0.25. Both the Omnibus and Hosmer-Lemeshow test results support the model (Table 8).

**Table 8**
**Omnibus Tests of Model Coefficients & Hosmer and Lemeshow Test**

| Step 1 | Chi-square | df | Sig. |
|---|---|---|---|
| Step | 28.622 | 6 | .000 |
| Block | 28.622 | 6 | .000 |
| Model | 28.622 | 6 | .000 |
| Hosmer and Lemeshow Test | | | |
| Step | Chi-square | df | Sig. |
| 1 | 10.267 | 8 | .183 |

**Table 9**
**Test of Homogeneity of Variances**

| | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|
| Assets | 7.884 | 1 | 128 | .006 |
| ResOnAssets | .001 | 1 | 128 | .980 |
| DebtEquity | .303 | 1 | 128 | .583 |
| Restructuring | .027 | 1 | 128 | .870 |
| Segments | .025 | 1 | 128 | .876 |
| ChaneInSale | 7.498 | 1 | 128 | .007 |

ANOVA statistics were computed for firms with severe internal control weaknesses – lack control over revenue recognition or/and at the firm level- and for control group. As was the case with the logistic model, the F-tests for total assets, the return on assets and to some extent the number of segment are significant. However, the F-test for number of segments is not robust, as it value was 0.09 (Table 10). The lack of significance of the number of segments variable might be attributed to the fact that the FASB limited the maximum number of segment to be disclosed to ten.

Large accelerated filers vary widely in size as measured by total assets. It is assumed that larger accelerated companies tend to have access to additional resources and have a well-developed infrastructure that enables them to establish effective internal controls. This premise as the results indicate can be applied to the larger firms but not for smaller firms in the large accelerated filer category. Not unexpectedly, the costs of effective internal control for firms with more transactions, more segments, more customers, more foreign transactions and investments are higher than the costs for other firms lacking these attributes. These results show that smaller firms of the large accelerated filers' category lack sufficient resources and may have not as well-developed infrastructure relative to the larger firms. The combination of insufficient resources and less-developed infrastructure may well preclude the smaller firms from establishing good internal control. The larger accelerated filers in this category are more likely to enjoy economies of scale and scope along with the additional resources that make it easier to develop the procedures and policies such as segregation of duties that are necessary for good internal control.

**Table 10**
**ANOVA**

| | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Assets | Between Groups | 3077234048262900.500 | 1 | 3077234048262900.500 | 4.380 | .038 |
| | Within Groups | 89932657186954080.000 | 128 | 702598884273078.800 | | |
| | Total | 93009891235216976.000 | 129 | | | |
| ResOnAssets | Between Groups | .044 | 1 | .044 | 15.628 | .000 |
| | Within Groups | .364 | 128 | .003 | | |
| | Total | .409 | 129 | | | |
| DebtEquity | Between Groups | 6.922 | 1 | 6.922 | .447 | .505 |
| | Within Groups | 1981.476 | 128 | 15.480 | | |
| | Total | 1988.398 | 129 | | | |
| Restructuring | Between Groups | .000 | 1 | .000 | .113 | .738 |
| | Within Groups | .007 | 128 | .000 | | |
| | Total | .007 | 129 | | | |
| Segments | Between Groups | 12.448 | 1 | 12.448 | 2.987 | .086 |
| | Within Groups | 533.521 | 128 | 4.168 | | |
| | Total | 545.969 | 129 | | | |
| ChaneInSale | Between Groups | .183 | 1 | .183 | 1.990 | .161 |
| | Within Groups | 11.747 | 128 | .092 | | |
| | Total | 11.930 | 129 | | | |

Additionally our research reveals that profitability is an important factor in determining the existence of internal control weaknesses. If a firm is profitable, it has the necessary resources to devote to establishing and maintaining effective internal control. Unlike the less profitable firms or those that incur losses. These firms may not be able to establish or maintain good internal control due to the lack of resources. More over these firms may find that they are willing to relax some controls thus enabling them to manage their earnings in order to meet financial analysts' expectations, achieve a desired profit level, or renew their contracts and/or achieve bonuses.

Comparing the results of this research with those of Doyle, *et al.* (2007a), we find that our results strongly re-enforce their results with respect to firm's size and profitability and to some lesser extent more segments. Thus large accelerated filers are able to sustain rapid growth, meet their obligations and restructure without disruption on their internal control.

## SUMMARY AND CONCLUSION:

The Sarbanes Oxley Act of 2002 requires all public firms to establish and maintain effective internal control over financial reporting and to disclose any material weaknesses. The SEC classified these firms with respect to filing dates into four categories: small, non-accelerated filers, accelerated filers and large accelerated filers. Large accelerated filers are assumed to have well developed infrastructure and sufficient resources to devote to establishing and maintaining effective internal control. In this paper, we tested a sample of large accelerated filers matched with a sample of firms with strong internal control to identify the determinants of internal control weaknesses. Using ANOVA and logistic techniques, six variables were tested. These were total assets, change in revenue, number of segments, return on assets, debt-equity ratio and those that undergo restructuring. The results indicate that total assets and return on assets are significant in determining the internal control weakness. When the tests were run for a subsample with severe weaknesses in their internal control against the control group, profitability, total assets and the number of segments variables were significant though the number of segments was not robust.

The major limitation to the research is that these results may be specific to large accelerated filers only. Other categories of firms may have different determinants. These firms may have different characteristics depending on the resources available for internal control.

Another limitation is that we have used only financial variables in our model. This notwithstanding, our findings are important as they carry significant informational value for regulators, financial statement users, and auditors. That is, less profitable firms and/or small size of firms in the category of large accelerated filers tends to have weak internal control. Therefore, their financial statements may not be reliable. As a result, regulators may scrutinize the financial statements of these firms for possible intentional errors. The findings of this research may also alert financial statements users of the low quality of earnings of these firms. Auditors may

expand their substantive tests to collect more and larger samples and carry the tests at different point of times.

## REFERENCES


Anderson, Kristen L. and Teri Lombardi Yohn, (2002). "The effect 10-K restatements on firm value, information asymmetries, and investor reliance on earnings." Georgetown University. Washington D.C., Working paper.

Ashbaugh-Skaife, H., Collins, D., and Kinney, W. (2007). The discovery and reporting of internal control deficiencies prior to SOX-mandated audits." *Journal of Accounting and Economics*, Volume 44, issue 1-2. PP 16-192.

Bryan, S. and Lilien, S. (2005). "Characteristics of firms with material weaknesses in internal control: An assessment of Section 404 of Sarbanes Oxley". Wake Forest University and City University of New York. Working paper.

Bulkeley, William, M. and Robert Tomsho. (2005). "Kodak to Get Auditors' Adverse View." Wall Street journal, January 27, p 7.

The Committee of Sponsoring Organization (COSO), (1992). Internal Control— Integrated Framework.

Dechow, P.M., and W. Ge. 2006. "The persistence of earnings and cash flows and the role of special items: Implications for the accrual anomaly*." Review of Accounting Studies*, Vol.11, pp. 253-296

DeFond, M., Jiambalvo, J., (1991). "Incidence and circumstances of accounting errors." *The Accounting Review* vol. 66, issue 3, 643-655.

Doyle, J., Ge, W. and McVay, S. (2007a). "Determinants of weaknesses in internal control over financial reporting and the implications for earnings quality." *Journal of Accounting & Economics* (JAE), September. Vol. 44, pp.193-223.

Doyle, J., Ge, W. and McVay, S.. (2007b). "Accruals quality and internal control over financial reporting." *The Accounting Review*, Vol. 82, pp. 1141-1170, October 2007

Eldridge, Susan W. and Kealey T. Burch, (2005). Sox costs: auditor attestation under Section 404, University of Nebraska at Omaha, Working paper.

Kinney, W.R., Jr. and McDaniel, L. (1989). "Characteristics of firms correcting previously reported quarterly earnings." *Journal of Accounting & Economics* 11, 71-93.

Krishnan, Gopal V. and Gnanakumar Visvanathan, (2007). "Reporting internal control deficiency in post-Sarbanes-Oxley era: The role of auditors and corporate governance." *International Journal of Auditing,* Vol. 11, pp. 73-90

Leech, Tim (2003). "Sarbanes-Oxley Sections 302 & 404: A White Paper Proposing Practical, Cost Effective Compliance Strategies" http://www.sec.gov/rules/proposed /s74002/card941503.pdf

Public Company Accounting Oversight Board (PCAOB), (2004). "Auditing Standard No. 2 – An audit of internal control over financial reporting performed in conjunction with an audit of financial statements". PCAOB. March 9.

Securities and Exchange Commission (SEC). (2005b). "SEC votes to propose changes in filing deadlines and accelerated filer definition; postpone 404 compliance date for non-accelerated filers; propose issuing Section 28(e) Interpretive Guidance." Press Release 2005-134, September 21.

Stice, J. 1991. "Using financial and market information to identify pre-engagement factors associated with lawsuits against auditors." *The Accounting Review* 66 (3), 516-33.

The Senate and House of Representatives of the United States of America (U.S. Congress). 2002. Sarbanes-Oxley Act of 2002. Public Law 107-204, 107th Congress.

# AN ANALYSIS OF CHARACTERISTICS OF LARGE CROSS-BORDER MERGERS AND ACQUISITIONS

**Madhvi Sethi, Symbiosis International University**
**Dipali Krishnakumar, Symbiosis International University**

## ABSTRACT

*This study investigates large cross border deals above USD 1 billion during the 2000 to 2011 time frame to explore whether deal values, valuation multiples and payment modes differ for acquisitions by emerging market firms when compared with acquisitions by developed market acquirers; and for diversified acquisitions vis-à-vis non diversified acquisitions. The impact of recession on deal values, valuation multiples and payment modes has also been analyzed.*

*The study finds that mean deal values differ with the economy of the acquirer and target (emerging market/developed market). Valuation multiples are impacted by whether the acquirers are from developed or emerging economies and for diversified v/s same industry deals. Valuation multiples are not influenced by recession. Payment is more likely to be in the form of stock for larger deals, same industry deals and for deals where the target is from a developed economy.*

*There are several research studies which have looked at characteristics of acquirers, targets and market reactions to acquisition announcements; others have researched valuation multiples and premiums paid. However, understanding emerging market firms' deal characteristics vis-à-vis developed market firm's deals and understanding the impact of recession on deal characteristics raises a significant research question which is explored in this paper. These findings provide interesting insights for internationalization of firms and inputs in the deal structuring and negotiation process.*

## INTRODUCTION

International expansion via cross border acquisitions has grown to play an important role in the strategic choices of firms worldwide. Initially acquirers were from developed markets and they targeted both developed and emerging market firms. The scenario has changed over the last decade with acquirers from both emerging and developed markets playing a prominent role in the cross border acquisition market. Acquisitions by emerging market firms have grown from a meager 2% of worldwide cross border deal volumes in 1999 to 29% of worldwide cross border deal values in 2010. The entry of emerging market acquirers has brought it with some interesting dynamics in the acquisition market which are explored.

