E/B/R ECONOMIC AND BUSINESS REVIEW

Volume 19 | Issue 1 Article 2

4-7-2017

Innovation Focused Strategy and Earnings Management

Nathan Jeppson

David Salerno

Recommended Citation

Jeppson, N., & Salerno, D. (2017). Innovation Focused Strategy and Earnings Management. *Economic and Business Review, 19*(1). https://doi.org/10.15458/85451.36

INNOVATION FOCUSED STRATEGY AND EARNINGS MANAGEMENT

NATHAN JEPPSON[1]
DAVID SALERNO [2]

Received: November 24, 2015
Accepted: November 10, 2016

ABSTRACT: *This study utilizes three approaches to investigate the extent to which firms with an innovation focused strategy engage in earnings management through the use of income smoothing, real activities, and the use of discretionary accruals. Several results are reported. First, firms with an innovative strategy report a greater percentage of earnings in the fourth quarter indicating greater earnings management. Second, innovative firms use real activities to a greater extent than non-innovative firms to manage earnings when income approaches certain earnings benchmarks. Lastly, innovative strategy firms engage in the use of discretionary accruals to a greater degree than other firms.*

Keywords: *Earnings management; Innovation; Firm strategy; Earnings manipulation; Accruals*
JEL Classification: M41; L21; O32
DOI: 10.15458/85451.26

INTRODUCTION

The literature shows there are two basic types of business strategies: cost leadership and differentiation (Porter, 1985; Ittner & Larcker, 2001; Langfield-Smith, 1997). Firms adopting a cost leadership strategy focus on being the least expensive producer of a product or the least expensive provider of a particular service. On the other hand, firms pursuing a differentiation strategy attempt to offer a unique product or service. Often firms with a differentiation strategy, a growth strategy or an innovation strategy are referred to synonymously (Ittner & Larcker, 2001). In order to obtain their economic objectives, firms with a either a cost leadership or a differentiation strategy engage in innovative activities in several categories including extending their existing product range, increasing sales and market share, or cutting costs (Guan et al., 2009).

Innovation is widely considered to be the lifeblood of corporate survival and growth (Zahra & Covin, 1994). Ittner and Larcker (2001) define an innovative firm as one that focuses on being first-to-market with a variety of original products or services.[3] Most early empirical studies examining innovation are derived from the classic discussion provided

1 Montana State University, Bozeman, MT, USA, e-mail: nathan.jeppson@montana.edu
2 University of Scranton, Kania School of Management, Scranton, PA, USA, e-mail: david.salerno@scranton.edu

3 Ittner and Larcker (2001) indicate that innovative firms may also be referred to as "prospector" or "build" firms in the literature. Conversely, firms that follow a cost leadership strategy might also be termed "defender" or "harvest" firms.

by Schumpeter (1942). Schumpeter outlines that new technology is successful innovation through combined investment decisions. However firms that are regarded as innovative might be innovative in several different areas. For example, extant literature often classifies innovation into broad categories such as process innovation, product innovation, or business model innovation (e.g. Nicholas, 2008). While innovation is a complex construct, for purposes of this paper an innovative firm is one that pursues product innovations.

While it is clear that firms engage in earnings management, the motivation of this paper is to investigate the additional extent to which firms with strategy focused on innovation (IS firms) engage in earnings management. The existence of earnings management is well documented in the literature (e.g., Hayn 1995; Burgstahler & Dichev, 1997; Degeorge, Patel & Zeckhauser, 1999; Das, Shroff & Zhang 2009; see also literature regarding research and development intensive firms such as Cheng, 2004). Literature shows that earnings can be manipulated using either accounting accruals or real activities (e.g., reduction in research and development spending, see Cohen & Zarowin, 2010). Accrual-based earnings management has no direct effect on cash flows, while real activity-based earnings management will affect firm cash flows and could affect accruals as well.

Knowledge regarding the extent to which innovative firms participate in earnings manipulation will be of special interest to investors and to other stakeholders because an innovative strategy could provide several competitive advantages: developing new products or new product lines that enthuse the customer, keeping ahead of competitors in a given industry, and entering into new market segments or developing new businesses (Bowonder et al., 2010).

Extant research provides several indications that IS firms may be more likely to manage earnings than are non-IS firms. First, an IS firm's investment in new products, processes or business models is inherently risky and uncertain (Choi & Ahn, 2010), therefore, management may have more pressure from the market to smooth earnings in order to reduce these large aberrations in income. Second, IS firms may be in need of large pools of capital to support new research projects (Choi & Ahn, 2010). The need for capital may place pressure on management to inflate earnings in order to receive the desired funding from investors. IS firms invest more capital in research and development (R&D) than do non-IS firms and therefore face increased fundraising pressures. Third, recent research indicates that innovative firms are underpriced (Ciftci, Lev & Radhakrishnan, 2011) and that the market undervalues R&D expenditures (Ali, Ciftci & Cready, 2012) which could reasonably be expected to encourage firms to manage earnings. Finally, prior literature has clearly demonstrated that R&D expenses provide an opportunity for earnings management. R&D spending can easily be manipulated to influence earnings overall (Bartov, 1993; Bens, Nagar & Franco-Wong, 2002; Bens et al., 2003; Cohen, Dey & Lys, 2008). Also, seminal studies regarding earnings management by Hayn (1995) and Burgstahler and Dichev (1997) show that firms are more likely to manipulate earnings around zero values of net income. Since one method firms often use to manage earnings is through a reduction in R&D expenses (Baber, Fairfield & Haggard, 1991; Bushee, 1998; Cheng, 2004; Garcia & Young, 2009), IS firms might be more likely to manage earnings because they often have high levels of R&D that could be temporarily curtailed as a means of reducing expenses and thus managing earnings (Holthausen, Larcker & Sloan, 1995).

Three tests are used to examine the relationship between IS firms and earnings management. The first is a test of income smoothing following Murphy (2001). The firm's fourth quarter net income is regressed on a dummy variable representing high net income through the first three quarters of the current year, a proxy for innovation strategy, and an interaction term of those two variables. We find that IS firms derive a greater portion of their income from the fourth quarter of the year than non-IS firms indicating that IS firms are manipulating income to a greater extent. The second test investigates the use of real activities such as the strategic use of R&D spending discussed earlier in this section (Roychowdhury, 2006). We find that IS firms employ the use of real activities to meet earnings benchmarks to a greater degree than do non-IS firms, thus indicating a greater degree of earnings management. Finally, the third test examines earnings management by use of discretionary accrual techniques following Cohen, Dey, and Lys (2008). We find evidence that IS firms also use discretionary accruals to manipulate income more than non-IS firms. This study is distinct in that it examines the relationship between firm innovation focused strategy and earnings management. The results of this paper will contribute to the literature by revealing the impact that an overall innovative firm strategy has on earnings management.

The remainder of this study is organized as follows. Section 2 contains a discussion of the literature regarding strategy, innovation, and earnings management. Section 3 provides the hypotheses and research design. Results and discussion regarding the proposed tests are included in section 4. Section 5 provides a conclusion and limitations

1 RELATED PRIOR RESEARCH

According to Chaney et al. (1991), innovation is the basis for all economic growth and development. They outline three primary areas of innovation research: (1) the efficiency of innovation investment; (2) the Schumpeterian hypothesis; and (3) the social benefits of innovation.

First, the literature examines whether a competitive marketplace effectively and efficiently invests in new process, product, and business model development. For example, Matolcsy and Wyatt (2008) determine how technological innovations drive the market value of the firm through earnings growth. This study uses three factors to determine the level of innovation: the success of prior technology investments, the complexity of technology and the development period of the technology. The results show that when the three factors that facilitate innovation are present alongside earnings growth, the market value of equity is greatly enhanced. At the firm level, Inderst and Klein (2007) show how managers have a tendency to overinvest in their own projects during the corporate budgeting process due to their own biases.

Second, prior studies examine the "Schumpeterian hypothesis" and whether a monopoly (or near monopoly) is necessary to foster innovation (Boldrin & Levin, 2009). Smythe (2010) characterizes the Schumpeterian hypothesis as the idea that highly concentrated industries

are more conducive to rapid technological innovation than less concentrated industries. For example, a study by Gayle (2003) conducts an empirical examination of the Schumpeterian hypothesis by using citation-weighted patent count to measure innovative output.

Finally, other research explores the role government has in fostering innovation and the social benefits of innovation. Social benefits of innovation are product inventions or process and business model developments that have value to society. For instance, innovations in the pharmaceutical industry have contributed to societal health while innovations in the high-tech industry have increased society's access to information. A recent example of this type of research is Wagner (2010) where the author explores the link between innovation with high social benefits and corporate social performance and the role that family firms play in this link. Wagner (2010) finds that family firms moderate the link between innovation and high social benefits and corporate social performance. We add to these three areas of innovation research by examining what effect the manipulation of earnings has on the expansion of innovative ideas.

