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Informativeness of Sales and Timely Loss Recognition

매출액의 정보성과 적시적 손실인식

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서울대학교 대학원
경영학과 회계학 전공
나 현 종

Abstract

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HyunJong Na

College of Business Administration

The Graduate School

Seoul National University

Recent development in financial accounting literatures has shown that sales revenue is informative by itself and incremental to earnings and cash flows (see e.g. Eritmur et al., 2003; Ghosh et al., 2005; Jegadeesh and Livat, 2006; Kama, 2009; Keung, 2010) and that investors and financial market value the information in sales revenue. I posit that firm managers also perceive thesales as valuable information incremental to cash flows. With a modification from the loss recognition model of Ball and Shivakumar (2006), I hypothesize that negative sales shock triggers asymmetric loss recognition, or conditional conservatism, because current revision in sales revenue is positively correlated with revisions in expected future cash flows. Since unrealized gain

and loss recognition is carried through accruals, empirical test results show that the relationship between accruals and sales revenue is asymmetric, or piecewise linear. The relative magnitude of decrease in accruals for negative sales change is greater than the relative magnitude of increase in accruals for positive sales change. Cross-sectional tests results show that loss recognition from negative sales shock is more pronounced for leveraged firms, small firms, R&D intense firms, for firms with high product market competition, financially distressed firms and in the post-SOX period, results consistent to prior literatures. In an additional test, I show a potential confounding effects from working capital accruals because working capital is sticky. The main result remains robust to controls for working capital effect.

Keywords : Informativeness of Sales; Accruals; Asymmetric Loss Recognition; Conditional Conservatism

Data Availability : The data used in this study are publicly available

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1. Introduction

There are two distinct ways, as categorized by Ball and Shivakumar (2006), accrual accounting functions; it ameliorates transitory changes in operating cash flow and recognizes unrealized gains and losses. First, accrual accounting ameliorates transitory working capital effects on cash flows. Dechow (1994) has noted that reporting realized cash flow is not necessarily informative because realized cash flow is a noisy measure of firm performance. To mitigate the timing and matching problems inherent in realized cash flow information, accounting has evolved to use accruals to alter the timing of cash flows recognition in earnings. By ameliorating transitory changes in operating cash flow, accruals buffer accounting income from transitory noise and make it a more efficient performance measure. For example, recording a receivable accelerates the recognition of a future cash flow in earnings, and matches the timing of the accounting recognition with the timing of the economic benefit from the sale[1]. Building upon Dechow (1994),

1) Accruals shift or adjust the recognition of cash flows over time, so that

subsequent literatures have examined the role of accruals in ameliorating transitory working capital effects in relations to cash flow. Dechow et al. (1997) have shown that accruals and cash flows from operations are contemporaneously negatively correlated. On the other hand, Dechow and Dichev (2002) have shown that current accruals and past and future cash flows from operations are positively correlated.

The second function of accrual accounting is recognizing unrealized gains and losses, the function that has been misled in accruals literatures until Ball and Shivakumar (2005). Building upon Basu (1997)'s framework for timely gain and loss recognition, Ball and Shivakumar (2005) have formalized the second role of accruals, timely recognition of economic gains and losses, and showed that it is a source of positive but asymmetric correlation between accruals and contemporaneous cash flows. This second function of accrual, timely recognition or conditional conservatism, is based on revisions in expected

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the adjusted numbers (earnings), better measure firm performance (e.g., see Statement of Accounting Concepts No. 1, FASH 1978, para. 44). For example, recording a receivable accelerates the recognition of a future cash flow in earnings, and matches the timing of the accounting recognition with the timing of the economic benefits from the sale.

future cash flows and thereby accomplished through accruals. Ball and Shivakumar (2006) notes that economic gain and loss, distinct from current-period gain and loss in cash flows, is the current-period cash flow plus any revision in the present value of expected future cash flows. Since the revisions in the current-period cash flow is likely to be positively correlated with revisions in expected future cash flows, an increase (decrease) in current period cash flow increases (decreases) expected future cash flows. Any downward revision in expected future cash flow triggers timely loss recognition that asymmetrically decreases contemporaneous accruals. Consequently, this positive and asymmetric correlation inherent in timely recognition role attenuates the negative correlation produced by the amelioration role of Dechow et al. (1998).

An invention in the work of Ball and Shivakumar (2005) is that they have shown the evidence of conditional conservatism with the piecewise linear relationship, contrary to prior accruals models that are based on a linear relationship between accruals and contemporaneous cash flows. They have shown that the asymmetry in both working capital accruals and

non-current accruals makes a piecewise linear specification the most likely one[2]. Following literatures have used this asymmetry as an evidence for conditional conservatism and examined the relationship between conditional conservatism and a variety of accounting measures such as internal controls (Goh and Li, 2011), managerial ownership (LaFond et al., 2008), debt covenants (Nikolaev, 2009), auditor tenures (Li, 2010), cost of equity (Lara et al., 2006), and book-tax differences (Heltzer, 2009).

In this paper, I identify an additional source of asymmetric relationships in accruals; that is, sales revenue. While no asymmetry between accruals and cash flows is predicted by prior literatures (see e.g. Jones, 1991; Kothari, 2002; Kothari et al., 2005), I posit that negative sales shock is an additional source of downward revision in expected future cash flows. Prior literatures in financial accounting have shown that sales revenue has high autocorrelation (Eritmur et al.

2) An example of timely loss recognition in working capital accruals is the requirement of income-decreasing but not income-increasing accruals for lower-of cost-or-market rule for inventories. An example of timely loss recognition in non-current accruals is the impairment, but not revaluation, of property, plant, and equipment, or good will under Generally Accepted Accounting Principles (Ball and Shivakumar, 2006).

2003) and that sales revenue is informative incremental to earnings and cash flows. Ghosh et al. (2005) have shown that firms reporting sustained increases in both earnings and revenues have higher quality earnings and larger earnings response coefficients than firms reporting sustained increases in earnings alone. Ertimur et al. (2003) and Jegadeesh and Livnat (2006) have shown that revenue surprises explain stock returns incremental to earnings surprises. Similarly, Keung (2010) has shown that earnings forecast revisions supplemented with sales forecast revisions have a greater impact on security prices than do stand-alone earnings forecast revisions. Kama (2009) has reported that market reaction to earnings surprises is not higher than to revenue surprises in certain context where earnings quality is low (e.g. R&D intense firms) and where sales revenue is the significant source of a market power (e.g. oligopolistic industry).

To the extent that sales revenue provides incremental informativeness beyond earnings and cash flow (see, e.g. Ertimur et al., 2003; Ghosh et al., 2005; Jegadeesh and Livat, 2006; Kama, 2009; Keung, 2010), the revisions in the

current-period sales revenue are likely to be positively correlated with revisions in its expected future revenue and cash flow. Accordingly, current-period negative revision in sales revenue will initiate the downward revision of expected future cash flow and will trigger timely loss recognition.