This study falls under the theoretical framework of internationalization strategies. Firms may choose to grow organically by participating in international resource and product markets or they might choose to grow inorganically through international expansion using merger and acquisition strategies. Such strategies might be driven by motives like gaining access to, and internalizing, strategic resources. The study investigates the differences in the characteristics of deals if the acquirer target countries differ in terms of development and hence provide a broad framework within which such differences might impact the payment modes.

Four aspects of internationalization strategies are explored in this study, using data on large cross border deals during the 2000 to 2011 time frame. Firstly, it explores whether deal characteristics, namely deal values, valuation multiples and payment modes (cash/stock) differ with the economy of the acquirer and target firm. Rossi and Volpin (2004), argue that premiums are higher for firms from countries where the volume of transactions and the degree of competition is higher and the shareholder protection regime is stricter. The sample includes deals which belong to developed as well as emerging economies, it is hypothesized that deal value, valuation multiples and payment modes for each acquirer target country pair will show significant differences due to differences in financial systems, shareholder protection regimes and regulations. The study finds that mean deal values differ with the economy of the acquirer and target (emerging market/developed market) with higher deal value found in the case of developed market acquirer and targets. Valuation multiples are impacted by whether the acquirers are from developed or emerging economies. This is seen from the result that there is a significant difference in the net income multiple compared across acquirer target pairs where the acquirers in the pairs come from different economies (developed or emerging).

The differences in the deal characteristics might change because of economic conditions like recession. Aguiar and Gopinath (2005) study mergers and acquisitions during financial crisis and find evidence for increase in foreign direct investment during the crisis. Acharya, Shin and Yorulamazer (2007) create an empirical model that proposes that distressed firms are acquired at "fire sale" prices during recession. These motivate the authors to study the impact of recession on deal characteristics. The data period allows the authors to explore whether deal characteristics are impacted by recession during the recession phase of 2001 and 2008-2009. The tests indicate that valuation multiples are not impacted during recession.

The third question asked is if the deal characteristics are impacted by the type of acquisition – related or diversified. Jahera, Hand & Lloyd (1985) in their study find that the control premium paid in unrelated acquisitions is higher than premium paid in related acquisitions. The data for this study includes 976 related deals and 391 diversified deals. This study finds that revenue multiples differ between diversified and related industry deals.

Finally, the study examines whether the choice of mode of payment is influenced by any of the deal characteristics and economy of the acquirer and the target. This research reveals that payment is more likely to be in the form of stock for larger deals, same industry deals and for deals where the target is from a developed economy.

This study builds upon the existing theories on cross border mergers and acquisitions and adds to the current literature by identifying the differences in the deal characteristics between emerging and developed market firms and during recession. It investigates the payment mode for the deals as a choice process and examines the determinants for the same.

The paper is organized as follows. The motivation for investigating the questions is provided in section 2 which provides details of hypothesis as well. Section 3 provides details of data and methodology. Section 4 discusses results; implications of findings and conclusions are provided in section 5.

## LITERATURE AND HYPOTHESIS

The research questions in this study are motivated by several studies on internationalization. The review of these studies can primarily be divided into several categories. Reasons for going cross border (Dunning, 1988; Teece, 1985; Teece 1986, Buckley and Cason, 1976, Barkema and Vermeulen, 1998; Brouthers & Brouthers, 2000) ; characteristics of acquirer and target nations (Rossi & Volpin,2004, Erel, Liao & Weisbach, 2012); value effects of going cross border (Chari, Ouimet & Tesar, 2009, Gubbi, Aulakh, Ray Sarkar, Chitoor ,2010 ); impact of acquirer and target firm characteristics on deal characteristic (Facciao and Mausilis, 2005). This study belongs to the steam of literature on cross border deals where acquirers and targets belong to different kinds of economies and test whether these differences in deal characteristics are significant.

There are various reasons that firms may decide to internationalize. The eclectic paradigm discussed by Dunning(1988), describes how firms undertake international expansion as a result of certain ownership advantages, location specific advantages and the benefits of internalizing the production rather than entering into joint ventures or alliances. Teece (1985, 1986) apply a transaction cost analysis to create a framework that enable multinational enterprises to evaluate a decision to either internalize production resources or enter into alliances. Researchers have studied the mode of internationalization either through joint ventures, green field ventures or via acquisitions (Brouthers and Brouthers (2000).

Chernykh, Liebenberg and Macias, (2011) document the growth of acquisitions by emerging market firms during the period 1990 to 2007. They report a sharp increase in the number and size of acquisitions by emerging market firms and note specifically the growth of acquisition of developed market targets by emerging market firms.

Rossi & Volpin (2004) find that acquirers have higher investor protection than targets, and that firms use acquisitions as a mechanism to opt out of weak governance regimes. In a study on determinants of cross border acquisitions, Erel, Liao & Weisbach (2012) find that the likelihood of mergers and acquisition between countries is impacted by geographic distance, quality of accounting, bilateral trade, stock market valuation differences and that firms from better performing countries tend to be acquirers.

Markets react differently when developed and emerging market firms make cross border acquisitions depending on whether the acquirer and target is developed or developing (Chari, Ouimet, Tessar(2010), Gubbi, Aulakh Ray, Sarkar, Chitoor (2010). Jensen and Ruback (1983) in a survey of literature on mergers, takeovers, and proxy contests in the US during the 1958 to 1980 time frame, find that on average shareholders of targets in a successful tender offer earn 30% abnormal returns and 20% abnormal returns in a merger, while bidders earn 0% abnormal returns. The Jensen et al.(1983) study is followed by a literature survey by Jarrell, Brickley and Netter (1988) which suggests that shareholders of target companies benefit from takeovers, and losses to bidders are insignificant. Andrade, Mitchell, and Stafford (2001) also find a similar outcome in their study of short term abnormal returns and post merger operating performance of US domestic acquisitions from 1973 to 1998. They find that target shareholders earn significant positive returns, however acquirers do not exhibit conclusive results.

In contravention of the well documented results above regarding under performance of acquirers, Chari, Ouimet & Tesar (2009) find that firms from developed markets earn significant positive abnormal returns when they acquire majority stakes in targets from emerging markets. Researchers have concluded that these differences in acquirer gains could be due to institutional differences in emerging and developed markets (Chari et al.) others have stated that the differences in abnormal returns are because of the difference in premium paid as a result of the level of competition for acquisitions in the target economy, with a higher level of competition observed in developed markets (Alexandridis, Petmezas, and Travlos 2010). Gubbi et al. (2010) in a study on acquisitions by emerging market firms from India find that acquirers gain positive abnormal returns and higher returns are observed when the target firms are located in advanced economies. Hence, suggesting that cross border acquisitions where emerging markets firms are involved as either acquirers or targets bring in new dimensions in the acquisition market. Ross and Volpin(2004) find that shareholder protection regime of the target influence premiums paid.

These studies motivate the authors to explore difference in deal characteristics between developed and emerging market acquirer target pairs.

Hypothesis 1 : There is a difference in valuation multiples between the different Acquirer-Target pairs

This study analyzes cross border deals during the 2000 to 2011 time frame to explore whether deal values, valuation multiples and payment modes (cash/stock) differ depending on whether the acquirer or target is from a developed market or emerging market.

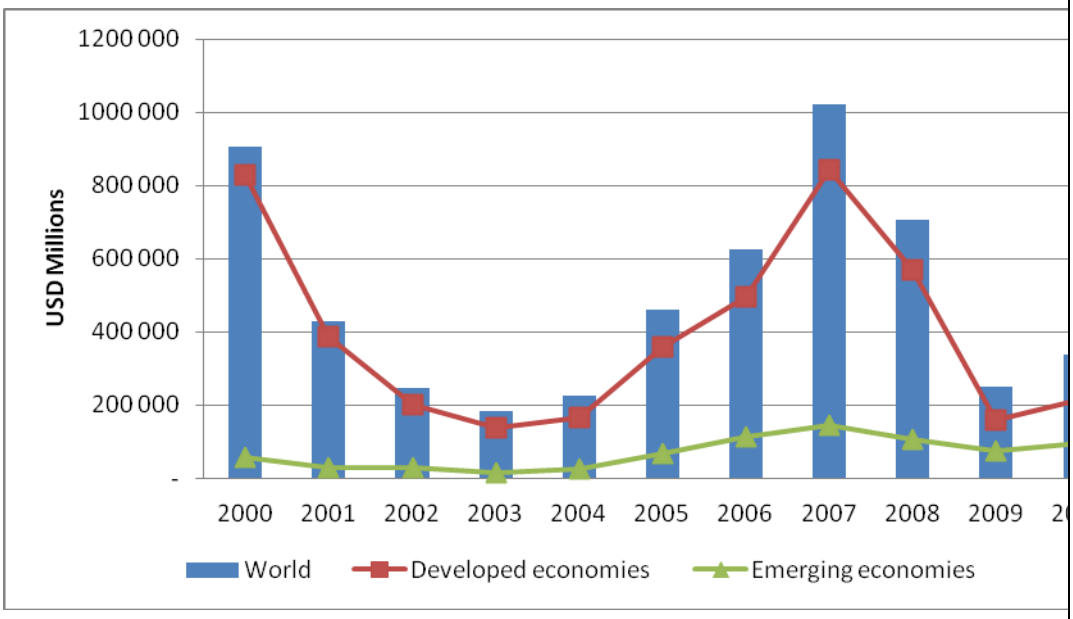
The study also finds its place in literature where major economic events like recession impact the decision to go cross border for an acquisition. Acharya, Shin and Yorulmazer (2007), Aguiar, Mark, and Gopinath (2005) have described how assets in an economy undergoing a crisis are sold off at low rates. The study explores whether individual deal characteristics are impacted by recession during the recession phase of 2001 and 2008-2009. Aguiar et. al. have found that median price to book value ratios declined during the Asian financial crisis for

acquisitions of Asian firms. This study extends this logic to state that it is likely that worldwide assets are sold off at low valuation multiples during a recession.