The existence of earnings management is clearly demonstrated in the literature (e.g., Burgstahler & Dichev, 1997; Das, Shroff & Zhang, 2009; Degeorge, Patel & Zeckhauser, 1999; Hayn, 1995). Some limited empirical evidence also exists regarding the relationship between firms adopting innovation focused strategies and their likelihood to manage earnings. For example, Garcia and Young (2009) establish a link between managers curtailing R&D in response to target driven earnings pressures. Their study uses a large sample of R&D active United Kingdom firms.[4] The results suggest that these R&D active firms are more likely to manage earnings to meet certain earnings targets by limiting R&D expenses. Several other studies in the literature have also shown that managers reduce R&D spending to increase short-term performance (e.g., Cheng, 2004). Most recently Shust (2015) examines and finds that the extent to which firms engage in research and development or their R&D intensity level is positively associated with accrual-based earnings management. This paper extends these studies by examining whether IS firms use discretionary accruals and several other types of real activities (in addition to R&D expenses) to manage or smooth earnings.

Management is motivated to manage earnings for a variety of reasons. Graham et al. (2005) provides several reasons for earnings management to meet certain benchmarks. The dominant reason relates to stock price. Skinner and Sloan (2002), for example, document that there are severe negative price reactions when growth firms do not meet earnings expectations. Burgstahler and Dichev (1997) document that managers avoid reporting earnings decreases and losses to decrease costs imposed in transactions with shareholders. Based on prospect theory, managers may be highly motivated to avoid reporting a loss since the largest gains in utility occur when moving from an absolute loss to a gain (Burgstahler & Dichev, 1997). Major consequences for missing earnings targets are an increase in uncertainty about future prospects and the perception that missing

4 The criteria Garcia and Young (2009) use for R&D active firms are non-financial firms with at least three consecutive years of non-zero R&D expenditure over a 13 year period. Garcia and Young (2009) focus their tests exclusively on United Kingdom firms that expense all R&D as incurred.

targets may be a sign of previously unknown problems at the firm (Graham, Harvey & Rajgopal, 2005).

Despite its short term benefit, earnings management has future and long-term consequences. Earnings management using real activities, such as delaying R&D expenditures, could have a negative impact on future performance (Mizik, 2010). Degeorge et al. (1999) find that the future performance of firms suspect for boosting earnings across a threshold is poorer than other firms. Additionally, aggressive earnings management leading to accounting scandals results in harsh consequences such as a significant drop in the value of equity ownership, and severe penalties such as fines and sanctions imposed by the Securities and Exchange Commission, jail or probation time and job loss (Karpoff et al., 2008).

A common reason to manage earnings is to achieve a smoother earnings path. Earnings smoothing, or a reduction of variability in reported earnings, is preferred by investors (Barth et al., 1999) as evidenced by firms that smooth earnings being consistently priced at a premium (DeAngelo et al., 1996). In fact, analysts reward firms that engage in more aggressive earnings smoothing with higher Financial Analysts' Federation (FAF) disclosure scores (Shaw, 2003).

However, there are other reasons why firms smooth earnings. For example, managers at firms that have their bonuses based on internal standards will manage earnings to meet but not exceed budgeted performance thus achieving a smooth pattern of earnings (Murphy, 2001). Smoother earnings reduce the probability that firms will violate debt covenants because, as part of a smoothing strategy, firms will manipulate earnings to meet the thresholds outlined in the debt covenants (Blasco & Pelegrin, 2006). Smoother earnings lead to an improvement in initial public offerings, stock financed acquisitions and the overall financial conditions of many other operations as firms that that have shown to have a consistent pattern of earnings are priced and valued by investors at a premium (Blasco & Pelegrin, 2006).

Several studies indicate that firms willingly sacrifice value in order to improve reported earnings. Mizik (2010) assesses the aggregate financial consequences of cutting marketing as well as R&D spending to inflate earnings. Mizik (2010) contrasts the reduction of these discretionary expenses to inflate earnings or myopic management with accounting accruals-based earnings inflation and finds that myopia has a long-term net negative impact on firm value. Mizik (2010) also shows that myopic management, and not accrual-based manipulation, has the greater negative impact on future financial performance. Further, many top company executives concede that they are willing to reduce R&D and advertising expenses even if that reduction in expenses would lead to a reduction in value of the firm (Graham, Harvey & Rajgopal, 2005). Dechow and Sloan (1991) similarly find that when top executives are at the end of their tenure or when they are nearing retirement at a firm, their firms exhibit a reduction in R&D spending.

Other related studies include Das, Shroff and Zhang (2009) which investigates whether the pattern of quarterly earnings changes can provide an indication of earnings management. They find that reversals of year to date earnings patterns in the fourth quarter occur more

frequently than should be expected if the earnings reversals occurred purely by chance. Several factors that were prevalent among firms with earnings reversals, including changes in R&D expenditures, were indicative of earnings management.[5] However, neither Das, Shroff and Zhang (2009) nor Mizik (2010) examine firms with an overall innovation strategy. Finally, previous research examines the relationship between R&D expenditures and meeting earnings forecasts and targets (Garcia & Young, 2009), while other research studies the impact that income smoothing has on earnings informativeness (Tucker & Zarowin, 2006).

2 RESEARCH DESIGN AND HYPOTHESES

Several studies in prior literature suggest that IS firms would be more likely to manage earnings than non-IS firms. First, Chaney, Devinney and Winer (1991) outline several areas from conception of a new innovation to the public release of that innovation where results from feasibility studies of new ideas, testing of new innovations, and sales of new products or ideas in the marketplace could influence earnings, analyst earnings forecasts, and other financial forecasts. Furthermore, profitability from innovative projects fluctuates widely due to the risky nature of taking new ideas through to completion as a successful product in the marketplace (see Marion & Friar, 2012). For example, Stevens and Burley (1997) estimate that, on average, for every 100 exploratory projects where R&D expense is incurred, only one successful product results.[6] Since an innovative firm's investment in new products and processes is inherently risky, management may have more pressure from the market to smooth earnings in order to reduce any aberrations in income as a result of R&D expenses from failed projects and profits from successful projects. Second, IS firms may be in need of large pools of capital to support new research projects. The need for such capital may place pressure on management to inflate earnings to meet analysts' expectations in order to receive the desired funding from investors (Fuller & Jensen, 2010). Because IS firms typically invest more capital in R&D and therefore face these fundraising pressures (Garcia & Young, 2009), it is reasonable to expect that earnings management might be used to attract capital to a greater degree than firms with low or no R&D programs. Third, research indicates that the market does not fully reward firms that engage in R&D. For example Ciftci, Lev and Radhakrishnan (2011) find that such firms are underpriced by the market. Moreover, consistent with the underpricing of such firms, Ali, Ciftci and Cready (2012) provide evidence that market participants undervalue R&D expenditures. Therefore it is reasonable to assume that firms that find themselves in this position would engage in earnings management to enhance their ability to attract capital. Finally, prior literature has clearly demonstrated that R&D expenses provide the opportunity for earnings management and have often been manipulated by management to influence overall earnings (Bartov, 1993; Bens, Nagar & Franco-Wong, 2002; Bens et al., 2003; Cohen, Dey & Lys, 2008).

5 Other factors Das, Shroff & Zhang (2009) find are prevalent among firms with earnings reversals include the size and direction of discretionary accruals, the reversal of subsequent accruals, the use of special items in the income statement, and the effective tax rate.

6 Stevens and Burley (1997) suggest that, on average, for every 3,000 raw ideas, there are 100 exploratory projects, 10 well-developed projects, 2 full-fledged product launches and 1 successful product.

We also consider the possibility, which enjoys very little support in the literature, that IS firms might be less likely to manage earnings. First, when IS firms are in a startup or growth phase they may place less emphasis on profitability than firms in the later phases of the corporate life cycle (Anderson & Zeithaml, 1984; Quinn & Cameron, 1983). Miller and Friesen (1984) explain that firms in the early stages of the life cycle are more innovative. Therefore, a firm in its early stages may be categorized as a IS firm when profitability is low and then later in the corporate life cycle when profitability is high may not be considered an IS firm. With this reduced emphasis on profitability, there would be less pressure to manage earnings during these early organizational phases. Since firms with a focus on innovation sometimes have negative earnings due to their startup nature, earnings management could be less prevalent among IS firms than among non-IS firms. Second, the motivation to manage earnings often stems from a need to raise capital. If an IS firm already has available sources of funding for future projects, either through venture capital or other profitable product lines, there would be less pressure to manage earnings (Graham, Harvey & Rajgopal, 2005).

Although the literature cited above offers two scenarios under which IS firms might be less likely to manage earnings, the current authors suggest that this evidence is weak. For example, the first reason cited is that firms in their early stage life cycle would be less likely to engage in earnings management because they would not be compelled to mask losses at that point because such losses would be expected by market participants. We acknowledge that this dynamic is possible; however there is no reason supported by the literature that would indicate that IS firms are any less likely to manage earnings in that environment than would be non-IS firms who are experiencing early life cycle losses. Therefore we find no reason to suspect that earnings management would be less likely in IS firms under those circumstances. The second reason cited above for less likely earnings management is that IS firms often obtain private venture capital to fund operations and thus have no need to raise capital through traditional public debt or equity sources. Therefore in the absence of such a need there would be no incentive to manage earnings. Although this scenario is likely true for some IS firms, there is no indication in the literature that IS firms have any less of a need for capital beyond private sources than do non-IS firms.