Empirical results strongly support the piecewise linear relationship between sales revenue and accruals. The observed piecewise relationship is robust to existing accruals models - Dechow and Dichev (2002) model, Jones (1991) model and Ball and Shivakumar (2005) model - and to known control variables such as market-to-book ratio, leverage ratio, size, highly litigious industries and Fama-French 12 industry classifications. Moreover, additional cross-sectional and time-series variation tests show that the loss recognition from negative sales shock is more pronounced for highly leveraged firms, small firms, R&D intense firms, firm with high product market competition, financially distressed firms and for post SOX period. Lastly, in an additional test, I identify a potential confounding factor - that is, working capital accruals. In addition to the effect of loss recognition, the relationship between sales revenue and working

capital accrual may be confounded by the proposed stickiness in working capital. Because accruals are affected by accrual determinants (Dechow, Kothari, Watts, 1998) such as credit policy and inventory level and because accrual generating process is not homogenous (Dopuch et al. 2012), the relative magnitude of decrease in working capital for a decrease in sales may be smaller than the relative magnitude of increase in working capital for an increase in sales. Untabulated test results show consistence to this expectation. Also, inclusion of working capital intensity as control variable in the original model provides the results consistent with the prior expectation. The coefficient on loss recognition remain significantly positive while the coefficient on working capital intensity shows significant asymmetry in the opposite direction.

To the best of my knowledge, this paper is the first to identify and empirically document the incremental informativeness of sales in initiating asymmetric loss recognition through accruals. By recognizing a more complex relationship between sales revenue and accruals, this paper contributes to the accounting literatures in at least three different ways. First,

the research contributes to the extant literatures in financial accounting regarding the incremental informativeness of sales. By showing that negative sales shock affects firms' accrual choices, this paper shows that not only investors but also managers perceive sales as a valuable information incremental to cash flow. Second, the research contributes to the stream of literatures in conditional conservatism by identifying an additional source of asymmetric loss recognition. Not only negative cash flow shock, but also sales shock triggers asymmetric loss recognition, an empirical phenomenon known as conditional conservatism. Lastly, this paper contributes to the extant literatures in managerial accounting. By showing that distinct characteristics in working capital accrual may confound the effect of asymmetric loss recognition from sales information, this paper shows that marginal working capital requirement is not proportional to marginal sales revenue; that is, working capital is sticky.

The following section introduces existing models for accruals, describes the incremental informativeness of sales revenue, and develops hypotheses that negative sales shock

triggers timely loss recognition. Section 3 describes the research design and data. Section 4 presents the main test results and an additional test result pertaining to working capital accruals. Section 5 concludes.

2. Prior Literatures and Hypotheses Development

2.1. Incremental Informativeness of Sales

Sales revenue has significant informativeness pertaining to both current and future period. Currently, sales revenue is the starting point for all income statement items that generates current earnings and cash flows. In a forward looking perspective, sales revenue serves as an indicator of earnings' persistence and future performance. Prior literatures have evidenced the significant informativeness of sales revenue incremental to earnings and cash flow information. Ghosh et al. (2005) have shown that firms reporting sustained increases in both earnings and revenues have higher quality earnings and

larger earnings response coefficients than firms reporting sustained increases in earnings alone. Ertimur et al. (2003) and Jegadeesh and Livnat (2006) have shown that revenue surprises explain stock returns incremental to earnings surprises. Similarly, Keung (2010) has shown that earnings forecast revisions supplemented with sales forecast revisions have a greater impact on security prices than do stand-alone earnings forecast revisions. Kama (2009) has reported that market reaction to earnings surprises is not higher than to revenue surprises in certain context where earnings quality is low (e.g. R&D intense firms) and where sales revenue is a significant source of market power (e.g. oligopolistic industry). Together, prior literatures support that revenues is an indicator of earnings' persistence (Jegadeesh and Livnat, 2006; and Gu et al., 2006) and firms' future performance (Ghosh et al., 2005), and that "investors can use the disclosure of revenues to better assess and interpret the quality of the disclosed earnings signal" (Ertimur et al., 2003). In sum, sales revenue is informative both by itself and incremental to earnings and cash flow information.

2.2. Existing Accruals Models

Despite the significant informativeness of sales revenue, conventional accruals models do not incorporate the complex relationship between revenue and accruals. While existing literatures explicitly acknowledges that "accrual accounting attempts to eliminate th[e] transitory effects by matching… against sales revenue" (Ball and Shivakumar, 2006, pg. 93; emphasis inserted), they have either neglected the informativeness of sales revenue or proposed a simple linear relationship between sales revenue and accruals. The accruals quality model of Dechow and Dichev (2002) does not explicitly model the relationship between working capital change and revenue change. Dechow and Dichev (2002) model in equation (1) below uses only the portions of past, present, and future cash flows that are related to current accruals.

$$\Delta WC_t = \beta_0 + \beta_1 * CF_{t-1} + \beta_2 * CF_t + \beta_3 * CF_{t+1} + \varepsilon_t \qquad (1)$$

Unlike Dechow and Dichev (2002) model, Jones-type models - the workhorse industry standard models - for accruals, explicitly model sales revenue in its structural description of accruals behavior. As described in equation (2) below, a variety of Jones-type models rely on changes in sales and the level of property, plant and equipment to explain total accruals.

$$TACC_t = \beta_0 + \beta_1 * \Delta Revenue_t + \beta_2 * PPE_t + \varepsilon_t \quad (2)$$

As shown above in equation (2), all known variations of Jones models (see e.g. Jones, 1991; Kothari, 2001; Kothari et al., 2005) rely on the external shock to sales to describe the generation of accruals. However, as Dopuch et al. (2005) points out, the creation of accruals depends on more than just the exogenous shock to sales. There are endogenous process through which the levels of accruals are determined and accruals may not be determined proportional to exogenous shock in sales. For example, working capital accruals are affected, in addition to exogenous shock in sales revenue, by firms' credit policies or inventory levels. However, the basic assumption in

the Jones-type models is that nondiscretionary marginal working capital requirements are proportional to marginal revenue[3].

2.3. Hypotheses Development

There are two distinct role of accruals: ameliorations of transitory changes in cash flow and recognition of unrealized gains and losses. Regarding these two roles of accruals, prior literatures have shown the relationship between accruals and cash flows. Pertaining to the first role of accruals, prior literatures have shown that accrual is negatively related to contemporaneous cash flows (Dechow, 1998) and positively related to past and future cash flows (Dechow and Dichev, 2002). Regarding the second role of accruals, accrual is positively but asymmetrically related to

3) "The Jones model specifies nondiscretionary accruals as linear in changes in total revenue and in total investments in durable assets. The implicit assumptions are that: (1) nondiscretionary marginal working capital requirements are proportional to marginal revenue, and (2) nondiscretionary depreciation is proportional to total investment (e.g., as would occur under "straight-line" depreciation, with constant asset lives and with no unscheduled asset impairment write-offs)" (Ball and Shivakumar, 2006).

contemporaneous cash flows, because revisions in current cash flows are positively correlated with current revisions in expected future cash flows (Ball and Shivakumar, 2005). Because timely gain and loss recognition is based on expected and not realized cash flows, it is accomplished through accruals and thereby attenuates the negative correlation predicted by the accruals quality model developed by Dechow et al. (1998).