Figure 1 plots the cross border deal values along with the share of developed and emerging market acquirers. It is seen that recession has had an impact on the total value of cross border Mergers and Acquisitions (M&A) causing it to decline in the years of recession. This study explores the impact of recession on deal characteristics and payment modes, depending on the economy of acquirers and targets.

**Figure 1**

Value of Cross Border M&As by economy of purchaser




Computed from UNCTAD World Investment Review 2011

Hypothesis 2 : There are differences between deal values, valuation multiples and payment modes between the different Acquirer-Target pairs before and after recession.

Jahera, Hand & Lloyd (1985), study various factors that impact acquisition premiums in controlling stake acquisitions and find that the control premium paid in unrelated acquisitions is higher. King, Dalton and Daily(2004) in their review of M&A literature found that related acquisitions have a positive impact on performance. The positive performance could arise from two possibilities, one that acquirers have better negotiating ability when they deal with a related industry because of which they may make an acquisition at a better price/lower multiple, or the second possibility that markets foresee better synergies in two related firms coming together.

Following Jahera, Hand & Lloyd (1985), the study expects to find that valuation multiples differ depending on whether the deal is in a related industry or diversified.

Hypothesis 3: Acquisition of controlling stakes in related industries are made at lower valuation multiples.

In a study on payment mode in European mergers and acquisitions Facciao and Mausilis (2005) find that bidder financial condition and corporate control concerns influence the payment modes, with bidder financial strength, financial constraint and asset size having a significant influence on the mode of payment. Faccio and Masulis, (2005) find that the method of payment cash, stock or stock cash combination payment is influenced by characteristics such as shareholding of majority owners; relative size of bidder and target, leverage of bidder; whether the deal is in the same industry or not etc. Facciao and Mausilis (2005) report that the probability of a cash financed deal decreases when the bidder and target are in the same industry. Martin (1996) studies the impact of various factor that influence the method of payment in a deal including growth opportunities of bidders, managerial stock ownership, cash levels with acquirers, institutional share ownership and business cycles. They find that an increase in stock market values is associated with an increase in stock financed deals. The final hypothesis is formulated following Facciao and Mausilis (2005) that payments are likely to be in stock when acquirers and targets are in the same industry, and following Martin (1996) that acquisitions during a time when stock values are down, presumably during a recession are more likely to be in the form of cash.

Hypothesis 4 : The choice of payment mode might depend on whether the deal is in a diversified or same industry, business cycle, economy of the target and percentage ownership sought.

## DATA AND METHODOLOGY

The study analyzes large value cross-border deals above USD 1 billion listed in the Bloomberg database from 2000 to 2011. Bloomberg lists 2309 cross-border deals for the 2000 to 2011 time frame with deal values above USD 1 billion. The decision to select deals above 1 billion USD deals is to understand the capital flows between the economies in a more representative way. By only focusing on large deals, the study is able to narrow its analysis to deal characteristics which are the subjects or this study as it is expected that deals would be similar with respect to other factors. After dropping deals that are not complete or deals where the acquirer or target nation is not mentioned, sample size is 1367 observations. Table 1 shows the number of completed deals in the sample classified by acquirer and target economies on the basis of Bloomberg data. Acquiring and Target countries are categorized as Developed (D) or Emerging (E) on the basis of UNCTAD classification. The 1367 deals comprise of 1118 deals by developed market acquirers and 249 deals by emerging market acquirers. The study classifies deals by acquirer and target country pairs to arrive at 964 deals where both acquirer and target

are from developed nations (DD) and 154 deals where the acquirer is developed while the target is from an emerging market.(DE) There are 131 deals where the acquirer is from an emerging county and the target is from a developed country (ED) and 118 deals by an emerging market acquirer in an emerging market target(EE).

**Table 1: Break up of number of deals by acquirer-target pairs**

| | Target-Developed | Target-Emerging | TOTAL |
|---|---|---|---|
| Acquirer-Developed | DD<br>964 | DE<br>154 | 1118 |
| Acquirer-Emerging | ED<br>131 | EE<br>118 | 249 |
| TOTAL | 1095 | 272 | 1367 |

DD - acquirer and target both from developed markets,
DE - acquirer is developed and the target is from an emerging market.
ED - acquirer from an emerging market and target from developed market.
EE - both the acquirer and target are from emerging markets.

Data from Bloomberg is collected on various deal particulars such as target and acquirer industry sector, target and acquirer nation, percentage sought, percentage owned before deal, total announced value of deal, deal status and valuation multiples paid for the deal namely book value multiple, revenue multiple, and net income multiple.

Table 2 summarizes the deal statistics for deal value, book value multiple, revenue multiple and net income multiple by acquirer target pairs. Since there is a large standard deviation observed, median values are used for comparison. It is observed that the median deal value for DD (developed acquirer and developed target) is the highest USD 2.0 billion, followed by DE when emerging market firms are acquired by developed market acquirers at USD 1.8 billion. Comparing the valuation multiples it is observed that median book value multiples are higher for DD acquisitions at 3.56 as compared to 3.09 for DE acquisitions. Median revenue multiples are highest for DE acquisitions at 2.56 Net income multiples paid for DD acquisitions are higher than other acquirer target pairs at 25.91

For the first hypothesis, the deal characteristics for the four acquirer target pairs, namely developed market acquire and also developed market target (DD), acquirer is developed while target is from an emerging market (DE), acquirer is from an emerging market and target is from a developed market (ED) and both target and acquirer are from emerging markets (EE) are compared. The study compares valuation multiples – book value multiple, revenue multiple and net income multiple; and log of deal value. A test for normality of these variables was run before deciding on the test to be used. It was observed that all four deal characteristic variables are not normally distributed[1]. Since normality cannot be assumed the Kruskal Wallis test (Siegel 1956) is used for comparing the variables across acquisition target pairs. The Kruskal Wallis test

can be used when the dependent variable is ordinal but not normally distributed and permits two or more groups.

**Table 2: Descriptive statistics of deal values and multiples for acquirer target pairs**

| Acquirer Target pair | Statistics | Deal Value USD million | Book value multiple | Revenue multiple | Net Income multiple |
|---|---|---|---|---|---|
| DD | Mean | 3,615.82 | 11.12 | 10.85 | 50.77 |
| | median | 2,008.77 | 3.56 | 2.35 | 25.91 |
| | std deviation | 4,860.21 | 78.15 | 77.92 | 144.11 |
| DE | mean | 2,512.20 | 24.79 | 21.66 | 62.37 |
| | median | 1,816.00 | 3.09 | 2.56 | 24.83 |
| | std deviation | 2,087.10 | 189.11 | 139.67 | 139.79 |
| ED | mean | 2,929.24 | 5.19 | 3.88 | 31.48 |
| | median | 1,765.00 | 3.08 | 2.06 | 19.49 |
| | std deviation | 2,814.04 | 7.57 | 6.32 | 35.06 |
| EE | mean | 2,086.87 | 3.57 | 3.42 | 25.54 |
| | median | 1,568.87 | 2.88 | 2.45 | 19.78 |
| | std deviation | 1,259.12 | 2.71 | 2.95 | 27.55 |

DD - acquirer and target both from developed markets,
DE - acquirer is developed and the target is from an emerging market.
ED - acquirer from an emerging market and target from developed market.
EE - both the acquirer and target are from emerging markets.

For the second hypothesis, the impact of a recessionary phase on mean deal values is investigated, taking the official recession phase as announced by National Bureau of Economic Research (NBER). The 9 month period from March 2001 to November 2001 and 18 month period from December 2007 to June 2009 was identified as a recessionary phase by NBER. Since, it is difficult to determine the duration of the post recession impact phase; that period has been ignored, and only the official recession period has been considered for this study. A variable called recession; coded 1/0 for the recessionary phases as defined by NBER has been created. Table 3 summarizes deal characteristics for acquisitions during a recessionary and non recessionary phase. The median values are used for comparison due to the presence of outliers. The median deal values during recession seem to be higher at 2.03 billion USD as compared to USD 1.91 million for deals during a nor recessionary phase. The deal multiples and values are compared using the Kruskal Wallis test and results are provided in the next section.

Table 4 provides the distribution of diversified and same industry deals. It is observed that the median deal values for within industry deals are higher at USD 2088 million as compared to diversified deals at USD 1677 million. The study compares deal values and deal multiples for same industry and diversified deals using a Kruskal Wallis test and provides the results in the next section.

| Table 3: Descriptive statistics of deal values and multiples during recession | | | | | |
|---|---|---|---|---|---|
| Economic Cycle | Statistics | Deal Value million USD | Book value multiple | Revenue multiple | Net Income multiple |
| Non Recession phase deals | Mean | 3279.56 | 13.01 | 12.10 | 48.91 |
| | median | 1912.30 | 3.43 | 2.35 | 24.42 |
| | std deviation | 4040.29 | 101.41 | 88.67 | 141.61 |
| Recession phase deals | mean | 3359.51 | 4.71 | 4.72 | 46.85 |
| | median | 2030.01 | 3.22 | 2.18 | 26.49 |
| | std deviation | 5258.06 | 4.68 | 10.57 | 68.61 |

| Table 4: Descriptive statistics of deal values and multiples for diversified and within industry deals. | | | | | |
|---|---|---|---|---|---|
| Nature of Deal | Statistics | Deal Value million USD | Book value multiple | Revenue multiple | Net Income multiple |
| Related deals | Mean | 3626.03 | 11.11 | 12.77 | 46.10 |
| | median | 2087.87 | 3.39 | 2.46 | 24.25 |
| | std deviation | 4677.82 | 89.54 | 92.65 | 109.69 |
| Diversified deals | mean | 2464.21 | 12.95 | 4.90 | 55.64 |
| | median | 1677.26 | 3.52 | 1.77 | 26.06 |
| | std deviation | 2909.14 | 100.26 | 15.20 | 181.86 |

Faccio, M., and Masulis, R.W., (2005) mention that in making an M&A currency decision, a bidder is faced with a choice between using cash and stock as deal consideration, which have conflicting effects. Hence, the study considers payment as a choice model and uses a multinomial logistic model. The study uses three categories of payment modes – stock, cash and combination. Since they are unordered, a multinomial logit model (McFadden 1973, McFadden (1984) is used. The log odds in other categories is compared to the log odds of payment in the reference category. The reference category used is payment by cash.

$$Ln\left(\frac{P(payment = stock)}{P(payment = cash)}\right) = \beta_{10} + \beta_{11}(\text{diversified}) + \beta_{12}(\text{deal value}) + \beta_{13}(acq\_eco) + \beta_{14}(tar\_eco) + \beta_{15}(recession)$$

$$Ln\left(\frac{P(payment = combination)}{P(payment = cash)}\right) = \beta_{20} + \beta_{21}(\text{diversified}) + \beta_{22}(\text{deal value}) + \beta_{23}(acq\_eco) + \beta_{24}(tar\_eco) + \beta_{25}(recession)$$

The study compares the log odds of payment being in stock or combination with the log odds of the payment being in cash. The independent variables used in the model are log of deal

value; whether the deal is diversified or in a related industry; takes place during recession or non recession phase and the economy of the target and the acquirer. Results of these tests are detailed in the next section.