Because the reasons for expecting less earnings management among IS firms are not strongly supported by the literature, and because of the strong indications in prior literature cited above that suggest a positive relationship exists between IS firms and earnings management, we test the following hypotheses stated in the alternate form:

H1. Earnings smoothing is more prevalent among IS firms than among non-IS firms.

H2. Use of real activities to manipulate earnings is more prevalent among IS firms than among non-IS firms.

H3. Use of discretionary accruals to manipulate earnings is more prevalent among IS firms than among non-IS firms.

To test the hypotheses, three earnings management approaches are examined. The first approach (to test H1) is to investigate whether income smoothing exists. Prior research

has examined income smoothing as evidence for earnings management (Matsuura, 2008; Shaw, 2003). Murphy (2001) examined the proportion of net income derived from the fourth quarter relative to the proportion of net income derived from the first three quarters of the fiscal year. Therefore, we test whether IS firms derive a greater (or smaller) proportion of income from the fourth quarter relative to non-IS firms.

The second approach (to test H2) is to test for the use of real activities by IS firms. One method that firms use to manage earnings through real activities is to reduce discretionary expenditures such as R&D expenses (Cardinal & Opler, 1995) and advertising and marketing expenses (Mizik, 2010). Roychowdhury (2006) develops empirical methods to detect real activity-based earnings management including cash flow from operations (CFO), production costs, and discretionary expenses. Roychowdhury (2006) argues that these variables capture the effect of real operations better than accruals. Then, these measures are used to detect real activities manipulation around the zero earnings and annual analyst forecasts thresholds. In a subsequent study (Cohen, Dey & Lys, 2008) also uses the Roychowdhury (2006) proxies for real-activity earnings management. Furthermore, other real activities that might be used to manipulate income include certain special items (Das, Shroff & Zhang, 2009) such as the delay of new product introductions and by offering certain customer incentives to boost product sales (Graham, Harvey & Rajgopal, 2005).[7]

Finally the use of discretionary accruals to manage earnings is examined (to test H3), which is the most commonly used measure to identify earnings management.[8] Burgstahler and Dichev (1997) document the existence of earnings management and indicate that besides using real activities, firms also use accruals to manage earnings. Discretionary accruals are normally identified using the modified "Jones Model" (Jones, 1991) as described in Dechow, Sloan and Sweeney (1995), Kothari, Leone and Wasley (2005), and Cohen, Dey and Lys (2008).[9] The original Jones Model estimates accruals as a function of a change in revenue and a change in property, plant and equipment. Then discretionary accruals are computed as the difference between the actual and predicted values of total assets. Since a higher than predicted level of discretionary accruals is an indicator that a firm might have engaged in earnings management, this equation computes discretionary accruals as the difference between the actual and the predicted value of total accruals.

7 Some special items could be used to manipulate income through accruals (i.e. write-downs of assets), some special items may be examples of real activity manipulation (i.e. non-recurring profit or loss on the sale of assets, investments, securities, among others) while others may be examples of either accrual or real activity manipulation (i.e. any significant nonrecurring items).

8 A recent study by Stubben (2010) finds that discretionary revenues can also be used to determine the level of earnings management a firm has engaged in. In fact, his study finds that revenue models are more likely than accrual models to indicate a combination of revenue and expense manipulation. Additionally, Dechow et al. (2012) develop a new approach for detecting earnings management that improves test power and specification. This new approach utilizes the information contained in the reversals of accruals to improve the power of testing for earnings by over 40%.

9 Dechow, Sloan, & Sweeney (1995) find the modified Jones Model to exhibit the most power in detecting earnings management.

2.1. Measurement of Innovation

Several previous papers use various approaches to measure innovation. Some commonly used proxies for innovation include R&D expenses (e.g., Cardinal & Opler, 1995; Ittner, Larcker & Rajan, 1997), number of patents (e.g., Francis & Smith, 1995; Holthausen, Larcker & Sloan, 1995), and new product releases (Cardinal & Opler, 1995; Ittner, Larcker & Rajan, 1997). Less commonly used proxies for innovation include the number of innovation-related press releases (Koku, 2010), revenue and income from acquisitions (Francis & Smith, 1995), and the ratio of capital expenditures to sales (Francis & Smith, 1995). Closely related measures of innovation include Ittner, Larcker and Rajan (1997) measures of firm growth and firm efficiency measured using market to book value and the number of employees to sales, respectively.

Following prior studies (e.g., Cardinal & Opler, 1995; Ittner, Larcker & Rajan, 1997), R&D expenses (Compustat XRD) are used to proxy for innovation. In order to operationalize R&D expenses as a proxy for innovation, the median value of R&D expenses scaled by total assets for each industry or 2-digit SIC code are computed. A dummy variable indicating high and low levels of R&D expenses for each firm-year is utilized. The variable indicates whether the firm's preceding three years average level of R&D spending is above or below the median value for each industry during the preceding three years.

2.2. Research Methodology

Three equations are used to test each of the approaches described in section 3.1. To test for income smoothing, the first equation is based on Murphy (2001) who identifies firms smoothing income in the fourth quarter. The following empirical equation is employed:

$$Qtr4_{it} = \beta_1 + \beta_2 YTDDIFF_{it} + \beta_3 INNOV_{it} + \beta_4 YTDDIFF_{it} * INNOV_{it} + \beta_5 AGE_{it} + \beta_6 MTB_{it} + \beta_7 MKTVAL_{it} + \beta_n Industry + \varepsilon_{it} \quad (1)$$

where, for each firm *i* and year *t*:

*Qtr*4 is the percent of annual net income (Compustat NI) derived from the fourth quarter;

YTDDIFF is the difference in net income (Compustat NI) through the first three quarters in year t with the net income through the first three quarters in year t-1;

INNOV is a dummy variable equal to one if the three year mean of R&D spending in years *t-3*, *t-2*, and *t-1* (Compustat XRD) scaled by total assets (Compustat AT) is above the industry median in years *t-3*, *t-2*, and *t-1*; otherwise, it is equal to zero;

AGE is the number of years since the initial public offering of the firm;

MTB is the market value of the firm (Compustat MKVALT) divided by the book value of the firm (Compustat CEQ);

MKTVAL is the market value of equity (Compustat MKVALM); and *Industry* represent dummy variables to indicate two-digit SIC code categories.

This equation examines whether firms with innovation focused strategies smooth earnings by artificially inflating or reducing the fourth quarter income once the income through the first three quarters of the year is known. Absent of earnings management and seasonal fluctuations in business activity, the dependent variable, *Qtr4*, would approximate one-quarter of a firm's annual net income because *Qtr4* is the percent of annual net income (Compustat NI) derived from the fourth quarter. Prior literature has shown that due to income smoothing, higher income through the first three quarters of the current year compared to income during the same period in the prior year has a downward effect on the fourth quarter's earnings as firms exceeding their targets in the first three quarters may adjust their fourth-quarter accruals downward to "save" for the future (Das, Shroff & Zhang, 2009; Murphy, 2001). For firm with net income, this would result in a negative coefficient on the *YTDDIFF* variable. Furthermore, because of the larger pool of marketing and R&D expenses in IS firms, the expectation of this study is that those firms will be more likely to smooth earnings than non-IS firms (Das, Shroff & Zhang, 2009; Mizik, 2010). For observations with annual net income, the coefficient on the interaction term *YTDDIFF*INNOV* is also expected to be negative. Such a result would indicate that IS firms smooth earnings by decreasing earnings to a greater extent during the fourth quarter. Conversely, for firms with annual net loss, the coefficient on both the YTDDIFF and the interaction would be expected to be positive. This result for firms with a net loss would indicate that they smooth their losses by increasing losses in the fourth quarter when their losses through the first three quarters of the current year are smaller than that of the same period in the prior year.