I posit that corresponding relationship exists in the relationship between accruals and sales revenue, incremental to cash flows effect. I conjecture that the change in sales revenue is a significant source of revision in expected future cash flows. Specifically, I hypothesize that sales shock is informative incremental to negative cash flow shock, and thereby triggers asymmetric loss recognition. To the extent that sales revenue provides incremental informativeness beyond earnings and cash flow (see, e.g. Ertimur et al., 2003; Ghosh et al., 2005; Jegadeesh and Livat, 2006; Kama, 2009; Keung, 2010), the revisions in the current-period sales revenue is likely to be positively correlated with revisions in

its expected future revenue, performance and cash flow. Accordingly, current-period negative revision in sales revenue will initiate the downward revision of expected future cash flow and will trigger timely loss recognition. Therefore, I provide hypothesis 1 as below to test for the timely loss recognition role of accruals and how sales revenue provides incremental information to revise expected future cash flows.

H1. The relative magnitude of decrease in total accruals for a negative change in sales revenue is greater than the relative magnitude of increase in total accruals for a positive change in sales revenue.

To the extent that the asymmetric relationship between accruals and sales revenue is driven by loss recognition role of accruals, such relationship is expected to be more prevalent in firms with certain characteristics that are known to promote conditional conservatism. For the robustness of my results, I use a variety of variables identified by prior literatures to test for cross-sectional

variations in the degree of conditional conservatism. I hypothesize that highly leveraged firms (Ahmed et al. 2002; Zhang 2008), small firms (Lafond and Watts, 2008), growth firms (Lafond and Watts, 2008), R&D intense firms (Kama, 2009), oligopolistic firms (Kama, 2009), financially distressed firms (Khan and Watts, 2008), firms in litigious industry (Basu, 1997; Watts, 2003), and firm in post-SOX period (Lobo and Zhou, 2006) will have significantly higher conditional conservatism.

Prior literatures assert that firms with high level of leverage tend to have greater bondholder and shareholder conflicts which increases the contractual demand for timely recognition of losses (Ahmed et al., 2002; Zhang, 2008). Therefore, I expect that the loss recognition role is more pronounced for firms with high leverage level and provide hypothesis 2a as below.

H2a. Piecewise linear relationship between the change in revenue and total accruals is more pronounced for highly leveraged firms.

LaFond and Watts (2008) have shown that larger firms produce more public information and have less information asymmetry. Therefore, larger firms have reduced demand for conservative accounting and smaller firms have relatively larger demand for conditional conservatism, which is reflected in increased loss recognition function. Therefore, I provide hypothesis 2b as below and conjecture that the asymmetric relationship is more pronounced for smaller firms.

H2b. Piecewise linear relationship between the change in revenue and total accruals is more pronounced for smaller firms.

LaFond and Watts (2008) have shown that information asymmetry associated with a firm's growth option increases the demand for conservatism. Also, prior literatures have documented that conditional and unconditional conservatism is negatively correlated (Givoly et al. 2007; Roychowdhury and Watts, 2007). Because market-to-book ratio proxies for

growth opportunities and unconditional conservatism, I expect that the asymmetric relationship between non-current accruals and sales revenue is more pronounced for firms with high market-to-book ratio and provide hypothesis 2c as below.

H2c. Piece-wise linear relationship between the change in revenue and total accruals is more pronounced for firms with high market-to-book ratio.

Kama (2009) has argued that, for certain firms with low earnings quality and high volatility in cash flow, sales is more informative than earnings. For example, in high R&D intensity company, earnings volatility is relatively high and sales is more informative. Also, in oligopolistic industry, sales revenue is a direct proxy for market power because market share strategy is relatively more important. Therefore, Kama (2009) argues that sales is more informative. Consistently, I provide hypothesis 2d and 2e as below that the loss recognition from negative sales shock is more pronounced for R&D intense firms and firms in highly concentrated industry.

H2d. Piecewise linear relationship between the change in revenue and total accruals is more pronounced for firms with high R&D intensity.

H2e. Piecewise linear relationship between the change in revenue and total accruals is more pronounced for firms in concentrated industry.

Some literatures provide that the demand for conditional conservatism increases with the magnitude of litigation risk. Khan and Watts (2008) argues that financially distressed firms are more likely to be sued and thus have more litigation risk and demand for conditional conservatism. Also, certain industry is innately more prone to litigation risk such as those categorized by Francis et al. (1994). Basu (1997) and Watts (2003) have argued that litigation risk enhances managers' incentives to recognize losses in a timelier manner than gains. Therefore, I provide hypothesis 2f and 2g that the loss recognition from negative sales shock is

more pronounced for financially distressed firms and firms in highly litigious industry.

H2f. Piece-wise linear relationship between the change in revenue and total accruals is more pronounced for financially distressed firms.

H2g. Piece-wise linear relationship between the change in revenue and total accruals is more pronounced for firms in litigious industry

Lastly, Sarbanes Oxley Act (2002) is known to have increased auditor liability as well as management liability for financial misstatement. Consistently, Lobo and Zhou (2006) have shown empirically that firms incorporate losses more quickly than gains in the post-SOX period. Therefore, I provide hypothesis 2h that the loss recognition from negative shock is more pronounced after the passage of SOX.

H2h. Piecewise linear relationship between the change in

revenue and non-current accruals is more pronounced after the passage of SOX.

3. Research Design, Data, and Descriptive Statistics

3.1. Research Design

The baseline regression model to test asymmetric relationship between accruals and sales revenue is constructed as equation (3). The equation mirrors the asymmetric loss recognition test of Ball and Shivakumar (2006), but I use sales revenue as a main variable of interest instead of cash flows from operations.

$$Accruals_{i,t} = \beta_0 + \beta_1 * \Delta Rev_{i,t} + \beta_2 * D\_Rev_{i,t} + \beta_3 * \Delta Rev_{i,t} * D\_Rev_{i,t} \quad (3)$$

$Accruals_{i,t}$ is calculated by subtracting cash flow from operations (Compustat item OANCF) from earnings before

extraordinary items reported in the cash flow statement (Compustat item IBC) and scaled by prior period total assets (Compustat item, AT). $\Delta Rev_{i,t}$ is the change in revenue calculated as a difference between current period sales (Compustat item, SALE) and prior period sales, scaled by prior period total assets. $D\_Rev_{i,t}$ is a binary variable equals to one if current period sales is smaller than prior period sales and zero otherwise. $\Delta Rev_{i,t}*D\_Rev_{i,t}$ is variable of primary interest representing the interaction term between change in sales and the decrease dummy. From the baseline regression model (3), I add accruals quality model of Dechow and Dichev (2002) as in equation (3.1), Jones (1991) model in equation (3.2), and Ball and Shivakumar (2005) model (3.3) to test whether the revenue effect survives after controlling for existing accruals models.

$$Accruals_{i,t} = \beta_0 + \beta_1*CF_{i,t} + \beta_2*CF_{i,t-1} + \beta_3*CF_{i,t+1} \quad (3.1)$$

$$Accruals_{i,t} = \beta_0 + \beta_1*(1/Asset_{i,t}) + \beta_2*\Delta Rev_{i,t} + \beta_3*PPE_{i,t} \quad (3.2)$$

$$Accruals_{i,t} = \beta_0 + \beta_1 * CF_{i,t} + \beta_2 * D\_CF_{i,t} + \beta_3 * CF_{i,t} * D\_CF_{i,t} \quad (3.3)$$