## RESULTS

The study compares the deal values and valuation multiples by acquirer target pair using a Kruskal Wallis test and displays the results in Table 5 Panel A. It is found that there is a significant difference between net income multiples paid by acquirer target pairs. Table 5 Panel B further explores the difference in net income multiples in different acquirer target pairs.

**Table 5 Panel A: Kruskal Wallis test results for difference in deal characteristics by acquirer target pairs.**

| Parameter | chi-squared | P value |
|---|---|---|
| Book Value multiple | 6.862 with 3 d.f. | 0.0764* |
| Revenue multiple | 2.879 with 3 d.f. | 0.4107 |
| Net Income multiple | 17.084 with 3 d.f. | 0.0007*** |
| Deal Value | 19.780 with 3 d.f. | 0.0002*** |
| (level of significance indicated by * for 10%, ** for 5% and *** for 1% ) | | |

**Table 5 Panel B: Kruskal Wallis Test results within acquirer target pairs.**

| Pairs compared | | P value |
|---|---|---|
| Acquirer | Target | |
| DD | DE | 0.442 |
| DD | ED | 0.006*** |
| DD | EE | 0.000*** |
| DE | ED | 0.017** |
| DE | EE | 0.002*** |
| ED | EE | 0.173 |

(level of significance indicated by * for 10%, ** for 5% and *** for 1% )
DD - acquirer and target both from developed markets,
DE - acquirer is developed and the target is from an emerging market.
ED - acquirer from an emerging market and target from developed market.
EE - both the acquirer and target are from emerging markets.

It is found that there are significant differences in multiples paid when the acquirers are from different economies. For example there is a significant difference in the net income multiple between DD (acquirer developed and target developed) and ED (acquirer emerging and target developed); DD and EE (acquirer and target emerging), DE (acquirer developed and target emerging) and ED, and DE and EE, but the difference in valuation is not significant when the acquirers in both pairs come from similar economies. This observation is in line by the findings by Startks and Wei (2013) that premiums are impacted by the difference in corporate

governance regimes of acquirers and targets, hence a difference in multiples paid is observed when the acquirers and targets come from different economies with difference corporate governance regimes.

Next, the study analyzes whether the valuation multiples and deal values are impacted by recession using a Kruskal Wallis test and display the results in Table 6. No significant difference is observed in multiples or deal values during recession and non recessionary phases. This does not tie up with the literature that assets may be sold of cheap during recession (Acharya, Shin and Yorulmazer, 2007, Aguiar, Mark, and Gopinath , 2005). This maybe because the recessionary phase impact might actually be felt post recession. However, it is difficult to determine how long the post recession phase should be considered as. This finding should be explored further in future research.

**Table 6: Kruskal Wallis test results for difference in deal characteristics during recession and non recession phase**

| Parameter | chi-squared | P value |
|---|---|---|
| Book Value multiple | 0.762 with 1 d.f. | 0.383 |
| Revenue multiple | 1.905 with 1 d.f. | 0.168 |
| Net Income multiple | 0.364 with 1 d.f. | 0.546 |
| Deal Value | 0.755 with 1 d.f. | 0.385 |
| (level of significance indicated by * for 10%, ** for 5% and *** for 1% ) | | |

This study also analyzes whether the valuation multiples and deal values differ between diversified and same industry deals for controlling stake acquisitions. highly significant difference is observed in the revenue multiples and deal values for within industry deals v/s diversified deals. This is in line with the hypothesis based on Jahera, Hand & Lloyd (1985) that premiums paid differ with the industry of the acquirer and target.

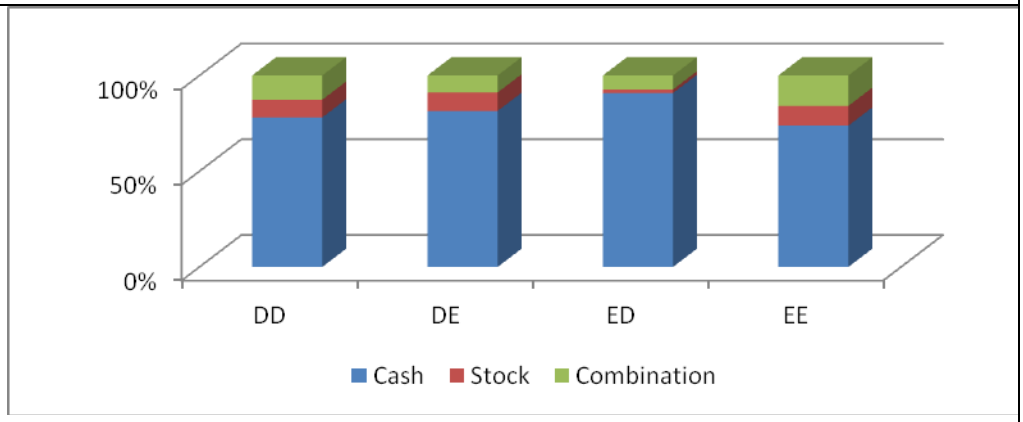
**Table 7: kruskal Wallis test for difference in deal characteristics for diversified and related deals**

| Parameter | chi-squared | P value |
|---|---|---|
| Book Value multiple | 0.002 with 1 d.f. | 0.964 |
| Revenue multiple | 11.939 with 1 d.f. | 0.001*** |
| Net Income multiple | 1.432 with 1 d.f. | 0.231 |
| Deal Value | 25.767 with 1 d.f. | 0.001*** |
| (level of significance indicated by * for 10%, ** for 5% and *** for 1% ) | | |

Next the study explores whether the payment type (cash/Stock/ combination of stock/cash is influenced by whether the acquirer and target are from developed or emerging countries, deal values, percentage sought and whether the deal is diversified or not. The deals are coded with 1 for cash deals, 2 for stock deals and 3 for cash and stock combinations, debt, debt

combinations, etc, 117 deals do not have payment data which are excluded from the analysis. Figure 2 shows the proportion of deals paid by cash, stock and combination of cash and stock payments for different acquirer target pairs.

**Figure 2: Payment mode by acquirer target economies.**




DD - acquirer and target both from developed markets,
DE - acquirer is developed and the target is from an emerging market.
ED - acquirer from an emerging market and target from developed market.
EE - both the acquirer and target are from emerging markets.

It is observed that cash is the primary mode of payment in most deals. In case of emerging markets acquisition of developed market targets the largest proportion of deals are in cash followed by combination deals. The proportion of stock payments for emerging market acquisitions of developed market targets is very low. This seems to be arising from the reluctance of developed market targets to hold shares in emerging market firms or from regulatory and listing issues

A multinomial logit is run where in the log odds of payment in stock and combination of stock and cash is compared with the base outcome of cash payments. The results of the multinomial logit are displayed in Table 8.

Multinomial logit results are in line with the findings by Facciao and Masulis (2005) on European acquisitions that payments for same industry deals are more likely to be in the form of stock rather than cash. The sign of the coefficient for diversified deals is negative for stock payments. The log odds of payment being in stock or combination of stock and cash decreases for diversified deals. Payment is more likely to be in stock or a combination of stock and cash for higher value deals. This finding supports Facciao and Masulis (2005) that average deal size is dramatically higher for stock financed deals. Though, it is also observed that the log odds of a combination deal increases significantly for larger valued deals. The results indicate that recession does not impact the payment mode. This finding does not agree with the hypothesis and the literature by Martin (1996) that payments mode is impacted by economic cycles. This

finding may be a result of definition of the recession phase which could be modified to include a post recession phase, since the impact of recession may be felt for a few years post recession. However, it is difficult to conclude on the time period to include as the post recession impact period, since the nature of the two recessions in the study were not comparable. The study also finds that there is a marginal increase at the 10% level of significance of payments being made in stock if the target is from a developed economy.

**Table 8: Multinomial Test Results for Payment mode (cash is the base outcome)**

| Deal Characteristics | Stock | Combination |
|---|---|---|
| log_Dealvalue | 0.389*** | 0.568*** |
| | (0.130) | (0.111) |
| Recession | -0.244 | -0.332 |
| | (0.281) | (0.249) |
| Diversified | -1.356*** | -0.694*** |
| | (0.328) | (0.230) |
| Target Developed | 0.440* | 0.203 |
| | (0.266) | (0.243) |
| Acquirer Developed | -0.527 | -0.0125 |
| | (0.328) | (0.254) |
| Constant | -4.871*** | -6.357*** |
| | (1.182) | (1.014) |
| Observations | 1,250 | 1,250 |

Standard errors in parentheses. level of significance indicated by
* for 10%, ** for 5% and *** for 1% )

## CONCLUSION AND IMPLICATIONS

Cross border deals have gained in importance over the last decade, with an exponential growth in acquisition by emerging market firms. Researchers have studied characteristics of acquirers and targets and announcement effect of acquisitions. However, there has been a limited focus on understanding emerging market firm deal characteristics vis-à-vis developed market firms.

Results of this study indicate that deal values differ between acquisition target pairs. As per expectations the highest deal values are for developed market acquisitions of developed market targets. It is observed that net income multiples paid are influenced by the level of economic development and corporate governance environment in acquirer target pairs, specifically when the acquirers are from different economies and corporate governance environments (emerging v/s developed).

It is also observed that diversification impacts deal values; within industry deals have higher mean deal values then diversified deals. Revenue multiples paid differs between same industry and diversified deals, with higher multiples paid for same industry deals. An implication

of this finding could be that targets should seek to be acquired by same industry acquirers rather than those from a different industry.

It is interesting to note that deal valuation multiples are not significantly impacted by whether the deal took place during recession. This result needs to be analyzed further as there could be a post recession impact phase which has been ignored in this study.