The second equation tests management's use of real activities. Under this method, following Cohen, Dey and Lys (2008), three tests for abnormal activities are performed: abnormal cash flow from operations; abnormal production costs; and abnormal discretionary expenses. Discretionary expenses are defined as the sum of advertising expenses, R&D expenses, and selling, general and administrative (SG&A) expenses. Each model measures the deviation from the predicted value in the corresponding industry-year regression. Although capitalization of development costs could have an impact on real activities earnings management and thus increase the deviation from predicted values in equation (4) below, because the firms in our sample generally use U.S. GAAP which precludes capitalization of such costs with narrow exceptions for software and website development costs, we expect any impact to be diminutive. Therefore following Cohen, Dey & Lys (2008) the normal levels of cash flow from operations, production costs, and discretionary expenses are generated by first estimating normal cash flow from operations *(CFO)* as follows:

$$CFO_{it} = \beta_1 \left(1/_{Assets_{it-1}}\right) + \beta_2 MV_{it} + \beta_3 Q_{it} + \beta_4 Sales_{it} + \beta_5 \Delta Sales_{it} + \varepsilon_{it} \quad (2)$$

The normal level of production costs *(Prod)* are estimated as:

$$Prod_{it} = \beta_1 \left(1/_{Assets_{it-1}}\right) + \beta_2 MV_{it} + \beta_3 Q_{it} + \beta_4 Sales_{it} + \beta_5 \Delta Sales_{it} + \beta_6 \Delta Sales_{i,t-1} + \varepsilon_{it} \quad (3)$$

Next, the normal level of discretionary expenses (*DiscExp*) is modeled as:

$$DiscExp_{it} = \beta_1 \left(1/_{Assets_{it-1}}\right) + \beta_2 MV_{it} + \beta_3 Q_{it} + \beta_4 INT_{it} + \beta_5 Sales_{i,t-1} + \varepsilon_{it} \quad (4)$$

In these equations, *CFO* (Compustat OANCF – XIDOC) is as reported in the statement of cash flows, scaled by total assets (Compustat AT); *MV* is the natural log of market value (Compustat PRCCM * CSHO); *Q* is Tobin's Q (Compustat (PRCCM * CSHO) + PSTK + DT + DLC) scaled by total assets; *Sales* is net sales (Compustat SALE) scaled by total assets; *Prod* represents the production costs, defined as the sum of Cost of Goods Sold (Compustat COGS) and change in inventory (Compustat INVT) scaled by total assets; *DiscExp* represents the discretionary expenditures, defined as the sum of advertising expenses (Compustat XAD), R&D expenses (Compustat XRD), and selling, general and administrative expenses (Compustat XSGA) scaled by total assets, and *INT* is internal funds (Compustat IB + XRD + DP). Abnormal *CFO*, abnormal production costs, and abnormal discretionary expenses are computed as the difference between the actual values and the normal levels predicted from equations (2), (3), and (4). These three variables are then used as proxies for real activity earnings management in the following equation:

$$\begin{aligned} Abnormal\ Activity = {} & \beta_0 + \beta_1 INNOV_{it} + \beta_2 Bench_{it} + \beta_3 INNOV_{it} * Bench_{it} + \beta_4 Big_{it} + \\ & \beta_5 \Delta GDP_t + \beta_6 AGE_{it} + \beta_7 MTB_{it} + \beta_n Industry_i + \beta_n Year_t + \varepsilon_i \end{aligned} \quad (5)$$

where for each firm *i* and year *t*:

Abnormal Activity is one of three measures of abnormal activity: abnormal cash flow from operations, abnormal production costs; or abnormal discretionary expenses;

Bench is an indicator variable that is set equal to one if (a) net income divided by total assets is between 0 and 0.01, or (b) the change in net income divided by total assets between *t – 1* and *t* is between 0 and 0.01, zero otherwise;

Big is a dummy variable equal to 1 if the auditor is a Big 4 audit firm;

ΔGDP is the change in gross domestic product (Compustat GDP);

Industry represent dummy variables to indicate two-digit SIC code categories; and

Year is dummy variables to control for year effects.

All other variables are defined as in prior equations.

As in Gunny (2010), we include the indicator variable, *Bench*, which identifies firms that have just met one or both of two earnings benchmarks. These two benchmarks are earnings that are just above zero or earnings that are just above the prior year's earnings. We also interact this indicator variable for earnings benchmarks with the test variable for innovation. A significant result on the interaction term would indicate IS firms engage in incrementally different earnings management behavior.

For given sales levels, firms that manage earnings upward are likely to have unusually high or low cash flow from operations, unusually low discretionary expenses, or unusually high

production costs. Either unusually high or low cash flow from operations could indicate earnings management. Unusually high cash flow may result from the reduction of cash expenses. Unusually low cash flow from operations could result from the acceleration of sales through price discounts or lenient credit terms (Cohen, Dey and Lys 2008). Therefore the expectation is that the coefficient of *INNOV* and the interaction between *INNOV* and *Bench* in Equation (5) will be either positive or negative for abnormal cash flow, negative for abnormal discretionary expense and positive for abnormal production costs. Such a result would indicate that innovative firms manage earnings by manipulating these real activities more than other firms in periods when a change in these income statement items will increase the likelihood of receiving favorable terms of financing or to meet analysts' earnings targets.

The third equation is used to test the extent to which IS firms engage in earnings management by using discretionary accruals. As suggested by Cohen, Dey, and Lys (2008), the equation is developed by starting with the Jones Model (Equation 6) for determining discretionary accruals. Discretionary accruals are computed as the difference between the actual and predicted values of total accruals as follows:

$$TA_{it} = \beta_0 + \beta_1 \left(1/_{Assets_{it-1}}\right) + \beta_2 \Delta Sales_{it} + \beta_3 PPE_{it} + \varepsilon_{it} \quad (6)$$

where for each firm *i* and year *t*:

TA is total accruals scaled by lagged total assets (Compustat AT) where total accruals is earnings before extraordinary items and discontinued operations (Compustat IBC) less cash flows from operations (Compustat OANCF - Compustat XIDOC);

ΔSales is change in sales (Compustat SALE) scaled by lagged total assets; and

PPE is net property, plant, and equipment (Compustat PPEGT) scaled by lagged total assets.

Then, following Cohen, Dey, and Lys (2008) the coefficient estimates obtained in Equation (6) are used to estimate the firm-specific normal accruals (NA_{it}) for the sample firms:

$$NA_{it} = \beta_0 + \beta_1 \left(1/_{Assets_{it-1}}\right) + \beta_2 (\Delta Sales_{it} - \Delta AR_{it}) + \beta_3 PPE_{it} \quad (7)$$

where for each firm *i* and year *t*:

NA is normal accruals; and

ΔAR is change in accounts receivable (Compustat RECT) scaled by lagged total assets.

All other variables are defined as in prior equations.

The discretionary accruals variable (DA) is computed as the difference between TA and NA and is used as the dependent variable in the following equation:

$$Accruals = \beta_0 + \beta_1 INNOV_{it} + \beta_2 Bench_{it} + \beta_3 INNOV_{it} * Bench_{it} + \beta_4 Big_{it} + \beta_5 \Delta GDP_t + \beta_6 MKTVAL_{it} + \beta_7 AGE_{it} + \beta_8 MTB_{it} + \beta_n Industry_i + \beta_n Year_t + \varepsilon_i \quad (8)$$

where for each firm *i* and year *t*:

Accruals is defined as one of three measures of discretionary accruals (DA): (1) the absolute value of discretionary accruals, (2) positive discretionary accruals, or (3) negative discretionary accruals.

All other variables are defined as in prior equations.

It is anticipated that the coefficient on the interaction *INNOV*Bench* in Equation (8) will be significant. Such a result for each of the three measures of discretionary accruals would suggest that accrual based earnings management is more prevalent among IS firms than among non-IS firms.

3 EMPIRICAL RESULTS

Table 1 summarizes the two samples used in this study: a smoothing sample, and an earnings management sample.

Table 1 - Innovation Strategy Sample Selection Procedures

Selection Procedure	*Smoothing Data*	*Earnings Management Data*
Total number of firm year observations in Compustat	20,055	19,791
Less: Non-innovative industries	---	8,506
Less: Extreme fourth-quarter income[a]	(4,006)	---
Final sample	16,049[b]	11,285

[a] Consistent with prior literature, observations are eliminated that contain fourth-quarter income shares less than zero or exceeding unity.

[b] In Tables 2 & 3, for ease of interpretation this final sample is split into two groups, observations with annual net income and annual net loss, with sample sizes of 7,750 and 8,299, respectively.

Each of the two data samples initially includes all available Compustat observations from 1991 to 2010. For the smoothing data set, we begin with all available observations. First, we eliminate observations with missing variables. Then, following Murphy (2001), firms with fourth quarter net losses or firms where fourth quarter income exceeds unity are eliminated. This results in a final sample size of 16,049.[10] For the earnings management sample, we begin with all available observations. Then, in order to focus our tests on

10 The smoothing data sample is not reduced to these eight industries in order to preserve a reasonable final sample size. Therefore, all industries are included in the smoothing data sample.

industries where innovation plays a key role in management strategy, we eliminate firms that are not in innovative industries (e.g., Collins, Maydew, & Weiss, 1997; Dechow & Sloan, 1991; Francis & Schipper, 1999; Lev & Sougiannis, 1996). Innovative industries are defined following Cao and Laksmana (2010) as either R&D intensive, intangible-intensive, or high-tech.[11] This results in the inclusion of firms from 137 different four-digit SIC coded industries in our earnings management sample. These procedures result in a final sample size of 11,285 for the earnings management data set.