CFi,t, CFi,t-1, and CFi,t+1 are current, past and future cash flows from operations, respectively (Compustat item, OANCF) scaled by prior period total assets. D_CFi,t is a dummy variable that equals to 1 if prior period cash flow from operations is greater than current period cash flow from operation and zero otherwise. CFi,t*D_CFi,t is an interaction term. 1/Asseti,t is one divided by total assets (Compustat item, AT) and PPEi,t is gross plant, property and plants (Compustat item, PPEGT), scaled by prior period total assets. In addition to existing accruals models, I include several control variables including market-to-book ratio, leverage ratio, size, litigious industry, Fama-French industry classification. Market-to-book ratio, MB, is market value of equity (Compustat item, MKVALT) divided by book value of equity (Compustat item, SEQ); leverage ratio, LEV, is total liabilities (Compustat item, LT) divided by total shareholders' equity (Compustat item, SEQ); firm size, SIZE, is natural logarithm of total assets; litigious industry dummy, LIT, is

classified consistent to Francis et al. (1994)[4]. Fama-French 12 industry classifications[5], FFIND, follows French's classification uploaded on his website. The full model to test hypothesis 1 is as followed in equation (4).

$$Accruals_{i,t} = \beta_0 + \beta_1 * \Delta Rev_{i,t} + \beta_2 * D\_Rev_{i,t} + \beta_3 * \Delta Rev_{i,t} * D\_Rev_{i,t} + \beta_4 * CF_{i,t} + \beta_5 * CF_{i,t-1} + \beta_6 * CF_{i,t+1} + \beta_7 * (1/ASSET_{i,t}) + \beta_8 * PPE_{i,t} + \beta_9 * D\_CF_{i,t}$$

4) Francis et al. (1994) classifies firms with primary SIC codes of 2833-2836 (biotechnology), 3570-3577 (computer equipment), 3600-3674 (electronics), 5200-5961 (retailing), 7370-7374 (computer services) as those operating in a litigious industries.

5) French classifies firms into 12 industries; firms with primary SIC codes of 0100-0900, 2000-2399, 2700-2749, 2770-2799, 3100-3199, 3940-3989 are classified into consumer non-durables; firms with primary SIC codes of 2500-2519, 2590-2599, 3630-3659, 3710-3711, 3714-3714, 3716-3716, 3750-3751, 3792-3792, 3900-3939, and 3990-3999 are classified into consumer durables; firms with primary SIC codes of 2520-2589, 2600-2699, 2750-2769, 3000-3099, 3200-3569, 3580-3629, 3700-3709, 3712-3713, 3715-3715, 3717-3749, 3752-3791, 3793-3799, 3830-3839, and 3860-3899 are classified into manufacturing; firms with primary SIC codes of 1200-1399, and 2900-2999 are classified into oil, gas, and coal extraction and products; firms with primary SIC code of 2800-2829 and 2840-2899 are classified into chemicals and allied products; firms with primary SIC code of 3570-3579, 3660-3692, 3694-3699, 3810-3829, and 7370-7379 are classified into business equipment; firms with primary SIC code of 4800-4899 and 4900-4949 are classified into telecommunications and utilities, respectively; firms with primary SIC codes 5000-5999, 7000-7299, and 7600-7699 are classified into shops; firms with primary SIC code of 2830-2839, 3693-3693, 3840-3859, and 8000-8099 are classified into healthcare; firms with primary industry code of 6000-6999 are classified into finance; the other are classified as others.

$$+ \beta_{10}*CF_{i,t}*D\_CF_{i,t} + \beta_{11\sim15}*Controls(MB, DEBT, SIZE, LIT, FFIND) + \varepsilon_{i,t} \quad (4)$$

The coefficient of interest is β3 on ΔRevi,t∗D_Revi,t. To support hypothesis 1 that the relationship between accruals and sales revenue is piecewise linear, I expect to find significant and positive coefficient on β3 conditional on positive β1 coefficient. Next, to test for several cross-sectional and time-series variations, I provide equation (5) as follows.

$$\begin{aligned} Accruals_{i,t} = {} & \beta_0 + \beta_1*\Delta Rev_{i,t} + \beta_2*D\_Rev_{i,t} + \beta_3*\Delta Rev_{i,t}*D\_Rev_{i,t} \\ & + \beta_4*\Delta Rev_{i,t}*VAR + \beta_5*D\_\Delta Rev_{i,t}*VAR \\ & + \beta_6*\Delta Rev_{i,t}*D\_\Delta Rev_{i,t}*VAR + \beta_7*VAR + \beta_8*CF_{i,t} \\ & + \beta_9*D\_CF_{i,t} + \beta_{10}*CF_{i,t}*D\_CF_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (5)$$

where VAR is either *LEV, SIZE, MB, RD, HHI, DISTRESS, LIT,* or *SOX LEV* is calculated by the sum of short-term debt (Compustat item DLCC) and long-term debt (Compustat item, DLT) divided by lagged total assets. *SIZE* is natural logarithm

of total assets; *MB* is market-to-book ratio and calculated by dividing the market value (Compustat item, MKVALT) by reported shareholders' equity (Compustat item, SEQ); *RD* is R&D intensity and calculated by dividing R&D expense (Compustat item, XRD) by total assets; *HHI* is a binary variable equal to 1 if the Herfindahl Hirschman Index calculated based on 3-digit SIC code is greater than 0.25, the classification consistent to the Guideline for Horizontal Merger in U.S.Department of Justice; *DISTRESS*is a binary variable that equals to 1 if Altman's Z-score is below 1.81 and zero otherwise; *SOX* is a binary variable that equals to 1 if the firm-year observation belongs to years after 2002. For these cross-sectional and time-series variation tests, I expect to find significant and positive coefficients for all interaction terms $\Delta EV_{i,t}$*$D\_\Delta EV_{i,t}$*VAR.

3.2 Data and Descriptive Statistics

Data are obtained from annual Compustat files. Accruals and cash flows data are obtained from cash flow statements because using indirect estimations from balance

sheet data is potentially erroneous (Hribar and Collins, 2002).

[Insert Table 1 Here]

As provided in Table 1, I use samples from 1987, the year in which cash flow data have become available, to 2012. I exclude financial firms and 1% of each tail of extreme observations for all continuous variables. This leaves with the final sample size of 172,329firm-year observations. Table 2 presents the descriptive statistics for the final sample. Table 2 shows the descriptive statistics on the final sample.

[Insert Table 2 Here]

3. Empirical Results

4.1. Sales Revenue and non-Current Accruals (H1)

Table 3 presents the regression results of H1 that the

relationship between sales revenue and non-current accruals is piecewise linear. I first run a baseline regression based on equation (3) without controlling for existing accruals models and control variables.

