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Sarah McVay  
of  
University of Utah  
will present

“Inventory Management and Ineffective Internal  
Control over Financial Reporting”

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# **Inventory Management and Ineffective Internal Control over Financial Reporting\***

Mei Feng  
University of Pittsburgh

Chan Li  
University of Pittsburgh

Sarah McVay  
University of Utah

Hollis Skaife  
University of Wisconsin-Madison

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## **Abstract**

Internal control over financial reporting is the collection of policies, procedures, and personnel that results in records accurately reflecting company transactions. We hypothesize that managers in firms with inventory-related internal control problems are hindered in their attempt to manage inventory, and thus their firms operate inefficiently. Empirically, we document that firms with inventory problems in general, and tracking and valuation problems specifically, have systematically lower inventory turnover ratios and have a higher likelihood and magnitude of inventory impairments. We also find some evidence that inventory turnovers improve when the weaknesses are remediated. In sum, we document that a firm's internal control over financial reporting can have an economically significant effect on their operations and thus profitability.

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\* We appreciate comments from Glen Schmidt and workshop participants at the University of Alberta Research Conference.

## **Inventory Management and Ineffective Internal Control over Financial Reporting**

### **1. Introduction**

The objective of inventory management decisions is to minimize the sum of total variable inventory costs thereby contributing to more profitable operations. Variable inventory costs are a function of such inputs as order quantity, holding cost rate including storage and obsolescence, unit purchase cost, and shortage costs (Gardner 1990). Obtaining and processing cost data requires policies, procedures and personnel dedicated to making sure inventory transactions are recorded completely and accurately. Internal control over financial reporting (ICFR) is the collection of policies, procedures, and personnel that results in records accurately reflecting company transactions and preventing, or promptly detecting, unauthorized acquisition, use or disposition of company assets (Deloitte & Touche LLP et al. 2004). A major requirement of the Sarbanes-Oxley Act of 2002, further refined by the Dodd-Frank Act of 2010, is the evaluation and public disclosure of the effectiveness of ICFR for publicly traded firms with market capitalization of \$75 million or more. In this paper we explore the importance of ICFR for inventory management and ensuing operating performance.

Inventory management is a critical component of operating performance, especially among retailers and manufacturers. For example, retailers use recorded inventory quantities to forecast customers' demands for goods, which in turn results in the issuance of purchase orders to replenish store shelves. Even though U.S. retailers spend approximately 1% of annual sales (approximately \$30 billion per year) on automated decision support tools, an abundance of inventory record inaccuracies exist (DeHoratius and Raman 2008).<sup>1</sup> Such errors can result in substantial lost sales due to inventory shortages, as well as increased capital charges and risk of obsolescence due to inventory surpluses.

The bulk of the literature examining inventory record inaccuracies necessarily use analytical models (e.g., Iglehart and Morey 1972) or field studies (e.g., Sheppard and Brown 1993) because of the difficulty in accessing proprietary details on firms' inventory policies. The required public disclosure of ineffective ICFR under the Sarbanes-Oxley Act and specifically ineffective internal control related to inventory processes allows us to identify the existence of inventory management problems in publicly traded firms. The disclosure of the ineffectiveness of ICFR comes about in two forms: (1) management's evaluation and reporting on internal control; and (2) the company's external auditor's attestation of management's evaluation of internal control. Management is required to issue a report along with the 10-K filed with the U.S. Securities and Exchange Commission (SEC) that indicates its evaluation of the ICFR. The report includes a statement that it is management's responsibility to establish and maintain

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<sup>1</sup> DeHoratius and Raman (2008) examine the inventory records of one larger retailer to empirically document the type and frequency of inventory errors. Common inventory errors documented in the DeHoratius and Raman (2008) field study include those related to selling and restocking, database errors, synchronization errors and counting errors.

adequate ICFR. The report also includes management's assessment of the effectiveness of the company's ICFR as of the end of the company's most recent fiscal year including an explicit statement as to whether internal control is effective and, if not, the material weaknesses in ICFR. The company's external auditor is required to issue an opinion within the audit report on the effectiveness of ICFR and confirm the source of material weaknesses if in existence.

Over 24 percent of material weaknesses in ICFR disclosed over 2004-2008 relate to inventory processes.<sup>2</sup> More specifically, we identify 233 firms that have inventory-related material weaknesses in ICFR; of these, 108 firms have inventory tracking problems and 182 firms have inventory valuation inaccuracies. Sheppard and Brown (1993), among others, indicate that inventory errors can lead to unnecessary inventory holding costs or to delays in production, and ultimately can affect relationships with customers and the financial viability of an organization. To the extent that ineffective internal control over these inventory processes leads to poor inventory management decisions (e.g., determining optimal order quantities, stockouts, holding costs), we expect firms with material weaknesses in inventory processes to have less profitable operations.