3.1 Smoothing Data Results

Table 2 presents the descriptive statistics and correlations for each of the variables used in the smoothing data tests. Panels A and B present descriptive statistics and correlations for observations with annual net income, while Panels C and D present descriptive statistics and correlations for observations with annual net loss. In order to differentiate between their distinct set of incentives, we split the smoothing sample into two subsamples. The first includes firms with annual net income and the second includes firms with annual net loss. Firms with annual net income are motivated to smooth their annual net income by reducing fourth quarter income when income through the first three quarters of the current year exceeds income through the same period in the prior year (Murphy, 2001). This results in the percentage share of net income being smaller for firms with net income that engage in earnings smoothing. Therefore the coefficient on the *YTDDIFF* variable and the interaction term for firm with net income that smooth earnings would be expected to be negative. Firms with annual net losses are less motivated to smooth income due to less emphasis on profitability (Anderson & Zeithaml, 1984). Still, if firms with annual net losses do engage in earnings management, their fourth quarter loss will make up a larger portion of annual net loss. Therefore the coefficient on the *YTDDIFF* variable and the interaction term for firm with net loss that smooth earnings would be expected to be positive.[12]

In Panel A of Table 2, the dependent variable, *Qtr4*, has a mean (median) value of 0.327 (0.290) and a standard deviation of 0.181. If earnings were distributed evenly across the four quarters of the year, the expected value of *Qtr4* would be 0.25. Therefore, on average,

11 These industries and corresponding two-digit SIC codes are: (1) chemical and allied products - 28; (2) machinery - 35; (3) electric and electric supplies - 36; (4) transportation equipment - 37; (5) measuring and photographic goods - 38; (6) communications - 48; (7) business service - 73; and (8) engineering, accounting and related service - 87. Cao and Laksmana (2010) note that each of these industries were identified as R&D intensive, intangible-intensive or high-tech industries by Collins, Maydew and Weiss (1997), Dechow and Sloan (1991), Francis and Schipper (1999), and Lev and Sougiannis (1996).

12 This may best be explained by using a numerical example. If during the prior year, a given firm experiences a loss of $750 through the first three quarters and then has losses in the fourth quarter of $250, the annual loss would be $1,000, with the fourth quarter comprising 25% of the annual loss. Then, if during the first three quarters of the current year, the firm experiences a loss of only $650, the value of the loss in the current year is smaller than the same period of the prior year. Then, in order to match the prior year annual loss of $1,000, the firm may have losses of $350, or 35% of the annual loss. Therefore, as described, firms with annual net losses that have a smaller loss through the first three quarters of the year compared to the prior year's first three quarters, will have a fourth quarter loss that makes up a larger portion of the current year's loss when the firm is smoothing earnings.

the observations in the sample have 31% higher earnings than would be expected if earnings were distributed evenly throughout the fiscal year.

Similarly, the variable, *YTDDIFF*, has a mean (median) value of 25.76 (3.011) and a standard deviation of 653.1. If earnings were consistent from one year to the next (no growth in earnings from the prior year), the expected value of *YTDDIFF* would be zero, indicating that it is equally likely that earnings through the first three quarters of the year would be higher or lower than the first three quarters of the previous year.

In Panel B of Table 2, both the *AGE* variable and *MTB* variable have significant Spearman correlations (Pearson only *AGE* variable correlation is significant) to the *INNOV* test variable. The Spearman (Pearson) correlation between the test variable *INNOV* and the control variables *AGE* is negative at -0.075 (-0.064) while the test variable's correlation with *MTB* is positive at 0.129 (0.008).

The descriptive statistics and correlations for observations with annual net loss as shown in Panels C and D of Table 2 are similar to those with annual net income with only a few exceptions. The mean (median) value for *YTDDIFF* is negative at -22.05 (-0.978) indicating that loss firms typically perform better in the first three quarters of the prior period than the current period. Also, the mean (median) value for *INNOV* is much higher at 0.400 (0.000) indicating that there are more innovative firms on average that have a net loss for the period. In untabulated results regarding the smoothing sample, we find that the average age of IS firms is 15.1 years, while the average age of non-IS firms is 16.2 years. Therefore, on average, an IS firm is on average 7% younger than non-IS firms in the smoothing sample.

Table 3 presents the results of our tests of income smoothing regarding fourth-quarter shares of net income on year-to-date income (relative to the prior year) including interactions for innovative firm strategy. Panel A presents results for observations with annual net income while Panel B presents results for observations with annual net loss. The first column of Panel A in Table 3 presents the regression results of Equation (1) excluding the control variables for industry, age, and growth while the second column presents the regression results for the entire equation. In both cases, the coefficients for *YTDDIFF* are negative and significant indicating that firms smooth annual net income by decreasing reported earnings in the fourth quarter of their fiscal year if earnings through the first three quarters of the fiscal year exceed earnings through the same period of the prior year. This result for the variable *YTDDIFF* is consistent with Murphy (2001). In both regressions, the coefficients for *INNOV* are positive and significant, indicating that IS firms have higher earnings during the fourth quarter of their fiscal year when compared to non-IS firms. This indicates that IS firms report a greater percentage of their income during the fourth quarter of the year than do other firms, providing evidence for H1. Therefore, IS firms smooth their income to a greater extent than other firms by manipulating their fourth quarter income upward. The coefficient for the *INNOV* variable suggests that IS firms report 4.2% more income than other firms, for a total of 39.2% of their annual income, during the fourth quarter of the year. Furthermore, the coefficients of the interactive variable of *YTDDIFF* and *INNOV* are negative and significant, suggesting that smoothing does occur to a greater extent during years where their income is higher though the first three quarters of the year.

The first column of Panel B in Table 3 presents the regression results of Equation (1) excluding the control variables for industry, age, and growth while the second column presents the regression results for the entire equation. In each regression, the coefficients for *YTDDIFF* are significant, suggesting that loss firms do report a significantly different portion of their loss during the fourth quarter when the current year's loss is through the first three quarters of the year is smaller than that of the first three quarters in the prior period. Similarly, in both regressions, the coefficients for *INNOV* are negative and significant indicating that IS firms that have an annual net loss experience a fourth quarter that makes up a smaller share of their annual net loss than that of non-IS firms. This result supports H1 and indicates that IS firms are managing their income more than non-IS firms by reporting smaller losses during the fourth quarter of the year, thus decreasing their annual loss. However, the coefficient on the interaction variable *YTDDIFF*INNOV* is not significant.[13]

Table 2 Descriptive statistics for smoothing data set for the period from 1994-2010

Panel A: Descriptive statistics for observations with annual net income (Sample size is 7,750)

Variable	Mean	Median	Standard deviation	25th Percentile	75th Percentile
Qtr4	0.327	0.290	0.181	0.224	0.391
YTDDIFF	25.76	3.011	653.1	-0.333	14.23
INNOV	0.105	0.000	0.307	0.000	0.000
AGE	16.63	16.00	4.931	14.00	19.00
MTB	4.344	2.454	79.03	1.505	4.045
MKTVAL	2,532	563.4	11,060	145.6	1667

Panel B: Spearman/Pearson correlations for observations with annual net income

Variable	*Qtr4*	*YTDDIFF*	*INNOV*	*AGE*	*MTB*	*MKTVAL*
Qtr4	---	-0.018	**0.059**	**-0.042**	0.001	**-0.026**
YTDDIFF	**-0.095**	---	-0.005	0.010	0.000	**0.155**
INNOV	**0.055**	**0.024**	---	**-0.064**	0.008	-0.001
AGE	**-0.053**	**-0.020**	**-0.075**	---	0.006	**0.054**
MTB	**0.120**	**0.204**	**0.129**	**-0.033**	---	0.011
MKTVAL	**-0.030**	**0.340**	**-0.113**	**0.022**	**0.420**	---

Spearman is on the bottom left, Pearson is on top right. Bold text indicates significance at the 0.1 level or better.

13 In untabulated results, when controlling for the previous year's fourth quarter percent of annual net income (Compustat NI), results are unchanged.

Table 2 (continued)

Panel C: Descriptive statistics for observations with annual net loss (Sample size is 8,299)

Variable	Mean	Median	Standard deviation	25th Percentile	75th Percentile
Qtr4	0.334	0.279	0.212	0.196	0.422
YTDDIFF	-22.05	-0.978	890.3	-7.876	1.586
INNOV	0.400	0.000	0.490	0.000	1.000
AGE	15.28	15.00	4.592	12.00	18.00
MTB	4.803	1.805	112.3	0.622	4.546
MKTVAL	348.0	63.93	2,492	16.03	209.4

Panel D: Spearman/Pearson correlations for observations with annual net loss

Variable	*Qtr4*	*YTDDIFF*	*INNOV*	*AGE*	*MTB*	*MKTVAL*
Qtr4	---	0.008	**-0.129**	**0.078**	-0.010	0.012
YTDDIFF	**0.039**	---	0.004	-0.009	0.001	**-0.261**
INNOV	**-0.102**	**0.118**	---	**-0.062**	-0.008	**-0.033**
AGE	**0.099**	**-0.022**	**-0.076**	---	-0.007	0.010
MTB	**-0.053**	**0.023**	**0.104**	**-0.035**	---	0.010
MKTVAL	-0.018	**-0.230**	**-0.064**	**-0.157**	**0.380**	---

Spearman is on the bottom left, Pearson is on top right. Bold text indicates significance at the 0.1 level or better.

Table 3 Coefficients of OLS regressions of fourth-quarter share of net income on year-to-date income (relative to prior year), with interactions for innovative firm strategy from 1994 to 2010.