[Insert Table 3 Here]

The baseline regression result, presented in Column (1) of Table 3, shows that the coefficient on $\Delta REV_{i,t}$*D_$\Delta REV_{i,t}$ is 0.16 ($p < 0.0001$) with significant and positive coefficient on $\Delta REV_{i,t}$, confirming that the relationship between sales revenue and working capital accruals is piecewise linear. From Column (2) to Column (5), I consecutively includes controls for Dechow and Dichev (2002) model, Jones (1991) model, Ball and Shivakumar (2006) model and other control variables. The results in Column (2) to Column (5) show that coefficient on main variable of interest, $\Delta REV_{i,t}$*D_$\Delta REV_{i,t}$ remains both statistically and economically significant and positive after controlling for all mentioned accruals models and control variables. Results also show that accruals are

negatively correlated with contemporaneous cash flow and positively correlated with past and future cash flows, consistent to Dechow and Dichev (2002). Lastly, consistent to Ball and Shivakumar (2006), the coefficient on $CF_{i,t}$*$D\_CF_{i,t}$ is positive and significant, confirming that accruals play loss recognition role from negative cash flow shock and that negative sales shock is informative incremental to cash flow shock. All remaining control variables are statistically significant yet economically insignificant.

Table 4 presents the regression results for different cross-sectional and time-series variation tests. Each of column (1) to (8) uses *LEV, SIZE, MB, RD, HHI, DISTRESS, LIT* and *SOX* as an interaction variable on the baseline regression model (1).

[Insert Table 4 Here]

Consistent to prior expectations, highly leveraged firms, small firms, R&D intense firms, financially distressed firms and firms after the passage of SOX showed a significantly larger

degree of conditional conservative. Also, firms in concentrated industry is significantly less conservative, contrary to the initial expectation. I attribute this finding to Dhaliwal et al.'s (2008) prior findings where it was documented that product market competition increases conservatism. Dhaliwal et al. (2008) argue that product market competition increases conservatism because intense competition improves the flow of information and limits managers' ability to conceal bad news, that competition increases firm's liquidation risk, contributing to a greater demand for accounting conservatism to achieve more efficient contracting, and that competition increases demand for conservatism because sub-optimal managerial decisions contrary to shareholders' interest can quickly lead to costly firm liquidation. Contrary to prior expectation, I was not able to find significant coefficients on growth firms and firms in litigious industry. Lastly, all coefficients on $\Delta REV_{i,t}$*D_$\Delta REV_{i,t}$ remain unchanged; they are significant and positive, a robust evidence in support of the hypothesis 1.

4.3. Additional Test – Case of Working Capital

Despite the documented loss recognition function of accruals from negative sales shock, the suggested asymmetric relationship between sales and accruals may be confounded by working capital accruals with an asymmetry in the opposite direction. The workhorse Jones (1991) model assumes that non-discretionary marginal working capital requirements are proportional to marginal sales revenue. I posit that firms' working capital management violates such proportionality assumptions. While the absolute volume of revenue is an important determinant of the absolute level of working capital, the marginal working capital requirement may not be proportional to marginal revenue. Rather, marginal working capital requirement may be piecewise proportional to marginal revenue depending on the direction of change in sales revenue, because firms often engage in working capital management.

When revenue changes positively, the amount of working capital needed to support the operations accordingly

increases. However, when revenue changes negatively, the amount of working capital does not necessarily decrease by a corresponding amount because of potential increases in accounts receivables and inventory. It is because, as Dopuch et al. (2005) has asserted, accruals are affected by accrual determinants such as firms' inventory and credit policies in addition to sales changes. For example, when sales decrease, firms may temporarily increase credit sales to sustain sales volume, delay payment to outside parties, or become unavailable to adjust production schedule in short-term period which leads to an accumulation of high inventory level. In other words, working capital may be sticky in a sense that the decrease in working capital requirement is not proportional to corresponding decrease in sales revenue. That is why working capital management is key to an improvement in profit, especially during the period of economic recession where credit constraints and inventory burden disproportionately weigh up on firm's working capital requirements. Consider the following example in Harvard Business Review,

> "The boom years made businesses careless with working capital. So much cash was sloshing around the system that managers saw little point in worrying about how to wring more of it out, especially if doing so might dent reported profits and sales growth… It's time, therefore, to take a cold, hard look at the way you're managing your working capital. It's very likely that you have a lot of capital tied up in receivables and inventory that you could turn into cash by challenging your working-capital practices and policies" (Kaiser and Young, 2009).

During the period of sales decrease, firms often fail to manage working capital efficiently and increase credit sales and accumulate inventories that subsequently increase the amount of working capital on the balance sheet. As a result, relative magnitude of positive change in working capital for an increase in revenue becomes greater than the relative magnitude of a negative change in working capital for a

decrease in revenue.

Therefore, working capital stickiness may be a confounding factor to the proposed asymmetric loss recognition role of negative sales shock. To test this conjecture, I provide the following equation (6) where I interact the baseline regression specification with working capital intensity.

$$
\begin{aligned}
Accruals_{i,t} = {} & \beta_0 + \beta_1 * \Delta Rev_{i,t} + \beta_2 * D\_Rev_{i,t} + \beta_3 * \Delta Rev_{i,t} * D\_Rev_{i,t} \\
& + \beta_4 * \Delta Rev_{i,t} * WC_{i,t} + \beta_5 * D\_Rev_{i,t} * WC_{i,t} \\
& + \beta_6 * \Delta Rev_{i,t} * D\_Rev_{i,t} * WC_{i,t} + \beta_7 * CF_{i,t} + \beta_8 * CF_{i,t-1} \\
& + \beta_9 * CF_{i,t+1} + \beta_{10} * (1/ASSET_{i,t}) + \beta_{11} * PPE_{i,t} \\
& + \beta_{12} * D\_CF_{i,t} + \beta_{13} * CF_{i,t} * D\_CF_{i,t} \\
& + \beta_{14\sim18} * Controls(MB,\ DEBT,\ SIZE,\ LIT,\ FFIND) \\
& + \varepsilon_{i,t} \qquad (6)
\end{aligned}
$$

where $WC_{i,t}$, working capital intensity, represents either one of $AR\_INT_{i,t}$, $INV\_INT_{i,t}$, $AP\_INT_{i,t}$, and $WC\_INT_{i,t}$. For accounts receivables intensity, $AR\_INT_{i,t}$, I divide accounts receivable from the balance sheet (Compustat item, RECT) by total

assets; for inventory intensity, $INV\_INT_{i,t}$, I divide inventory from the balance sheet (Compustat item, INV) by total assets; for accounts payable intensity, $AP\_INT_{i,t}$, I divide accounts payable from the balance sheet (Compustat, AP) by total assets; for total working capital intensity, $WC\_INT_{i,t}$, I add accounts receivable and inventory less accounts payable and divide them by total assets.

[Insert Table 5 Here]

Regression results are consistent to prior expectation. Table 5 regression results for equation (6) where Column (1) is based on individual working capital items and Column (2) is based on the calculated total working capital accounts. In both Column (1) and (2), coefficient on $\Delta REV_{i,t}*D\_\Delta REV_{i,t}$ remain unchanged; they are significant and positive and show that the effect of negative sales shock in triggering conditional conservatism is valid after controlling for working capital intensity. Coefficients on working capital intensity, both separately and together, are consistent to prior expectation;

that is, working capital confounds the effect of negative sales shock in asymmetric loss recognition. Lastly, untabulated regression result, where dependent variable to equation (6) is a change in working capital obtained from cash flow statement, shows that working capital is sticky to negative sales change.