Cash has been the primary form of payment for all acquirer target pairs, however the probability for stock payments increases for larger deal values, deals within the same industry and where targets are from developed economies.

The way forward could be to look at the universe of all the cross border deals and then test the robustness of these results. In future research it would be useful to explore other characteristics of acquirer and target like the different characteristics of the countries and the value created for each kind of pair. The results in this study also motivate further research on understanding the regulations of the countries which might be one of the reasons for the payment mode adopted by the firms.

The findings have implications for researchers, firms market participants and intermediaries like investment banks involved in the deal structuring process. It is found that payment is more likely to be in the form of stock for larger deals, same industry deals and for deals where the target is from a developed economy. So, while taking a decision about payment for the target, the size of the deal, industry of the target and economy of the target should be considered. Once the firm decides to internationalize and chooses acquisition as its strategy, the economy where the target is located would impact not only the deal values but also the valuation multiples. Valuation multiples are impacted by the industry relatedness of the acquirer and the target. While structuring the deal, the firm has to take cognizance of the kind of deals whether diversified or related industry deal.

This study brings out some interesting stylized facts about cross border mergers and acquisitions over the 2000 to 2011 time frame and addresses research questions on deal characteristics and raise questions for further research in this area. This study brings forth a new dimension to the cross border deals literature and provides an incremental path in understanding the internationalization process of firms, specific to the areas of deal structuring for developed v/s emerging market firms.

## ENDNOTE

[1] Test results not provided here. A Shapiro-Francia test of normality was conducted, and the null hypothesis that the variables are normally distributed was rejected at 1% level of significance.

## AUTHORS NOTE

The authors would like to thank participants at FOBE 2012, IMT Ghaziabad for suggestions on the paper and especially thank anonymous reviewers for insightful and useful comments on the paper.

## REFERENCES

Acharya, V., Shin, H. and Yorulmazer, T (2007). 'Fire-sale FDI'. *CEPR Discussion Paper no. 6319. London, Centre for Economic Policy Research*.

Aguiar, Mark, and Gopinath G., (2005), Fire-Sale FDI and Liquidity Crises, *The Review of Economics and Statistics,* 87(3): 439-542.

Andrade, G., Mitchell M., and Stafford E. (2001). New evidence and perspectives on mergers. *Journal of Economic Perspectives,* 15, 103-120.

Alexandridis, G., Petmezas, D. and Travlos, N.G. (2010), Gains from Mergers and Acquisitions Around the World: New Evidence. Financial Management, 39: 1671–1695.

Barkema, H.G., Vermeulen, F., (1998). International expansion through start-up or acquisition: a learning perspective. Acad. Manage. J. 41, 7–26.

Brouthers, K.D., Brouthers, L.E., (2000). Acquisition or greenfield start-up? Institutional, cultural and transaction cost influences. *Strategic Management Journal*, 21, 89–97.

Buckley, P. J., & Casson, M.,(1976). The future of the multinational enterprise. London: Macmillan.

Chari, A., Ouimet, P., and Tesar, L., (2010). The Value of Control in Emerging Markets. *Review of Financial Studies,* vol. 23, No. 4, pp. 1741-1770.

Chernykh, L., Liebenberg, I.A., and Macias, A. J., (2011) Changing Direction: Cross Border Acquisitions by Emerging Market Firms. Retrieved October 31 2012 from *SSRN: http://ssrn.com/abstract=1540260.*

Dunning, J. H, (1988). The eclectic paradigm of international production: A restatement and some possible extensions. *Journal of International Business Studies*, 19(1): 1–31.

Faccio, M., and Masulis, R.W., (2005). The Choice of Payment Method in European Mergers & Acquisitions. *Journal of Finance*, Vol. 60, No. 3, pp. 1345-1388, 2005.

Gubbi, S.R., Aulakh P.S., Ray S. Sarkar M.B., Chitoor R., (2010). Do international acquisitions by emerging-economy firms create shareholder value? The case of Indian firms. *Journal of International Business Studies* 41**,** 397–418.

Jarrell, G. A., Brickley, J.A., and Netter, J. M., (1988). The market for corporate control: The empirical evidence since 1980, *Journal of Economic Perspectives* 2, 49-68.

Jahera, J. S., Hand, J., & Lloyd, W. P. (1985). An Empirical Inquiry into the Premiums for Controlling Interests. *Quarterly Journal of Business and Economics*, 67-77.

Jensen, M.C., and Ruback, R. S. (1983). The market for corporate control: The scientific evidence. *Journal of Financial Economics,* 11, (1-4), 5-50.

King, D, Dalton, D, Covin J, Daily C, (2004). Meta-Analyses of Post-Acquisition Performance: Indications of Unidentified Moderators. *Strategic Management Journal, 25*(2), 187-200.

McFadden D. 1973. Conditional Logit Analysis of Qualitative Choice Behavior, in Frontiers in Econometrics, ed. By P. Zarambka. Academic Press: New York.

McFadden D. 1984. Econometric analysis of qualitative response models," Handbook of Econometrics, Handbook of Econometrics 1(2) : 1395-1457 Elsevier.

Martin, K. J.,(1996). The Method of Payment in Corporate Acquisitions, Investment Opportunities, and Management Ownership. Journal of Finance, (51) 4, 1227-1246.

Morck, R., Shleifer, A., & Vishney, R. W. (1990). Do Managerial Objectives Drive Bad Acquisitions. *Journal of Finance*, 45(1), 31-48.

Rossi, S. and P. Volpin (2004), 'Cross-country Determinants of Mergers and Acquisitions',
*Journal of Financial Economics*, 74, 277–304.

Siegel, S., (1956). Nonparametric Statistics for the Behavioral Sciences, New York, McGraw-Hill Book Com-pany, Inc.

Starks, L. T. and Wei, K. D. (2013), Cross-Border Mergers and Differences in Corporate Governance. *International Review of Finance* .

Teece, D., J., (1985). Multinational Enterprise, Internal Governance, and Industrial Organization, *American Economic Review* 75 (2), 233–238.

Teece, D. J., (1986). Transaction Cost Economics and the Multinational enterprise. *Journal of Economic Behaviour and Organization*, 7:21-45.

# DETERMINANTS OF FIRMS MANAGING EPS THROUGH SHARE REPURCHASES

**Naser Khaledi, Purdue University Calumet**

## ABSTRACT

*This paper examines the determinants of firms that are able to manage earning per share (EPS) through share repurchases vs. firms that are not able to manage EPS through share repurchases. To run the test, I utilize Univariate analysis based on the relation between cost of debt capital (CODC) and cost of equity (E/P ratio). Prior research reports that firms with higher (lower) cost of equity are (not) able to manage EPS through share repurchases (Khaledi and Balsam, 2003). I identify determinants of repurchasing firms based on firms' ability to manage EPS upward. Prior research identifies motivations of share repurchasing firms (Dittmar, 2000). However, Khaledi and Balsam (2003) partition their sample based on the relationship between the cost of debt capital (CODC) and earnings-price ratio (E/P) to examine whether firms are able to manage EPS through share repurchases. I report that managing firms have higher leverage, are larger, and have higher E/P ratio. Non-managing firms repurchase more shares, have higher value of share repurchases, have higher market-to-book value, and pay higher interest rate.*

## INTRODUCTION

The motives behind share repurchase programs have changed over the years. Dittmar (2000) presents some motives behind share repurchase announcements. Dittmar states that excess capital as one of these motives by saying that when firms' capital exceeds their investment opportunities, the firms either distribute excess cash to the investors or retain the cash. Cash distribution to investors can be categorized into two forms: as dividends or as share repurchases. Share repurchases have advantages over dividend payouts as a method of cash distribution. In fact, firms that carry out share repurchase programs are not committed to announce future share repurchases.

Also, the market does not expect cash distribution in the form of share repurchases in a regular basis as appose to dividends and, hence, stock of repurchasing firms will not be affected negatively by not announcing future share repurchases. Signaling stock undervaluation is cited by prior research as another motive of share repurchases (Dittmar 2000). Firms repurchase their shares because they believe that their shares are undervalued. The premise is based on the information asymmetry between insiders and investors. By repurchasing their shares, firms

signal the market that they have inside information that their shares worth more than their present value.

Optimizing leverage ratio is the third motive behind share repurchases. Firms repurchase their shares so they can reach the desired leverage ratio by reducing number of shares outstanding in the denominator calculation (Dittmar 2000). To dilute the effect of stock options, firms repurchase their shares so options exercised have no effect on shares' value. In the merger market, an outside party tries to takeover the target firm. As a defense, the target firm repurchases its shares to raise the lowest share price to make it more expensive for the outside party to takeover the firm. Dittmar argues that the motive for share repurchases changes over the time due to the increase in certain activities. To illustrate, she argues that stock options dilution as a motive behind share repurchases increased in the early 1990's due to the large amount of options granted to the employees and management.

However, recent research has focused on share repurchases as a self-serving behavior tool (Khaledi and Balsam, 2003; Bens et al, 2003). Khaledi and Balsam (2003) and Bens et al. (2003) report that firms are able to manage EPS through share repurchases when the cost of debt capital is less than the cost of equity. Earlier research on share repurchases reports positive abnormal return on and post share repurchase announcements (Comment and Jarrel, 1991). This implies that managers not only manage EPS through reducing number of shares outstanding, but also increase the price of the stock. This paper extends our understanding on determinants of firms that use share repurchases as a tool to manage EPS. The study's contribution is that it uses current interest rate to proxy for the cost of debt capital not prior interest expenses as in Khaledi and Balsam (2003) because historical data (interest expenses) are not relevant in share repurchase decisions.

## RESEARCH DESIGN

To differentiate between firms that are able to manage EPS through share repurchases (managing firms) and firms that are not able to manage EPS through share repurchases (non-managing firms), I partition the sample based on the relation between cost of debt capital (CODC) and earnings-price (E/P) ratio, the proxy for cost of equity. When CODC for a firm is lower than its cost of equity, the firm is better off to repurchase its shares by borrowing cash or using available cash on hand. To run the test, I use Univariate analysis to see how the firms behave according to their cost of debt capital in relation to their E/P ratio.

## VARIABLES

Prior research has generally ignored share repurchases as a way of managing EPS (Khaledi and Balsam, 2003). Share repurchases reduce the number of shares outstanding, the denominator in EPS calculation. As the number of shares outstanding in EPS calculation

decreases, EPS increases holding net income constant. However, net income will be affected by the interest expense incurred in the case where share repurchases are financed by issuing debt or by the interest income forgone if the share repurchases are financed by selling firm's securities or using available cash. The relative change in the numerator (interest effect) and denominator (share reduction effect) will determine whether share repurchases increase or decrease EPS.