Panel A: Observations with annual net income

	Dependent variable: *Qtr4*	
Independent variables[a]	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept	0.327 (148.4)***	0.377 (61.76)***
YTDDIFF[b]	-0.263 (-9.02)***	-0.256 (-7.15)***
INNOV	0.046 (5.07)***	0.045 (4.80)***
*YTDDIFF * INNOV*	-0.001 (-2.79)***	-0.001 (-2.79)***
AGE		-0.001 (-2.95)***
MTB		0.003 (4.67)***
MKTVAL		-0.000 (-0.93)
Industry Controls		Included
# of observations	7,750	7,750
Adjusted R^2	0.013	0.032

***, **, * Indicates significance at the 1 percent, 5 percent and 10 percent levels, respectively.

[a]Continuous variables have been winsorized at the 1% and 99% levels to ensure results are not sensitive to extreme observations.

[b]Values for this variable have been multiplied by one thousand for ease of interpretation.

Table 3 (continued)

Panel B: Observations with annual net loss

	Dependent variable: *Qtr4*	
Independent variables[a]	Coefficient (t-statistic)	Coefficient (t-statistic)
Intercept	0.361 (108.8)***	0.409 (59.90)***
YTDDIFF[b]	0.286 (7.18)***	0.351 (8.37)***
INNOV	-0.060 (-13.18)***	-0.050 (-11.12)***
*YTDDIFF * INNOV*[b]	-0.236 (-1.06)	0.279 (-1.26)
AGE		0.004 (6.68)***
MTB		-0.001 (-3.57)***
MKTVAL[b]		0.007 (4.02)***
Industry Controls		Included
# of observations	8,299	8,299
Adjusted R^2	0.023	0.046

***, **, * Indicates significance at the 1 percent, 5 percent and 10 percent levels, respectively.

[a]Continuous variables have been winsorized at the 1% and 99% levels to ensure results are not sensitive to extreme observations.

Table 4 Descriptive statistics for earnings management data set for the period from 1994-2010

Panel A: Descriptive statistics (Sample size is 11,285)

Variable	Mean	Median	Standard deviation	25th Percentile	75th Percentile
AbCFO	0.001	0.068	2.774	-0.176	0.260
AbPROD	-0.126	-0.099	2.429	-0.248	0.064
AbDISCEXP	-0.265	-0.251	7.149	-0.469	0.019
ABSDA	1.007	0.104	14.84	0.044	0.244
DA	-0.053	0.027	14.87	-0.070	0.133
INNOV	0.226	0.000	0.418	0.000	0.000
Bench	0.468	0.000	0.499	0.000	1.000
Big	0.735	1.000	0.441	0.000	1.000
ChgGDP	240.5	312.0	255.6	167.9	375.0
MKTVAL	2,830	247.4	12,879	46.10	1,107
AGE	15.62	15.00	5.448	12.00	31.00
MTB	2.853	2.137	67.28	1.137	3.928

Table 4 (continued)

Panel B: Spearman/Pearson correlations[a]

Variable	(A)[b]	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
(A)	---	**-0.325**	**-0.665**	**0.050**	**-0.025**	**-0.061**	**0.048**	**0.051**	**0.017**	**0.037**	-0.013	0.003
(B)	**-0.292**	---	**0.620**	**-0.133**	**0.017**	**-0.022**	**0.025**	**0.023**	**0.020**	-0.007	**0.027**	-0.001
(C)	**-0.291**	**-0.410**	---	**-0.048**	**-0.041**	**0.057**	**-0.018**	0.006	**-0.017**	-0.000	0.002	-0.001
(D)	**-0.151**	**-0.047**	**0.130**	---	**-0.070**	0.000	**-0.022**	**-0.052**	-0.006	-0.010	**-0.022**	-0.011
(E)	**-0.052**	**-0.028**	**-0.035**	**0.177**	---	0.013	-0.004	-0.009	**-0.029**	0.000	0.012	0.011
(F)	**-0.217**	**-0.184**	**0.470**	**0.112**	-0.014	---	**-0.229**	**-0.062**	**0.017**	**-0.065**	**-0.043**	0.010
(G)	**0.356**	0.010	**-0.403**	**-0.147**	**0.131**	**-0.229**	---	**0.181**	**0.054**	**0.094**	**0.072**	-0.002
(H)	**0.348**	**-0.063**	**-0.175**	**-0.189**	**-0.073**	**-0.062**	**0.181**	---	**0.042**	**0.118**	**-0.040**	0.011
(I)	**0.031**	**0.061**	**-0.047**	**0.033**	0.005	**0.024**	**0.063**	**0.053**	---	**0.020**	**0.155**	-0.001
(J)	**0.726**	**-0.169**	**-0.384**	**-0.194**	**-0.052**	**-0.208**	**0.369**	**0.514**	**0.029**	---	**0.090**	0.010
(K)	**-0.091**	**0.137**	**-0.100**	**-0.049**	-0.028	**-0.046**	**0.072**	**-0.053**	**0.196**	**-0.016**	---	-0.009
(L)	**0.276**	**-0.203**	0.011	0.009	**0.033**	**0.081**	**0.107**	**0.139**	**-0.193**	**0.398**	0.012	---

[a]Spearman is on the bottom left, Pearson is on top right. Bold text indicates significance at the 0.1 level or better.

[b]Column and row headings:

(A) *AbCFO*

(B) *AbPROD*

(C) *AbDISCEXP*

(D) *ABSDA*

(E) *DA*

(F) *INNOV*

(G) *Bench*

(H) *Big*

(I) *ChgGDP*

(J) *MKTVAL*

(K) *AGE*

(L) *MTB*

3.2 Earnings Management (Real Activities and Discretionary Accruals)

Table 4 presents the descriptive statistics and correlations for each of the variables used in the earnings management sample for tests regarding both accrual based earnings management and real activity management. Panel A of Table 4, which provides descriptive statistics, shows that while the mean (median) value for *DA* (the difference between total accruals and fitted normal accruals) is near zero at -0.053 (0.027), the mean (median) value for *ABSDA* (the absolute value of the difference between total accruals and fitted normal accruals) is 1.007 (0.104). Since the *ABSDA* variable captures the discretionary accruals regardless of the direction of the accrual, the magnitude of the mean value of *ABSDA* is far larger than the mean value of *DA*.

In Panel B of Table 4, each of the measures for real activities management have significant Pearson (Spearman) correlations with the *INNOV* test variable. The Pearson (Spearman) correlation is also significant (significant for *AbCFO* and *AbDISCEXP*, but not *AbPROD*) for each of the measures of real activities management with the *Bench* indicator variable. The Spearman (Pearson) correlations are also significant for *ABSDA* with both *INNOV* and Bench (significant for *INNOV* but not Bench). In untabulated results regarding the earnings management sample, we find that the average age of IS firms is 15.2 years, while the average age of non-IS firms is 15.7 years. Therefore, on average, an IS firm is on average 3% younger than non-IS firms in the earnings management sample.

Table 5 presents the test results of the association between IS firms and real activities earnings management. The first two columns present the coefficients and t-statistics for Equation (5) with *AbCFO* as the dependent variable, columns 3 and 4 provide results with *AbPROD* as the dependent variable, and columns 5 and 6 present results with *AbDISCEXP* as the dependent variable.

Results indicate that among IS firms, real activity earnings management is present for both the *AbCFO* and the *AbDISCEXP* equations. The dummy variable, *INNOV*, is positive and significant at 0.621 when *AbDISCEXP* is the dependent variable in Equation (5). This indicates that IS firms incur more discretionary expenses than non-IS firms. As is the case in prior literature, firms overall are likely to manage income by manipulating discretionary expenses when close to earnings benchmarks. Consistent with such manipulation, we find a significant negative result for the coefficient of *Bench* at -0.216. Consistent with our hypothesis, we find that IS firms manage income to a greater extent than non-IS firms by decreasing discretionary expenses to increase income as the coefficient for *INNOV *Bench* is also negative and significant at -0.213.

We find similar indications of earnings management by IS firms by testing abnormal cash flows from operations, *AbCFO*. We find using *AbCFO* as the dependent variable in Equation (5) that the coefficient for *INNOV* is -0.255 indicating that IS firms normally have less cash flows from operations than non-IS firms likely due to having incurred more R&D expenses than other firms. Furthermore, IS firms have higher cash flows from operations when earnings are close to zero or approach last year's reported earnings as shown in Table 5 by the significant coefficient of 0.251 for the interaction *INNOV*Bench*. Results for

Equation (5) using *AbPROD* as the dependent variable also indicate real activity earnings management for IS firms. Therefore, our tests regarding *AbCFO* and *AbPROD* provide further evidence for H2.

Table 5 Innovative Strategy and Determinants of Real Activities Earnings Management from 1994 to 2010

Independent variables[a]	*AbCFO* Coefficient (t-statistic)		*AbPROD* Coefficient (t-statistic)		*AbDISCEXP* Coefficient (t-statistic)	
Intercept	-0.290	(-9.24)***	0.044	(1.87)*	-0.126	(-3.31)***
INNOV	-0.255	(-17.63)***	-0.133	(-15.21)***	0.621	(33.05)***
Bench	0.145	(19.95)***	0.024	(4.21)***	-0.216	(-25.12)***
*INNOV*Bench*	0.251	(14.04)***	-0.098	(-7.20)***	-0.213	(-9.40)***
Big	0.267	(26.29)***	-0.042	(-5.82)***	-0.151	(-12.07)***
ChgGDP[b]	-0.000	(-0.01)	0.031	(1.37)	-0.007	(-0.17)
MKTVAL[b]	0.011	(28.11)***	-0.005	(-16.09)***	0.002	(2.58)***
AGE	-0.006	(-8.87)***	0.002	(3.68)***	-0.005	(-5.49)***
MTB	0.004	(5.16)***	-0.002	(-3.87)***	0.002	(1.52)
Industry controls	Included		Included		Included	
Year-by-year controls	Included		Included		Included	
# of observations	11,285		11,285		11,285	
Adjusted R^2	0.298		0.238		0.356	

***, **, * Indicates significance at the 1 percent, 5 percent and 10 percent levels, respectively.

[a]Continuous variables (including dependent variables) have been winsorized at the 1% and 99% levels to ensure results are not sensitive to extreme observations.