5. Conclusion

In this paper, I have shown that negative sales shock, incremental to negative cash flow shock, triggers asymmetrically timely loss recognition because current-period negative revision in sales revenue is positively correlated with revision of expected future cash flow. Cross-sectional variation tests provide results consistent with prior literatures in conditional conservatism; asymmetric loss recognition from negative sales shock is more pronounced for leveraged firms, small firms, R&D intense firms, firms in competitive industry, firms with financial distress and after the passage of SOX. To

the best of my knowledge, this is the first to have documented the comprehensive relationship between sales and accruals in regards to loss recognition role. By recognizing a more complex relationship between sales revenue and accruals, this paper contributes to various streams of literatures in the study of accountancy. First, the research contributes to financial accounting literatures regarding the incremental informativeness of sales. By showing that negative sales shock affect firms' accrual choices, this paper provides that not only investors but also managers perceive sales as a valuable information incremental to cash flow. Second, the research contributes to the stream of literatures in conditional conservatism by identifying an additional source of asymmetric loss recognition. Not only negative cash flow shock, but also negative sales shock triggers asymmetric loss recognition, an empirical phenomenon known as conditional conservatism. Lastly, this paper contributes to the extant literatures in managerial accounting. By showing that distinct characteristics in working capital accrual may confound the effect of asymmetric loss recognition from sales information,

this paper shows that marginal working capital requirements may not be proportional to marginal sales revenue; that is, working capital is sticky.

References

Ahmed, A. S., Billings, B. K., Morton, R. M., & Stanford-Harris, M. (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.

Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings. Journal of accounting and economics, 24(1), 3-37.

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

Ball, R., & Shivakumar, L. (2006). The role of accruals in asymmetrically timely gain and loss recognition. *Journal of Accounting Research*, *44*(2), 207-242.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of accounting and economics*, *18*(1), 3-42.

Dechow, P. M., Kothari, S. P., & L Watts, R. (1998). The relation between earnings and cash flows. *Journal of Accounting and Economics*, *25*(2), 133-168.

Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The accounting review*, *77*(s-1), 35-59.

Dopuch, N., Mashruwala, R., Seethamraju, C., & Zach, T. (2005). Accrual determinants, sales changes and their impact on empirical accrual models. *Retrieved March*, *14*, 2006.

Ertimur, Y.,J. LivnatandM. Martikainen(2003), 'Differential Market Reaction to Revenue and Expense Surprise',*Review of Accounting Studies*, Vol.8, No.2&3(June), pp.185-211.

French, K. (2014, July 31). Detail for 12 Industry Portfolios. Retrieved November 24, 2014, from http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html

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

Goh, B. W., & Li, D. (2011). Internal controls and conditional conservatism. *The Accounting Review*,*86*(3), 975-1005.

Heltzer, W. (2009). Conservatism and book-tax differences.*Journal of Accounting, Auditing & Finance*,*24*(3), 469-504.

Jegadeesh, N., & Livnat, J. (2006). Revenue surprises and stock returns. *Journal of Accounting and Economics*,*41*(1), 147-171.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of accounting research*, 193-228.

Kaiser, K., & Young, S. D. (2009). Need cash? Look inside your company. Harvard Business Review, 87(5), 64-71.

Kama, I. (2009). On the market reaction to revenue and earnings surprises. *Journal of Business Finance & Accounting*,*36*(1-2), 31-50.

Keung, E. C. (2010). Do supplementary sales forecasts increase the credibility of financial analysts' earnings

forecasts?.*The Accounting Review*,*85*(6), 2047-2074.

Kothari, S. P. (2001). Capital markets research in accounting. *Journal of accounting and economics*,*31*(1), 105-231.

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

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

LaFond, R., & Watts, R. L. (2008). The information role of conservatism. The Accounting Review, 83(2), 447-478.

Lara, J. M. G., Osma, B. G., & Penalva, F. (2006).*Cost of equity and accounting conservatism*. working paper, University of Navarra.

Li, D. (2010). Does auditor tenure affect accounting conservatism? Further evidence.*Journal of Accounting and Public Policy*,*29*(3), 226-241.

Lobo, G.J., & Zhou, J. (2006). Did conservatism in financial reporting increase after the Sarbanes-Oxley Act? Initial evidence. Accounting Horizon, 20(1), 57-73.

Nikolaev, V. V. (2010). Debt covenants and accounting conservatism.*Journal of Accounting Research*,*48*(1), 51-89.

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

Zhang, J. (2008). The contracting benefits of accounting conservatism to lenders and borrowers.*Journal of accounting and economics*,*45*(1), 27-54.

Table 1

Data Selection

	Firm-year Observations
Initial Compustat data with valid observations	215,270
Excluded Financial Firms	-23,860
Restricted to years from 1987 (FAS 95) to 2012	-7,477
Excluded Top and Bottom 1% of Observations	-11,604
Final Sample	172,329

This table shows the sample selection procedure. Initial Compustat data with valid observations include 215,270 firm-year observations. From this, I exclude 23,860 observations pertatining to financial firms and restrict sample years from 1987, when FAS 95 was put into force, to 2012 - thereby excluding addition 7,477 firm-year observations. Lastly, I exclude top and bottom 1 percentile of observations on all continuous variables. Final sample size is 172,329 firm-year observations.

Table 2

Descriptive Statistics for a Sample of 172,329 Firm-Year Observations for the Period 1987-2012

	Mean	Median	Std Dev	Lower Quartile	Upper Quartile
Sales Revenue	1407.5	108.0	6240.8	17.4	617.8
Income before Extraordinary Items	72.0	1.9	649.7	-2.7	26.1
Cash Flows from Operations	175.2	6.4	901.0	-0.4	61.5
Total Accruals	-103.2	-4.9	622.6	-38.7	-0.2
Total Assets	2231.8	160.5	8817.7	27.6	942.0
PPE (Gross)	1271.4	43.2	5754.4	6.1	344.7
Working Capital	249.4	14.3	1861.7	0.8	95.9

This table provides descriptive statistics of the final sample of 172,329 firm-year observations. Mean sales revenue is 1,407.5 million USD with standard deviation of 6,240.8 million USD. Mean total accruals is negative at 103.2 million USD and standard deviation is 622.6 million USD.

Table 3

Piecewise Linear Relationship between
Sales Revenue and Total Accruals

Dependent Variable : Total Accruals	(1) Baseline	(2) Control for Dechow and Dichev Model	(3) Control for Jones Model	(4) Control for Ball and Shivakumar	(5) Full Model
Intercept	-0.08***	-0.09***	-0.04***	-0.05***	-0.09***
	(-78.06)	(-93.76)	(-33.37)	(-34.15)	(-19.31)
$\Delta REV_{i,t}$	0.01***	0.03***	0.04***	0.05***	0.01***
	(4.30)	(13.72)	(17.61)	(21.77)	(2.82)
$D\_\Delta REV_{i,t}$	-0.01***	0.00	-0.01***	-0.01***	-0.02***
	(-5.31)	(-1.24)	(-3.10)	(-7.88)	(-6.05)
$\Delta REV_{i,t}$*$D\_\Delta REV_{i,t}$	0.16***	0.08***	0.05***	0.04***	0.06***
	(25.34)	(13.12)	(8.73)	(6.67)	(5.76)
$CF_{i,t}$		-0.10***	-0.10***	-0.19***	-0.07***
		(-22.63)	(-22.19)	(-27.15)	(-6.63)
$CF_{i,t-1}$		0.31***	0.26***	0.27***	0.22***
		(81.60)	(68.27)	(56.78)	(32.42)
$CF_{i,t+1}$			0.15***	0.14***	0.14***
			(56.67)	(51.69)	(35.08)
$1/ASSET_{i,t}$			-0.19***	-0.19***	-0.18***

			(-85.76)	(-86.07)	(-47.56)
$PPE_{i,t}$			-0.06***	-0.06***	-0.06***
			(-44.34)	(-42.55)	(-25.63)
$D\_CF_{i,t}$				0.03***	0.04***
				(19.97)	(16.27)
$CF_{i,t}*D\_CF_{i,t}$				0.18***	0.14***
				(31.19)	(17.14)
Controls					YES
Adjusted R^2	0.88%	15.47%	20.59%	21.63%	25.30%
# Observations	172329	159476	149055	149055	79947

This table presents the regression results of H1 that the relationship between sales revenue and non-current accruals is piecewise linear based on equation (4).