The variables that are included in this study are presented in the literature (e.g. Khaledi and Balsam, 2003). I examine certain variables and see whether any change exists between each variable's mean within the two sub-samples based on the relationship between CODC and E/P ratio. I use the value of shares outstanding (VALUEREP) and change in share repurchases (REPURCH) as used in a previous study as proxies for share repurchases (Khaledi and Balsam, 2003). I use VALUEREPURCH as well. It is the difference between the value of share repurchases of the current year minus last's year. I define change in shares repurchases (REPURCH) as the percentage change in shares outstanding during the year. I use LEVELREPURCH in the analysis. It is defined as the current number of shares outstanding minus last year's shares outstanding.

I expect the change in shares outstanding to be negative (positive) if share repurchases are more (less) than share issuance. I follow Khaledi and Balsam's (2003) definition of the value of shares outstanding which is the dollar amount of shares repurchases net of the dollar amount of share issuance during the year (VALUEREP).

**COST OF DEBT CAPITAL (CODC):**

The cost of debt capital (CODC) is one of the determinants of share repurchases. Firms with high cost of debt capital are less likely to repurchase their shares if they intend to manage EPS upward. If the cost of debt capital exceeds the earnings-price ratio (see Khaledi and Balsam, 2003), then share repurchases will actually reduce EPS. Khaledi and Balsam (2003) report a negative relation between CODC and share repurchases. I measure *CODC* as interest rate required for the corresponding bond rating for each firm. I use the marginal cost of debt estimated based on the corporations' bond rating and the current yield for bonds of that rating.

**EARNINGS-TO-PRICE (E/P):**

I use earnings-price (E/P) ratio as in Khaledi and Balsam (2003) who use E/P to proxy for cost of equity. Firms with E/P lower than CODC will not be able to increase their EPS by share repurchases because the decrease in the numerator of the EPS is more than the decrease in the denominator of the EPS. This results in a decline in EPS. I use E/P as in Khaledi and Balsam (2003) to compare it with CODC in order to partition the sample into firms that are and firms that are not able to manage EPS upward. Khaledi and Balsam (2003) report insignificant results for the E/P ratio.

**ABILITY TO MANAGE (ABLE): CODC VERSUS E/P:**

Not every firm can manage its EPS upward through share repurchases. To identify firms that can manage their EPS through share repurchases, I compare their cost of debt capital (*CODC*) with their earnings-price ratio (*E/P*). As in Khaledi and Balsam (2003), I argue that a firm can manage its EPS upward through share repurchases if *CODC* < *E/P*. I use a dummy variable (ABLE) that takes a value of 1 if CODC < E/P and 0 otherwise.

**MARKET-TO-BOOK RATIO OF ASSETS (MVBV):**

I follow Fenn and Liang (2001) and use Market-to-Book Ratio of assets (MVBV) as a measure of investment opportunities. Market-to-book (assets) ratio is defined as total assets minus book value of equity plus shares outstanding, adjusted for stock split, multiplied by stock price, all deflated by lag of total assets. Fenn and Liang argue that firms with high investment opportunities will use cash resources to invest in positive net present value projects rather than to repurchase shares. They report a significant negative relationship between MVBV and share repurchases.

**GROWTH IN SALES ($\Delta$ LOGSALES):**

Firms with growth opportunities need cash to capture investment opportunities in order to expand their market share. Bens et al. (2003) use change in log of sales ($\Delta$ LOGSALES) as a proxy for growth. Change in log of sales is calculated as current log of sales minus last period's log of sales deflated by last period's log of sales. Bens et al. (2003) argue that firms with high growth will less likely to repurchase their shares. They report an inverse relationship between $\Delta$ LOGSALES and share repurchases.

**CAPITAL EXPENDITURE (CAPEXP):**

Firms expand their operations by investing in positive net present value projects. These expansions require that these firms use their cash for capital expenditures rather than for share repurchases. Kahle (2002) uses capital expenditure deflated by lag of total assets (CAPEXP) to control for cash payouts. She argues that firms will repurchase less of their shares outstanding when they plan to spend on capital expenditure. Kahle (2002) reports a negative relationship between capital expenditure and share repurchases. Grullon and Michaely (2004) use the same argument that firms with more capital expenditure are less likely to repurchase their shares. They document that firms repurchasing their shares are more likely to reduce their current level of capital expenditures.

**EARNINGS MANAMGEMENT: DISCRETIONARY ACCRUALS (DAC):**

Prior literature shows (Jones, 1991; DeFond and Jiambalvo, 1994) managers' self-serving behavior in the form of earnings management. Managers manage earnings by increasing or decreasing earnings to the desired level. Several studies examine market motivated earnings management (Teoh et al., 1998a; Teoh et al., 1998b) and show managers overstate earnings prior to financial events. Teoh et al. (1998a) examines whether managers inflate earnings by increasing earnings through discretionary accruals.

Teoh et al. (1998a) report that managers manage earnings, which is evidenced by investors overlooking pre-issue earnings for seasoned equities without fully adjusting for possible discretionary accruals manipulation. I include discretionary accruals ($DAC_t$) as a determinant of share repurchases as in Khaledi and Balsam (2003). DAC is defined as discretionary accruals using Jones (1991) cross sectional model as in Defond and Jiambalvo (1994).

**DEBT-TO-ASSETS RATIO (LEVERAGE):**

I include debt-to-total assets (LEVERAGE) to control for firm's payout decision. Kahle (2002) uses LEVERAGE and posits that debt is a substitute for payouts to shareholders. Fenn and Liang (2001) use leverage arguing that debt is an alternative method of disgorging free cash flow and thus firms with high debt will less likely to payout dividends or repurchase shares. Kahle (2002) and Fenn and Liang (2001) report a negative relation between debt and share repurchases.

**CASH FLOW FROM OPEARTIONS (CFO):**

Firms with excess cash flows beyond their investment needs may distribute the excess cash either through dividend or share repurchases. To see the effect of share repurchase as a method of cash payout, I use CFO in my test expecting to find a difference between CFO for firms that are able to manage EPS and that of non-managing firms. Fenn and Liang (2001) use cash flow from operations deflated by lag of total assets (CFO) to control for excess cash effect on share repurchases decision and they report that CFO increases repurchases.

**LOG OF TOTAL ASSETS (SIZE):**

Firms' size (SIZE) is used to proxy for political costs (Watts and Zimmerman, 1986; Zimmerman, 1983), information asymmetry (Atiase, 1985; Dittmar, 2000), litigation risk (Lys and Watts, 1994) and any other omitted variables. Prior studies use log of assets to proxy for

firms' size (Bens et al., 2003; and Dittmar, 2000). I include log of total assets to control for the effect of firm's size.

## SAMPLE SELECTION

Table 1 presents the sample selection procedure. I use firm level data from Compustat for years 2000-2002 to obtain financial and stock price data. The initial Compustat sample is 27,720 firm-years. I delete 18,932 missing Compustat observations leaving 8,788 available observations. I delete another 7,575 missing Bond Rating observations, which results in 1,213 available observations that are used in the analysis.

**Table 1**
**Sample Selection Year 2000-2002**

| | Missing Observations | No. of Observations |
|---|---|---|
| Initial Sample | | 8,788 |
| LESS: Observations with zero values and missing values | (18,932) | |
| LESS: Missing Observations – Bond Rating | (7,575) | |
| Final sample used in the analysis | | 1,213 |

## DESCRIPTIVE STATISTICS

Table 2 presents descriptive statistics for the variables used in the study. The mean (median) for change in shares outstanding compared to previous year (LEVELREPURCH) is $4.96 ($0.44) million for firms that are able to manage EPS through share repurchases (when ABLE = 1) vs. $15.71 ($0.39) million for firms not able to manage EPS (when ABLE = 0). Although the mean differs for managing firms and non-managing firms, I find that the median is roughly similar between the two sub-samples.

The mean (median) for percentage change in shares outstanding (REPURCH) is 2.40% (0.34%) for managing firms (when ABLE = 1) vs. 2.40% (0.28%) for non-managing firms (ABLE = 0). I find that the means' difference is greater than the medians' difference. This shows that percentage change in shares outstanding is greater for managing firms. The mean (median) for change in value of share repurchases compared to previous year (VALUEREPURCH) is $-3.06 (0.00) for managing firms (when ABLE = 1) vs. $130.32 (0.00) for non-managing firms (when ABLE = 0). This shows that on average managing firms spend more on share repurchase programs than non-managing firms as indicated by the negative sign for managing firms. However, there is no significant difference in the median of the dollar spent between managing and non-managing firms on share repurchase programs.