[b]Values for this variable have been multiplied by one thousand for ease of interpretation.

Table 6 Innovative Strategy and Determinants of Accrual Based Earnings Management from 1994 to 2010

Independent variables[a]	*ABSDA* Coefficient (t-statistic)	*Positive DA* Coefficient (t-statistic)	*Negative DA* Coefficient (t-statistic)
Intercept	0.919 (6.61)***	0.467 (3.56)***	-0.638 (-5.63)***
INNOV	0.101 (2.93)***	0.062 (1.43)	-0.148 (-4.64)***
Bench	-0.053 (-1.98)**	-0.053 (-1.72)*	0.040 (1.68)*
*INNOV*Bench*	-0.137 (-2.43)**	-0.111 (-1.72)*	0.125 (2.33)**
Big	-0.237 (-7.77)***	-0.193 (-5.87)***	0.221 (7.26)***
ChgGDP[b]	0.161 (1.43)	0.029 (0.32)	-0.255 (-2.04)**
MKTVAL[b]	-0.001 (-1.22)	-0.001 (-0.70)	0.000 (0.24)
AGE	0.002 (0.72)	0.001 (0.42)	-0.003 (-1.50)
MTB	-0.001 (-0.52)	0.001 (0.34)	0.001 (0.58)
Industry controls	Included	Included	Included
Year-by-year controls	Included	Included	Included
# of observations	11,285	6,548	4,737
Adjusted R^2	0.189	0.271	0.155

***, **, * Indicates significance at the 1 percent, 5 percent and 10 percent levels, respectively.

[a]Continuous variables (including dependent variables) have been winsorized at the 1% and 99% levels to ensure results are not sensitive to extreme observations.

[b]Values for this variable have been multiplied by one thousand for ease of interpretation.

Table 6 presents the results of estimating Equation (8) to examine the use of discretionary accruals in IS firms. The first column presents the coefficients and t-statistics *ABSDA* as the dependent variable. The second and third columns present regression results with *Positive DA* and *Negative DA* as the dependent variables.

Overall, the results in Table 6 provide evidence that, in addition to using real activities, IS firms use accruals to manage earnings to a greater extent than do non-IS firms. The coefficient on *INNOV* in Equation (8) where *ABSDA* is the dependent variable is positive and significant at 0.101. This suggests that IS firms use discretionary accruals to manage earnings more than their non-IS firm counterparts thus supporting H3. The coefficient for the interaction term is negative and significant indicating that less accruals are used to manage earnings when the firm's earnings are close to the earnings benchmarks of positive earnings and the prior year's earnings, again supporting H3.

Further, Table 6 provides results of tests for positive and negative discretionary accruals. Table 6 indicates that while the coefficient for *INNOV* with *Positive DA* as the dependent variable in Equation (8) is not significant, the coefficient for *INNOV* with *Negative DA* as the dependent variable in Equation (8) is significant at -0.148 indicating that IS firms utilize less negative discretionary accruals and thus supports H3. The interaction term for positive discretionary accruals is negative and marginally significant at -0.111, and the interaction terms is positive and significant at 0.125 for negative discretionary accruals. These results indicate that while IS firms utilize more discretionary accruals than other firms, it may occur to a lesser extent when IS firms earnings are near the earnings benchmarks of positive income or the prior year's income. This is likely due to a focus on other earnings benchmarks such as analysts' earnings forecasts (DeGeorge, Patel & Zeckhauser, 1999) or targets for specific executive compensation components (Holthausen, Larcker & Sloan, 1995).

3.3 Robustness and Sensitivity Tests

Because both the test variable for IS firms and one of the three discretionary expenses from equation 4 are composed of R&D expenses, we replicate the test regarding abnormal activity for discretionary expenses without including R&D expenses (see Cohen, Dey, & Lys, 2008). In untabulated results we find that upon elimination of R&D expenses from the calculation of *DiscExp*, our conclusions regarding the extent to which IS firms manipulate earnings using discretionary expenses remain unchanged.

To ensure that the results regarding earnings management are not sensitive to particular industries, we replicate the tests for real activities and discretionary accruals without limiting the sample to industries that are R&D intensive. In untabulated results we find no change in the direction or significance level of the test variables in the real activities tests for earnings management. In the tests of accrual based earnings management, we find that the level of significance increases to 1% for the *Bench* variable for all three measures of discretionary accruals and that the level of significance for the interaction variable increases to 5% in the *Positive DA* test and to 1% in the interaction variable in the *Negative DA* test with no change in direction in either case.

We also replicate our results for the earnings management sample for tests regarding real activities management and discretionary accruals including several control variables for executive compensation as in Cohen, Dey and Lys (2008). The additional variables included are defined as follows:

Bonus is the average bonus compensation as a proportion of total compensation received by the CEO and the CFO of a firm;

Ex_Option is exercisable options and is the number of unexercised options that the executives held at year-end that were vested scaled by total outstanding shares of the firm;

Un_Option is unexercisable options defined as the number of unexercised options (excluding option grants in the current period) that the executives held at year-end that have not vested scaled by total outstanding shares of the firm;

Gt_Option is new option grants made during the current period scaled by total outstanding shares of the firm;

Owner is the sum of restricted stock grants in the current period and the aggregate number of shares held by the executives at year-end (excluding stock options) scaled by total outstanding shares of the firm;

Inclusion of these additional controls for executive compensation dramatically reduces the sample size for these tests to 3,199 observations. However, in untabulated results we find that our results and conclusions remain unchanged with the exception of the tests regarding abnormal cash flow from operations which become insignificant.

4 CONCLUSION AND LIMITATIONS

Prior research describes and clearly demonstrates the existence of earnings management (e.g. Burgstahler & Dichev, 1997; Das, Shroff & Zhang, 2009; Degeorge, Patel & Zeckhauser, 1999; Hayn, 1995). The purpose of this paper is to examine the degree to which firms that have a strategy focused on innovation participate in earnings management relative to firms that are not focused on innovation. The association between innovation strategy and earnings management is measured using proxies described in the literature for income smoothing, strategic use of real activities, and the manipulation of discretionary accruals. Consistent with the hypotheses that IS firms smooth earnings, use real activities, and record discretionary accruals to manipulate earnings, the results show that firms with an innovative firm strategy manage earnings to a greater extent than do non-innovation firms. Specifically, the results indicate that innovative firms engage in income smoothing, real activities earnings manipulation and discretionary accruals to meet earnings benchmarks to a greater degree than do non-IS firms.

The results of this paper contribute to the literature by providing additional insight to the understanding of earnings management activity, and will be useful to market participants by specifically documenting the relationship between a firm with an overall strategy focused on innovation and the extent of earnings management. These results also inform managers, regulators, and other stakeholders to be aware that, although the intended outcome of an innovation strategy is normally to increase firm value by marketing new and innovative products or services, an innovation strategy could also affect the way in which income is measured for those firms.

We recognize three limitations to the analysis we perform in this study. First, a large number of observations were eliminated from the sample used in this study due to missing data in the commercial databases employed. This reduction in the sample size could have an impact on the generalizability of the results. Second, although the control variables

that were used in all equations for this study were drawn from prior accounting literature, it is possible that relevant controls were omitted from the models. Third, in accordance with U.S. GAAP, the firms included in our sample generally expense R&D costs as they are incurred. Limited exceptions to this rule include the capitalization of software and website development costs. However, capitalization of R&D expenses permitted under other methods of accounting such as IFRS could have an effect on our results, especially as it relates to income smoothing and other earnings manipulation through the alteration of real activities. The potential to capitalize R&D expenses could alter the decisions of management regarding these real activities and could affect the extent to which firms manipulate earnings.

This study concentrates exclusively on innovation strategy. There are a wide range of other firm strategies that have not been examined in this study. Ittner and Larcker (2001) clarify that firm strategies need not be located only on a continuum between firms following a "cost leadership" and firms following an "innovation strategy". Firm strategies can also include higher quality, differentiation through image, superior customer service, a focus on a particular market niche, being flexible in responding to customer demands or mimicking innovations of competitors. Future research could examine the effect of any of these other firm strategies on the extent of earnings management.

REFERENCES

Ali, A., Ciftci, M. & Cready, W. (2012). Market underestimation of the implications of R&D increases for future earnings: The US evidence. *Journal of Business Finance & Accounting, 39*(3/4), 289–314.