Equation (4) :

$$Accruals_{,t} = \beta_0 + \beta_1*\Delta ev_{i,t} + \beta_2*D\_Rev_{i,t} + \beta_3*\Delta ev_{i,t}*D\_Rev_{i,t} + \beta_4*CF_{i,t} + \beta_5*CF_{i,t-1} + \beta_6*CF_{i,t+1} + \beta_7*ASSET_{i,t} + \beta_8*PPE_{i,t} + \beta_9*D\_CF_{i,t} + \beta_{10}*CF_{i,t}*D\_CF_{i,t} + \beta_{11\sim15}*Controls(MB, DEBT, SIZE, LIT, FFIND) + \varepsilon_{i,t}$$

$Accruals_{i,t}$ is calculated by subtracting cash flow from operations (Compustat item OANCF) from earnings before extraordinary items reported in the cash flow statement (Compustat item IBC) and

scaled by lagged total assets. $\Delta ev_{i,t}$ is the change in revenue calculated as a difference between current period sales (Compustat item, SALE) and prior period sales, scaled by prior period total assets (Compustat item, AT). $D_Rev_{i,t}$is a binary variable equals to one if current period sales is smaller than prior period sales and zero otherwise. $\Delta ev_{i,t}*D\_Rev_{i,t}$ is the interaction term between change in sales and the decrease dummy and is the variable of primary interest. $CF_{i,t}$, $CF_{i,t-1}$, and $CF_{i,t+1}$are current, past and future cash flows from operations, respectively (Compustat item, OANCF) scaled by prior period total assets. $Asset_{i,t}$ is total assets (Compustat item, AT) and $PPE_{i,t}$ is gross plant, property and plants (Compustat item, PPEGT), scaledby prior period total assets. In addition to existing accruals models, I include several control variables including market-to-book ratio, debt ratio, size, litigious industry, Fama-French industry classification. Market-to-book ratio, MB, is market value of equity (Compustat item, MKVALT) divided by book value of equity (Compustat item, SEQ); debt ratio, DEBT, is total liabilities (Compustat item, LT) divided by total shareholders' equity (Compustat item, SEQ); firm size, SIZE, is natural logarithm of total assets; litigious industry is classified consistent to Francis et al. (1994); Fama-French 12 industry classifications, FFIND, follows French's classification uploaded on his website.

Table 4

Cross-sectional Variations

Dep. Var. : TACC	H2) VAR= Leverage	H3) VAR= Size	H4) VAR= MB	H5) VAR= R&D	H6) VAR= HHI	H7) VAR= Distress	H8) VAR= Litigious	H9) VAR= Post-SOX
Intercept	-0.12***	-0.17***	-0.13***	-0.11***	-0.13***	-0.13***	-0.12***	-0.12***
	(-111.60)	(-70.78)	(-76.12)	(-58.40)	(-108.22)	(-56.87)	(-105.08)	(-92.92)
$\Delta REV_{i,t}$	0.02***	0.03***	-0.02***	0.05***	0.02***	0.05***	0.03***	0.04***
	(11.06)	(5.25)	(-3.88)	(13.62)	(9.61)	(11.78)	(10.24)	(16.33)
$D\_\Delta REV_{i,t}$	-0.01***	-0.02***	-0.01***	-0.02***	-0.01***	-0.01	-0.01***	-0.01***
	(-8.66)	(-5.80)	(-4.83)	(-6.84)	(-6.42)	(-1.13)	(-7.04)	(-6.50)
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}$	0.09***	0.15***	0.14***	0.02**	0.11***	0.01*	0.10***	0.07***
	(15.16)	(14.08)	(14.75)	(2.40)	(16.24)	(1.70)	(14.40)	(9.63)
$\Delta REV_{i,t}*VAR_{i,t}$	-0.02***	0.00*	0.02***	-0.10***	0.02*	-0.04***	0.00	-0.08***
	(-13.77)	(1.73)	(9.17)	(-10.15)	(2.32)	(-7.20)	(0.02)	(-15.24)
$D\_\Delta REV_{i,t}*VAR_{i,t}$	-0.02***	0.00*	0.02***	0.05***	-0.01*	-0.01**	0.00	0.00
	(-8.41)	(1.89)	(7.25)	(3.53)	(-2.38)	(-2.08)	(-0.52)	(-0.23)
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}*VAR_{i,t}$	0.04***	-0.03***	0.00	0.50***	-0.06***	0.13***	-0.01	0.12***
	(9.39)	(-12.36)	(-0.53)	(13.77)	(-3.49)	(7.63)	(-1.01)	(8.95)
$CF_{i,t}$	0.28***	0.28***	0.42***	0.29***	0.32***	0.32***	0.32***	0.32***
	(67.87)	(65.48)	(71.21)	(50.26)	(76.25)	(74.60)	(76.22)	(76.69)

$D\_CF_{i,t}$	0.09***	0.09***	0.09***	0.10***	0.09***	0.09***	0.09***	0.09***
	(66.57)	(67.34)	(44.08)	(46.53)	(69.13)	(69.04)	(69.18)	(68.82)
$CF_{i,t}*D\_CF_{i,t}$	0.05***	0.05***	0.01	-0.01	0.04***	0.04***	0.04***	0.04***
	(10.19)	(10.13)	(0.77)	(-1.52)	(7.32)	(7.63)	(7.33)	(7.14)
$VAR_{i,t}$	0.10***	0.01***	0.03***	-0.16***	0.01***	0.00	-0.01***	0.00*
	(63.06)	(20.70)	(24.63)	(-20.23)	(2.47)	(1.39)	(-3.01)	(1.48)
Adjusted R^2	15.35%	12.86%	17.79%	16.18%	12.07%	12.13%	12.07%	12.21%
# Observations	172018	172275	94885	83801	172329	172329	172329	172329

This table presents the regression results for different cross-sectional and time-series variation tests based on equation (5).