***Table 2***
***Descriptive Statistics Sample Year = 2000-2002***

| *Variables* | *ABLE* | *N* | *Mean* | *Q1* | *Median* | *Q3* | *Max* | *S.D.* |
|---|---|---|---|---|---|---|---|---|
| LEVELREPURCH ($) | 1 | 350 | 4.96 | -0.83 | 0.44 | 3.46 | 271.5 | 35.82 |
| | 0 | 863 | 15.71 | -0.71 | 0.39 | 3.07 | 2112.70 | 124.60 |
| REPURCH (%) | 1 | 350 | 2.40 | -0.75 | 0.34 | 2.14 | 71.26 | 9.46 |
| | 0 | 863 | 3.35 | -0.32 | 0.28 | 1.45 | 137.84 | 13.98 |
| VALUEREPURCH ($) | 1 | 350 | -3.06 | -24.00 | 0.00 | 38.19 | 5666.00 | 762.07 |
| | 0 | 863 | 130.32 | -19.00 | 0.00 | 75.34 | 6148.00 | 683.72 |
| VALUEREP (%) | 1 | 350 | -0.14 | -0.78 | 0.00 | 1.40 | 26.77 | 5.50 |
| | 0 | 863 | 0.00 | -0.40 | 0.00 | 1.02 | 24.93 | 4.55 |
| MVBV (%) | 1 | 350 | 134.93 | 106.44 | 117.77 | 146.51 | 404.53 | 47.49 |
| | 0 | 863 | 194.92 | 117.73 | 149.23 | 220.37 | 1,685.09 | 131.96 |
| LEVERAGE (%) | 1 | 350 | 0.30 | 0.19 | 0.30 | 0.40 | 0.97 | 0.16 |
| | 0 | 863 | 0.26 | 0.14 | 0.26 | 0.36 | 0.90 | 0.15 |
| SIZE | 1 | 350 | 8.95 | 7.97 | 8.87 | 9.86 | 13.53 | 1.39 |
| | 0 | 863 | 8.80 | 7.77 | 8.70 | 9.70 | 13.70 | 1.42 |
| ASSETS ($) | 1 | 350 | 22,622.21 | 2,895.36 | 7,164.56 | 19,228.00 | 752249.00 | 60,670.88 |
| | 0 | 863 | 22,905.54 | 2,369.61 | 6,029.14 | 16,353.00 | 853,502.34 | 72,813.82 |
| CFO (%) | 1 | 350 | 11.86 | 7.05 | 10.69 | 14.86 | 40.98 | 8.35 |
| | 0 | 863 | 11.27 | 5.96 | 9.99 | 15.25 | 53.52 | 7.86 |
| $\Delta$ LOGSALES | 1 | 350 | 0.05 | -0.03 | 0.06 | 0.17 | 1.72 | 0.28 |
| | 0 | 863 | 0.04 | -0.03 | 0.03 | 0.12 | 3.63 | 0.26 |
| CAPEXP (%) | 1 | 350 | 5.88 | 2.27 | 4.66 | 7.60 | 32.45 | 5.39 |
| | 0 | 863 | 5.44 | 2.26 | 4.45 | 7.23 | 45.85 | 4.82 |
| DAC (%) | 1 | 350 | 1.61 | -3.96 | -0.39 | 3.48 | 248.55 | 21.65 |
| | 0 | 863 | 1.55 | -5.27 | -0.30 | 5.17 | 101.75 | 20.77 |
| CODC (%) | 1 | 350 | 6.70 | 5.24 | 6.72 | 7.86 | 9.94 | 1.45 |
| | 0 | 863 | 7.79 | 7.23 | 7.79 | 8.29 | 9.94 | 1.28 |
| E/P (%) | 1 | 350 | 9.67 | 7.50 | 8.62 | 10.92 | 30.95 | 3.64 |
| | 0 | 863 | 3.26 | 2.82 | 4.46 | 5.79 | 9.87 | 7.30 |

The mean (median) for percentage change in the value of share repurchases (VALUEREP) is -0.14% (0.00%) for managing firms (when ABLE = 1) vs. 0.00% (0.00%) for non-managing firms (when ABLE = 0). The mean (median) for market-book value (MVBV) for firms that are able to manage EPS through share repurchases is 134% (117%) vs. 194% (149%) for firms not able to manage EPS. This indicates that the market-book value for managing firms is less than that of the non-managing firms. The mean (median) for LEVERAGE for firms that are able to manage EPS is 30% (30%) vs. 26% (26%) for firms that are not able to manage EPS. This indicates that managing firms have a higher leverage than non-managing firms. Managing firms have 30% of their assets financed vs. 26% for non-managing firms.

he mean (median) of the size (SIZE) of the managing firms is 8.95 (8.87) vs. 8.80 (8.70) for non-managing firms. The mean (median) for total assets for the managing firms is $22,622.21 ($7,164) million vs. $22,905.54 ($6,029.14) million for the non-managing firms. This shows that non-managing firms have more assets than managing firms.

The mean (median) of the cash flows for the managing firms is 11.86% (10.69%) vs. 11.27% (9.99%) for the non-managing firms. It shows that managing and non-managing firms have similar cash flows as a percentage of total assets. The median of the cash flows for both sub-samples is similar with a slight difference. The mean (median) of growth as measured by the change in log of sales ($\Delta$LOGSALES) is similar for the managing and the non-managing firms, 0.05 (0.06) vs. 0.04 (0.03), respectively. However, there is a difference in the median for both sub-samples.

Capital expenditure for the managing firms and the non-managing firms have roughly similar means (medians) of 5.88% (4.66%) vs. 5.44% (4.45%), respectively. This indicates that capital expenditure in both sub-samples is around 5.5% of the firms' total assets. The values of the median are similar for the managing and the non-managing firms. Discretionary accruals' (DAC) mean (median) is similar for both the managing and the non-managing firms, 1.61% (-0.39%) vs. 1.55% (-0.30%). This indicates that on average sample firms are managing accruals upward and the managing firms are manipulating the earnings through discretionary accruals slightly more than the non-managing firms.

The cost of debt capital's (CODC) mean (median) for the managing firms is 6.7% (6.72%) vs. 7.79% (7.79%) for the non-managing firms. This shows that non-managing firms pay on average 1% higher interest on their loans than managing firms. The mean (median) for E/P ratio for the managing firms is 9.67% (8.62%) vs. 3.26% (4.46%) for the non-managing firms. This shows that the market values stock of the managing firms three folds higher than that of the non-managing firms.

## PEARSON CORRELATION

Table 3 presents Pearson correlation results among the variables. Change in shares outstanding (LEVELREPURCH) is slightly related to the rest of the variables. However, LEVELREPURCH is not correlated with LEVERAGE, and CODC. Percentage change in shares outstanding (REPURCH) is slightly correlated with the other variables and highly negatively correlated with the percentage change in the value of share repurchases (VALUEREP). However, REPURCH is not correlated with LEVERAGE, ASSETS, CFO, DAC, and CODC. The change in the value of share repurchases (VALUEREPURCH) is slightly correlated with the other variables. However, VALUEREPURCH has no correlation with$\Delta$SALES, CAPEXP, DAC, and E/R.

The percentage change in the value of share repurchases (VALUEREP) is slightly correlated with the other variables. VALUEREP is not correlated with LEVERAGE, SIZE, $\Delta$LOGSALES, CAPEXP, DAC, and CODC. Market-to-book ratio (MVBV) is highly positively correlated with cash flows from operations (CFO) and slightly correlated with the rest of the variables except for VALUEREP, and DAC. The debt-to-assets (LEVERAGE) is slightly correlated with the other variables except for LEVELREPURCH, REPURCH, VALUEREP, and

CODC. The log of total assets (SIZE) is slightly correlated with the other variables. However, SIZE has no correlation with VALUEREP, $_{\Delta}$LOGSALES, CAPEXP, and DAC. The total assets (ASSETS) is slightly with the rest of the variable. However, ASSETS has no correlation with$_{\Delta}$ LOGSALES, DAC, and E/P.

**Table 3**
**Parson Correlation Sample Year = 2000-2002 (N = 1,213) ***

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 LEVELREPURCH | 1.00 | 0.62 (0.00) | -0.13 (0.00) | -0.12 (0.00) | -0.05 (0.00) | -0.00 (0.73) | 0.16 (0.00) | 0.09 (0.00) | 0.07 (0.00) | 0.17 (0.00) | 0.16 (0.00) | 0.05 (0.04) | 0.01 (0.51) | -0.07 (0.00) |
| 2 REPURCH | 0.62 (0.00) | 1.00 | -0.17 (0.00) | -0.43 (0.00) | -0.10 (0.00) | 0.00 (0.95) | 0.09 (0.00) | 0.01 (0.63) | -0.02 (0.39) | 0.21 (0.00) | 0.16 (0.00) | 0.02 (0.45) | 0.03 (0.17) | -0.09 (0.00) |
| 3 VALUEREPURCH | -0.13 (0.00) | -0.17 (0.00) | 1.00 | 0.43 (0.00) | 0.17 (0.00) | -0.09 (0.00) | 0.17 (0.00) | 0.18 (0.00) | 0.16 (0.00) | -0.01 (0.69) | 0.02 (0.37) | 0.03 (0.17) | -0.04 (0.08) | 0.01 (0.61) |
| 4 VALUEREP | -0.12 (0.00) | -0.43 (0.00) | 0.43 (0.00) | 1.00 | 0.12 (0.00) | -0.03 (0.17) | -0.00 (0.94) | 0.05 (0.05) | 0.19 (0.00) | -0.02 (0.42) | 0.01 (0.60) | 0.02 (0.41) | 0.00 (0.81) | 0.16 (0.00) |
| 5 MVBV | -0.05 (0.04) | -0.10 (0.00) | -0.09 (0.00) | -0.03 (0.17) | 1.00 | -0.17 (0.00) | -0.17 (0.00) | -0.10 (0.00) | 0.53 (0.00) | 0.05 (0.06) | 0.10 (0.00) | 0.00 (0.75) | -0.06 (0.02) | -0.07 (0.00) |
| 6 LEVERAGE | -0.00 (0.73) | 0.00 (0.95) | -0.09 (0.00) | -0.03 (0.17) | -0.17 (0.00) | 1.00 | 0.10 (0.00) | 0.13 (0.00) | -0.10 (0.00) | -0.05 (0.07) | 0.11 (0.00) | -0.05 (0.06) | -0.03 (0.26) | 0.06 (0.03) |
| 7 SIZE | 0.16 (0.00) | 0.09 (0.00) | 0.17 (0.00) | -0.00 (0.94) | -0.17 (0.00) | 0.10 (0.00) | 1.00 | 0.58 (0.00) | -0.22 (0.00) | 0.01 (0.52) | 0.00 (0.96) | 0.00 (0.96) | -0.13 (0.00) | -0.07 (0.01) |
| 8 ASSETS | 0.09 (0.00) | 0.01 (0.63) | 0.18 (0.00) | 0.05 (0.05) | -0.10 (0.00) | 0.13 (0.00) | 0.58 (0.00) | 1.00 | -0.17 (0.00) | 0.02 (0.46) | -0.09 (0.00) | -0.00 (0.76) | -0.07 (0.00) | -0.04 (0.13) |
| 9 CFO | 0.07 (0.00) | -0.02 (0.39) | 0.16 (0.00) | 0.19 (0.00) | 0.53 (0.00) | -0.10 (0.00) | -0.17 (0.00) | -0.22 (0.00) | 1.00 | 0.08 (0.00) | 0.42 (0.00) | -0.09 (0.00) | -0.04 (0.10) | 0.13 (0.00) |
| 10 $_{\Delta}$ LOGSALES | 0.17 (0.00) | 0.21 (0.00) | -0.01 (0.69) | -0.02 (0.42) | 0.05 (0.06) | -0.05 (0.07) | 0.01 (0.52) | 0.02 (0.46) | 0.08 (0.00) | 1.00 | 0.10 (0.00) | 0.05 (0.07) | -0.04 (0.13) | 0.00 (0.87) |
| 11 CAPEXP | 0.16 (0.00) | 0.10 (0.00) | 0.02 (0.37) | 0.01 (0.60) | 0.10 (0.00) | 0.11 (0.00) | 0.00 (0.96) | -0.09 (0.00) | 0.42 (0.00) | 0.10 (0.00) | 1.00 | -0.00 (0.85) | 0.02 (0.47) | 0.04 (0.13) |
| 12 DAC | 0.05 (0.04) | 0.02 (0.45) | 0.03 (0.17) | 0.02 (0.41) | 0.00 (0.75) | -0.05 (0.06) | 0.00 (0.96) | -0.00 (0.76) | -0.09 (0.00) | 0.05 (0.07) | -0.00 (0.85) | 1.00 | -0.00 (0.77) | 0.07 (0.01) |
| 13 CODC | 0.01 (0.51) | 0.03 (0.17) | -0.04 (0.08) | 0.00 (0.81) | -0.06 (0.02) | -0.03 (0.26) | -0.13 (0.00) | -0.07 (0.00) | -0.04 (0.10) | -0.04 (0.13) | 0.02 (0.47) | -0.00 (0.77) | 1.00 | -0.07 (0.00) |
| 14 E/P | -0.07 (0.00) | -0.09 (0.00) | 0.01 (0.61) | 0.16 (0.00) | -0.07 (0.00) | 0.06 (0.03) | -0.07 (0.01) | -0.04 (0.13) | 0.13 (0.00) | 0.00 (0.87) | 0.04 (0.13) | 0.07 (0.01) | -0.07 (0.00) | 1.00 |