Anderson, C.R. & Zeithaml, C.P. (1984). Stage of the product life cycle, business strategy, and business performance. *Academy of Management Journal, 27*(1), 5–24.

Baber, W.R., Fairfield, P.M. & Haggard, J.A. (1991). The effect of concern about reported income on discretionary spending decisions: The case of research and development. *The Accounting Review, 66*(4), 818–829.

Barth, M. E., Elliott, J. A. & Finn, M. W. (1999). Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research, 37*(2), 387–413.

Bartov, E. (1993). The timing of asset sales and earnings manipulation. *The Accounting Review, 68*(4), 840–855.

Bens, D.A., Nagar V. & Franco-Wong, M.H. (2002). Real investment implications of employee stock option exercises. *Journal of Accounting Research, 40*(2), 359–393.

Bens, D.A., Nagar, V., Skinner, D.J. & Wong, M. (2003). Employee stock options, EPS dilution, and stock repurchases. *Journal of Accounting and Economics, 36*(1), 51–90.

Blasco, N. & Pelegrin, B. (2006). A new methodological approach for detecting income smoothing in small samples: An application to the case of Spanish savings banks. *Journal of Accounting, Auditing and Finance, 21*(4), 347–372.

Boldrin, M. & Levine, D. K. (2009). Does intellectual monopoly help innovation? *Review of Law and Economics, 5*(3), 991–1024.

Bowonder, B., Dambal, A., Kumar, S. & Shirodkar, A. (2010). Innovation strategies for creating competitive advantage. *Research Technology Management, 53*(3), 19–32.

Burgstahler, D. & Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics, 24*(1), 99–126.

Bushee, B. (1998). The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review, 73*(3), 305–333.

Cao, J. & Laksmana, I. (2010). The effect of capital market pressures on the association between R&D spending and CEO option compensation. *Review of Quantitative Finance and Accounting, 34*(2), 273–300.

Cardinal, L.B. & Opler, T.C. (1995). Corporate diversification and innovative efficiency: An empirical study. *Journal of Accounting and Economics, 19*(2/3), 365–381.

Chaney, P.K., Devinney, T.M. & Winer, R.S. (1991). The impact of new product introductions on the market value of firms. *Journal of Business, 64*(4), 573–610.

Cheng, S. (2004). R&D expenditures and CEO compensation. *The Accounting Review, 79*(2), 305–328.

Choi, H-G. & Ahn, J. (2010). Risk analysis models and risk degree determination in new product development: A case study. *Journal of Engineering and Technology Management, 27*(1/2), 110–124.

Ciftci, M., Lev, B. & Radhakrishnan, S. (2011). Is research and development mispriced or properly risk adjusted? *Journal of Accounting, Auditing & Finance, 26*(1), 81–116.

Cohen, D.A., Dey, A. & Lys, T.Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757–787.

Cohen, D.A. & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics, 50*(1), 2–19.

Collins D., Maydew, E. & Weiss, I. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics, 24*(1), 39–67.

Das, S., Shroff, P.K. & Zhang, H. (2009). Quarterly earnings patterns and earnings management. *Contemporary Accounting Research, 26*(3), 797–831.

DeAngelo, H., DeAngelo, L. & Skinner, D. J. (1996). Reversal of fortune dividend signaling and the disappearance of sustained earnings growth. *Journal of Financial Economics, 40*(3), 341–371.

Dechow, P.M., Hutton, A.P., Kim, J.H. & Sloan, R.G. (2012). Detecting earnings management: A new approach. *Journal of Accounting Research, 50*(2), 275–334.

Dechow, P.M. & Sloan, R.G. (1991). Executive incentives and the horizon problem. *Journal of Accounting and Economics, 14*(1), 51–89.

Dechow, P.M., Sloan, R.G. & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193–225.

Degeorge, F., Patel, J. & Zeckhauser, R. (1999). Earnings management to exceed thresholds. *Journal of Business, 72*(1), 1–33.

Francis, J. & Schipper, K. (1999). Have financial statements lost their relevance? *Journal of Accounting Research, 37*(2), 319–352.

Francis, J. & Smith, A. (1995). Agency costs and innovation: Some empirical evidence. *Journal of Accounting and Economics, 19*(2/3), 383–409.

Fuller, J. & Jensen, M. (2010). Just say no to Wall Street: Putting a stop to the earnings game. *Journal of Applied Corporate Finance*, *22*(1), 59–63.

Garcia, B. & Young, S. (2009). R&D expenditure and earnings targets. *European Accounting Review, 18*(1), 7–32.

Gayle, P. (2003). *Market concentration and innovation: New empirical evidence on the Schumpeterian Hypothesis.* Working paper, Kansas State University.

Graham, J.R., Harvey, C.R. & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*(1-3), 3–73.

Guan, J.C., Yam, R., Tang, E. & Lau, A. (2009). Innovation strategy and performance during economic transition: Evidences in Beijing, China. *Research Policy, 38*(5), 802–812.

Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research, 27*(3), 855–888.

Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics, 20*(1), 125–153.

Holthausen, R.W., Larcker, D.F. & Sloan, R.G. (1995). Business unit innovation and the structure of executive compensation. *Journal of Accounting and Economics, 19*(2/3), 279–313.

Ignacio, J., Garrigós, J.A. & Hervas-Oliver, J.L. (2010). How innovation management techniques support and open innovation strategy. *Research Technology Management, 53*(3), 41–52.

Inderst, R. & Klein, M. (2007). Innovation, endogenous overinvestment, and incentive pay. *RAND Journal of Economics, 38*(4), 881–904.

Ittner, C.D. & Larcker, D.F. (2001). Assessing empirical research in managerial accounting: A value-based management perspective. *Journal of Accounting and Economics, 32*(1–3), 349–410.

Ittner, C.D., Larcker, D.F. & Rajan, M. (1997). The choice of performance measures in annual bonus contracts. *The Accounting Review, 72*(2), 231–255.

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193–228.

Karpoff, J. M., Lee, D. S. & Martin, G.S. (2008). The cost to firms of cooking the books. *Journal of Financial and Quantitative Analysis, 43*(3), 581–611.

Koku, P.S. (2010). R&D expenditure and profitability in the pharmaceutical industry in the United States. *Journal of Applied Management Accounting Research, 8*(1), 35–42.

Kothari, S.P., Leone, A.J. & Wasley, C.E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163–197.

Langfield-Smith, K. (1997). Management control systems and strategy: A critical review. *Accounting, Organizations and Society, 22*(2), 207–232.

Lev, B. & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics, 21*(1), 107–138.

Marion, T.J. & Friar, J.H. (2012). Managing global outsourcing to enhance lean innovation. *Research-Technology Management, 55*(5), 44–50.

Matolcsy, Z.P. & Wyatt, A. (2008). The association between technological conditions and the market value of equity. *The Accounting Review, 83*(2), 479–518.

Matsuura, S. (2008). On the relation between real earnings management and accounting earnings management: Income smoothing perspective. *Journal of International Business Research, 7*(S3), 63–77.

Miller, D. & Friesen, P.H. (1984). A longitudinal study of the corporate life cycle. *Management Science, 30*(10), 1161–1183.

Mizik, N. (2010). The theory and practice of myopic management. *Journal of Marketing Research, 47*(4), 594–611.

Murphy, K.J. (2001). Performance standards in incentive contracts. *Journal of Accounting and Economics, 30*(3), 245–278.

Nicholas, T. (2008). Does innovation cause stock market runups? Evidence from the great crash. *American Economic Review, 98*(4), 1370–1396.

Porter, M. (1985). *Competitive advantage: Creating and sustaining superior performance.* New York: The Free Press.

Quinn, R.E. & Cameron, K. (1983). Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence. *Management Science, 29*(1), 33–51.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics, 42*(3), 335–370.

Schumpeter, J.A. (1942). *Capitalism, socialism and democracy.* New York: Harper.

Shaw, K.W. (2003). Corporate disclosure quality, earnings smoothing, and earnings' timeliness. *Journal of Business Research, 56*(12), 1043–1050.

Shust, E. (2015). Does research and development activity increase accrual-based earnings management? *Journal of Accounting, Auditing & Finance, 30*(3), 373–401.

Skinner, D. & Sloan, R. (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies, 7*(2/3), 289–312.

Smythe, D.J. (2010). A Schumpeterian view of the great merger movement in American manufacturing. *Cliometrica*, *4*(2), 141–170.

Stevens, G.A. & Burley, J. (1997). 3,000 Raw ideas = 1 commercial success. *Research Technology Management, 40*(3), 16–27.

Stubben, S.R. (2010). Discretionary revenues as a measure of earnings management. *The Accounting Review, 85*(2), 695–717.

Tucker, J.W. & Zarowin, P.A. (2006). Does income smoothing improve earnings informativeness? *The Accounting Review, 81*(1), 251–270.

Wagner, M. (2010). Corporate social performance and innovation with high social benefits: A quantitative analysis. *Journal of Business Ethics, 94*(4), 581–594.

Zahra, S.A. & Covin, J.G. (1994). The financial implications of fit between competitive strategy and innovation types and sources. *The Journal of High Technology Management Research, 5*(2), 183–211.