Equation (5) :

$$Accruals_{,t} = \beta_0 + \beta_1*\Delta ev_{i,t} + \beta_2*D\_Rev_{i,t} + \beta_3*\Delta ev_{i,t}*D\_Rev_{i,t} + \beta_4*\Delta ev_{i,t}* VAR + \beta_5*D\_\Delta ev_{i,t}*VAR + \beta_6*\Delta ev_{i,t}*D\_\Delta ev_{i,t}*VAR + \beta_7*VAR + \beta_8*CF_{i,t} + \beta_5*D\_CF_{i,t} + \beta_9*CF_{i,t}*D\_CF_{i,t} + \varepsilon_{i,t}$$

VAR is either Leverage, Size, MB, RD, HHI, Distress, Litigious, or SOX; Leverage is calculated by the sum of short-term debt (Compustat item DLCC) and long-term debt (Compustat item, DLT)

divided by lagged total assets. Size is natural logarithm of total assets; MB is market-to-book ratio and calculated by dividing the market value (Compustat item, MKVALT) by reported shareholders'equity (Compustat item, SEQ); RD is R&D intensity and calculated by dividing R&D expense (Compustat item, XRD) by total assets; HHI is a binary variable equal to 1 if the Herfindahl Hirschman Index calculated based on 3-digit SIC code is greater than 0.25, the classification consistent to the Guideline for Horizontal Merger in U.S. Department of Justice; Distressed is a binary variable that equals to 1 if Altman's Z-score is below 1.81 and zero otherwise; SOX is a binary variable that equals to 1 if the firm-year observation belongs to years after 2002.

Table 5

Additional Test - Working Capital as a Confounding Variable

Dependent Variables : Total Accruals	(1)	(2)
Intercept	-0.15***	-0.14***
	(-28.98)	(-28.64)
$\Delta REV_{i,t}$	-0.07***	-0.08***
	(-10.05)	(-17.03)
$D\_\Delta REV_{i,t}$	-0.01*	-0.02***
	(-1.69)	(-7.61)
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}$	0.13***	0.17***
	(8.49)	(16.52)
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}*AR\_INT_{i,t}$	-0.39***	
	(-6.81)	
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}*INV\_INT_{i,t}$	-0.14**	
	(-2.17)	
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}*AP\_INT_{i,t}$	0.40***	
	(12.56)	
$\Delta REV_{i,t}*D\_\Delta REV_{i,t}*WC\_INT_{i,t}$		-0.38***
		(-14.10)
$WC\_INT_{i,t}$		0.13***
		(29.76)
$CF_{i,t}$	-0.05***	-0.05***
	(-4.34)	(-4.47)
$D\_CF_{i,t}$	0.04***	0.04***
	(15.64)	(16.05)
$CF_{i,t}*D\_CF_{i,t}$	0.13***	0.13***
	(15.47)	(15.92)
Adjusted R^2	27.66%	27.50%
# Observations	78011	78011

(*) For brevity in, the coefficients on constitutive terms of interactions and control variables (DD model, Jones model, market-to-book, leverage, size, litigious industry, FF industry) have been omitted from the table

This table presents regression results for equation (6) where Column (1) is based on individual working capital items and Column (2) is based on the calculated total working capital accounts.

Equation (6) :

$$
\begin{aligned}
Accruals_{,t} = {} & \beta_0 + \beta_1 * \Delta ev_{i,t} + \beta_2 * D\_Rev_{i,t} \\
& + \beta_3 * \Delta Rev_{i,t} * D\_Rev_{i,t} + \beta_4 * \Delta ev_{i,t} * WC \\
& + \beta_5 * D\_Rev_{i,t} * WC + \beta_6 * \Delta ev_{i,t} * D\_Rev_{i,t} * WC \\
& + \beta_7 * CF_{i,t} + \beta_8 * CF_{i,t-1} + \beta_9 * CF_{i,t+1} \\
& + \beta_{10} * ASSET_{i,t} + \beta_{11} * PPE_{i,t} + \beta_{12} * D\_CF_{i,t} \\
& + \beta_{13} * CF_{i,t} * D\_CF_{i,t} \\
& + \beta_{14\sim18} * Controls(MB,\ DEBT,\ SIZE, \\
& \quad LIT,\ FFIND) + \varepsilon_{i,t}
\end{aligned}
$$

WC reflects working capital intensity and is calculated by dividing each of balance sheet working capital accruals and total working capital by total assets. Specifically, for accounts receivables intensity, AR_INT, I divide accounts receivable from the balance sheet (Compustat item, RECT) by total assets; for inventory intensity, INV_INT, I divide inventory from the balance sheet (Compustat item, INV) by total assets; for accounts payable intensity, AP_INT, I divide accounts payable from the balance sheet (Compustat, AP) by total assets; for total working capital intensity, WC_INT, I add accounts receivable and inventory less accounts payable and divide them by total assets.

국문초록

매출액의 정보성에 대해 다양한 각도로 연구한 재무회계 분야의 최근 연구들은 매출액이 독립적으로 그리고 이익과 현금흐름에 증분적으로 큰 정보성을 갖는다는 견해를 보이고 있으며, 금융시장 참가자들이 매출액이 갖고 있는 정보성에 가치를 부여한다고 주장한다. 본 연구는, 금융시장 투자자뿐만 아니라 기업의 경영진들 역시 매출액이 현금흐름에 대해 증분적으로 가지고 있는 정보성에 가치를 부여해 조건부 보수주의를 촉진시킨다고 주장한다. 본 연구는 Ball and Shivakumar (2006)의 발생액을 통한 적시적 손실인식 모형을 수정하여, 음(-)의 현금흐름뿐만 아니라 음(-)의 매출액 변화 역시 기업의 적시적 손실인식(즉, 조건부 보수주의)을 촉진시킨다고 주장하는데, 이는 현재시점의 매출액의 변화는 미래 시점의 현금흐름의 변화와 양(+)의 상관관계를 갖고, 이러한 미래시점의 미실현 이익과 손실은 현재시점의 기업회계 과정에서 발생액을 통해 인식하게 된다는 가정에서 출발한다. 1987년부터 2012년 까지 미국의 상장기업을 대상으로 한 본 연구의 실증 분석 결과는 이러한 주장을 뒷받침하며, 매출액과 발생액의 관계는 기존 선행연구들에서 주장하고 있는 선형 관계가 아닌 구분적 선형 관계로 나타난다는 것을 보여준다. 즉, 매출액 감소에 따른 발생액의 상대적 감소규모가 매출액 증가에 따른 발생액의 상대적 증가규모 보다 크다는 실증 결과를 제시하고 있다. 기존 선행연구를 바탕으로 한 횡단면 분석 결과는 이러한 주장을 더욱 뒷받침하는데, 음(-)의 매출액 변화에 따른 발생액을 통한 적시적 손실인식은 부채가 많은 회사에서, 규모가 작은 회사에서, 연구개발비 지출이 큰 회사에서, 경쟁이 치열한 산업에서, 부도 위험이 큰 회사에서, 그리고 Sarbanes-Oxley Act(2002)의 입법 이후 더 크게 나타난다는 결과를 보이고 있다. 마지막으로, 본 논문은 운전자본의 하방경직성이 음(-)의 매출액 변화에 따른 발생액을 통한 적시적 손실인식에 혼란변수(Confounding Factor)로 작용할 수 있다는 점을 지적하며, 기업의 운전자본 집중도를 통제변수로 사용함으로써 본 연구의 견고성을 확인하였다.

주요어 : 매출액의 정보성; 발생액; 적시적 손실인식;
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