- Main sample includes managing and non-managing firms

Cash flow from operations (CFO) is highly positively correlated with the market-to-book value (MVBV) and the capital expenditure (CAPEXP) of the firms. Cash flow from operations (CFO) has slight relationship with the rest of the variables except for REPURCH. The change in log of sales ($_{\Delta}$ LOGSALES) as a measure of growth is slightly correlated with the other variables expect for VALUEREPURCH, VALUEREP, SIZE, ASSETS, CODC and E/P. Capital expenditure (CAPEXP) has a high positive relationship with cash flow from operations (CFO) and slight correlation with the other variables. CAPEXP has no correlation with VALUEREPURCH, VALUEREP, SIZE, DAC, CODC, and E/P.

Discretionary accruals (DAC) has correlation with all the variables except for REPURCH, VALUEREPURCH, VALUEREP, MVBV, SIZE, ASSETS, CAPEXP, and CODC.

Cost of debt capital (CODC) has slight correlation with VALUEREPURCH, MVBV, SIZE, ASSETS, and E/P. Earnings-price ratio (E/P) is correlated only with LEVELREPURCH, REPURCH, VALUEREP, MVBV, LEVERAGE, SIZE, CFO, DAC, and CODC.

## DIFFERENCE IN THE MEANS OF SUB-SAMPLES VARIABLES

To examine the difference in the means of the variables for both sub-samples, I use t-test to examine whether a difference exists between the means of the same variable for the managing and the non-managing firms. If a significant difference exists, then the variable is considered as a determinant of the firms that are able (not able) to manage EPS through share repurchases.

The differences in the mean of the variables between the two sub-samples are presented in table 3. The difference in the means of the level of change in the shares outstanding from previous period (LEVELREPURCH) is significant with a t-value of 2.31 (p-value = 0.02). This indicates that non-managing firms repurchase more shares than managing firms. However, the percentage change in shares outstanding (REPURCH) is insignificant with a t-value of 1.37 (p-value = 0.17). The difference in the means for the level of the value of share repurchases (VALUEREPURCH) is significant with a t-value of 2.84 (p-value = 0.00). This indicates that non-managing firms' value of share repurchases is more than the value of share repurchases for the managing firms.

The difference in the means of the percentage change in the value of share repurchases (VALUEREP) is insignificant with a t-value of 0.43 (p-value = 0.66). This indicates that there is no significant difference between values of share repurchases for the managing firms and that of the non-managing firms. The difference in the means of market-to-book value (MVBV) is significant with a t-value of 11.63 (p-value = 0.00). This shows that the non-managing firms' MVBV is significantly greater than the managing firms' MVBV. The leverage (LEVERAGE) means difference is significant with a t-value of -4.36 (p-value = 0.00). This indicates that the managing firms are leveraged more than the non-managing firms.

The log of total assets' (SIZE) means difference is significant with a t-value of -1.77 (p-value = 0.07). This indicates that the managing firms are larger than the non-managing firms. The means difference for total assets (ASSETS) is insignificant with a t-value of 0.07 (p-value = 0.94). This indicates that on average, managing firms and non-managing firms have similar value of total assets. The means difference for cash flows (CFO) is insignificant with a t-value of -1.13 (p-value = 0.26). This implies that there is no difference in cash flows between managing firms and non-managing firms.

The results in table 4 show that there is no difference between the growth's means ($\Delta LOGSALES$) for the managing and the non-managing firms. This indicates that both types of firms have similar growth rate. Capital expenditure (CAPEXP) means difference is insignificant with a t-value of -1.33 (p-value = 0.18). This indicates that both managing and non-managing firms have similar capital expenditure as a percentage of total assets. The difference in the means for

discretionary accruals (DAC) is insignificant with a t-value of -0.05 (p-value = 0.96). This shows that both firms on average manipulate similar portion of discretionary accruals as a percentage of total assets.

**Table 4**
**Difference in Variable's Means for the Managing and the Non-Managing Firms**

| Variable | Mean | t-value | Pr > t |
|---|---|---|---|
| LEVELREPURCH | 10.75 | 2.31 | 0.02** |
| REPURCH | 0.95 | 1.37 | 0.17 |
| VALUEREPURCH | 133.39 | 2.84 | 0.00*** |
| VALUEREP | 0.14 | 0.43 | 0.66 |
| MVBV | 59.98 | 11.63 | 0.00*** |
| LEVERAGE | -0.04 | -4.36 | 0.00*** |
| SIZE | -0.15 | -1.77 | 0.07* |
| ASSETS | 283.33 | 0.07 | 0.94 |
| CFO | -0.58 | -1.13 | 0.26 |
| $_{\Delta}$ LOGSALES | -0.00 | -0.52 | 0.60 |
| CAPEXP | -0.44 | -1.33 | 0.18 |
| DAC | -0.06 | -0.05 | 0.96 |
| CODC | 1.08 | 12.10 | 0.00*** |
| E/P | -6.40 | -20.29 | 0.00*** |

Mean of the non-managing firms minus the mean of the managing firms.
***, **, and * represents 1%, 5%, and 10% level of significance.

The difference in the means of cost of debt capital (CODC) is significant with a t-value of 12.10 (p-value = 0.00). This indicates that non-managing firms pay more interest for their loans than managing firms. Earnings-price ratio (E/P) means' difference is significant with a t-value of -20.29 (p-value = 0.00). This shows that the E/P ratio is significantly higher for the managing firms than for the non-managing firms.

In summary, non-managing firms repurchase more of their shares than managing firms, the value of the repurchases is higher for the non-managing firms than that of the managing firms, market-to-book value of the non-managing firms is higher than that of the managing firms, and non-managing firms pay higher interest rate than managing firms. On the contrary, managing firms are more leveraged, larger in size, and have higher E/P ratio than that of the non-managing firms.

## CONCLUSION

Prior research examines a variety of motives behind share repurchases (Dittmar 2000). Not until recently, Bens et al (2003) and Khaledi and Balsam (2003) among others examine whether managers manage EPS through share repurchases. Knowing the determinants of firms that are able to manage EPS through share repurchases, investors can make sound investment

decisions based on the information available to them about the determinants of managing and non-managing firms. I report, as expected, that managing firms have higher earnings-price ratio. Consistent with Khaledi and Balsam (2003), I report that managing firms are larger. However, opposite to expectation, managing firms have higher leverage. This implies that managing firms use their resources inefficiently. Non-managing firms repurchase more shares. As expected, non-managing firms have higher market-to-book value (MVBV). Similar to Khaledi and Balsam (2003), I document that non-managing firms pay higher interest rate.

## REFERENCES

Atiase, R. (1985) "Predisclosure Information, Firm Capitalization, and Security Price Behavior Around Earnings Announcements." Journal of Accounting Research 23(1):21-36.

Bens, D., Nagar, V., Skinner, D., Wong, F. (2003) "Employee Stock Options, EPS Dilution, and Stock Repurchases." Journal of Accounting and Economics 36:51-90.

Comment, R. and Jarrell, G. (1991) "The Relative Signaling Power of Dutch-Auction and Fixed-Price Self-Tender Offers and Open-Market Share Repurchases." The Journal of Finance, 46(4):1243-1271.

DeFond, M., Jiambalvo, J. (1994) "Debt Covenant Violation and Manipulation of Accruals: Accounting Choice in Troubled Companies." Journal of Accounting and Economics, 17:145-176.

Dittmar, A. (2000) "Why Do Firms Repurchase Stock?" Journal of Business 73(3): 331-355.

Fenn, G. and Liang, N. (2001) "Corporate Payout Policy and Managerial Stock Incentives." Journal of Financial Economics, 60:45-72.

Grullon, G. and Michaely, R. (2004) "The Information Content of Share Repurchase Programs." The Journal of Finance. 59(2):651-680.

Jones, J. (1991) "Earnings Management During Import Relief Investigations." Journal of Accounting Research 29(2). pp.193-228.

Kahle, K. (2002) "When a Buyback Isn't a Buyback: Open Market Repurchases and Employee Options." Journal of Financial Economic 63:235-261.

Khaledi, N. and Balsam, S., (2003) "Managing EPS Through Share Repurchases." Working Paper, Temple University: 1-27.

Lys, T., and Watts, R. (1994) "Lawsuits against Auditors." Journal of Accounting Research. 32(Supp.): 65-93

Teoh, S., Welch, I., and Wong, T. (1998a) "Earnings Management and the Underperformance of Seasoned Equity Offerings." Journal of Financial Economics 50:63-99.

_____, Welch, I., and Wong, T. (1998b) "Earnings Management and the Long-Run Market Performance of Initial Public Offerings." Journal of Finance 53:1935-1974.

Watts, R. and Zimmerman, J. (1986) Positive Accounting Theory. Prentice-Hall, Inc. Upper Saddle River, New Jersey, 07458. U.S.A.

Zimmerman, J. (1983) "Taxes and Firm Size." Journal of Accounting and Economics. (5) 119-149.