We assess the profitability of operations by comparing inventory turnover ratios and inventory write-offs of firms with material weaknesses over their inventory processes to a matched sample of firms with effective ICFR. All else equal, lower inventory turnover ratios, defined as cost of goods sold (sales) divided by average inventory, are associated with less profitable operations (e.g., Huson and Nanda 1995). Likewise the presence of inventory write-offs will increase current period expenses, also resulting in lower profitability. After controlling for the standard determinants of ineffective internal control, we document that firms with inventory-related ICFR problems have lower inventory turnover ratios; this relation extends to both tracking and valuation inventory problems.

Turning to our inventory impairment analysis, descriptive statistics indicate that 35.2% of firms with ineffective ICFR report inventory impairments whereas only 21% of effective ICFR firms impair their inventory. The results of the multivariate analysis indicate that after controlling for determinants of ineffective ICFR, we find firms with material weaknesses in their internal control over inventory processes are more likely to report significant inventory impairments, which directly affect operating performance as inventory write-offs reduce operating income. Moreover, our results indicate that both tracking and valuation inventory problems are associated with larger inventory write-offs, thereby reducing the profitability of operations.

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<sup>2</sup> A material weakness in ICFR indicates that there is more than a remote likelihood that there is a material misstatement in the firm's financial statements. Other material weaknesses in internal control include lack of policies or procedures over the accounting for revenue, leases or warranties (see Ge and McVay 2005 for more details). It is possible, however, that poorly performing firms tend to have internal control problems. We control for other internal control problems and do not find a similar relation.

Our findings contribute to the literature on inventory management and operating performance. Prior research relies on insights obtained via case studies, surveys, and questionnaires to document inventory management costs (e.g., Anderson et al. 2006). Using publicly available data, we provide evidence that the lack of proper inventory tracking and valuation systems is indirectly related to companies' operating performance via inventory turnover ratios and directly related to companies' operating performance via inventory write-offs.

## **2. Hypothesis Development**

Internal controls over financial reporting have received a great deal of attention by managers, auditors and regulators over the last decade, following the prominent Section 404 of the Sarbanes-Oxley Act of 2002. This rule requires that managers document and evaluate internal control over financial reporting, resulting in a manager-provided assessment of the effectiveness of internal controls (Section 404a) and that auditors then opine on this assessment (Section 404b). Though the documentation, testing, and related audits are quite costly, there are several perceived benefits to internal control regulation, such as improvements in earnings quality and the firm's cost of capital (e.g., Altamuro and Beatty 2010; Ashbaugh-Skaife et al. 2008; Ashbaugh-Skaife et al. 2009; Doyle et al. 2007a).

The general consensus for financial reporting quality is that account-specific ineffective internal control such as problems with inventory tracking or inventory valuation are easily circumvented via substantive testing by auditors, and thus do not represent a serious concern to shareholders as users of the financial statements (e.g., Doss and Jonas 2004; Doyle et al. 2007a). This assertion, however, is very dependent on the desired output. Financial statements filed with the SEC and made available to shareholders are subject to external monitoring—they are reviewed or audited by the firm's public accounting firm. Internal management reports, however, are not corrected by auditors, and managers must use information contained with these reports throughout the year to make operating decisions. If the company lacks the proper policies, procedures and personnel to collect and summarize data, managers are likely to rely on faulty internal management reports (Feng et al. 2009) and make sub-optimal operating decisions.

We posit that the implications of ineffective internal control extend beyond financial reporting; that the scope of inventory valuation and inventory tracking weaknesses will affect inventory management decisions ultimately impacting the operating performance of the firm. Specifically, we posit that by relying on faulty internal management reports, managers are not able to manage their inventories as well as comparable managers relying on accurate internal management reports.

Accurate inventory records are critical to operating performance, and we identify several direct implications of ineffective internal control on inventory management. First, we anticipate that there will

be larger deviations between reported inventory and actual inventory among firms with inventory-related material weaknesses. Inventory shortages resulting from inaccurate records will result in lost sales, as sales are constrained by available inventory (e.g., Iglehart and Morey 1972; Anderson et al. 2006; Lai et al. 2011). Lost sales will result in lower inventory turnover ratios, which are often used as a measure of operating performance (Gaur et al. 2005). Alternatively, inadvertently carrying inventory levels that are too high is also costly, as it ties up capital and increases the risk of obsolescence (e.g., Sheppard and Brown 1993; DeHoratius and Raman 2008). Obsolete inventory, once identified, must be eliminated from the accounting records, i.e., written-off as current period expenses, thereby reducing operating income—an important measure of operating performance.

As an example of an internal control problem over inventory tracking, 99 Cents Only Stores disclosed in its 2006 internal control report:

There was an internal control weakness surrounding the Company's inventory accounts. The Company **did not maintain accurate records of specific item quantity and location of its inventory** and therefore relied primarily on physical counting of inventory and its existing transactional controls. The nature, size and number of locations make it infeasible to physically count the entire inventory every quarter. These factors in combination with control deficiencies surrounding inventory accounts related to store receiving, and store returns result in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected (**emphasis added**).

The above weakness could result in lost sales, as inventory levels were not accurate, and potentially result in inventory write-offs or impairments if the inventory was stored in an inaccessible location sufficiently long, resulting in obsolescence or damage.

As an example of an internal control problem over inventory valuation, Dana Holding Corp disclosed in its 2004 internal control report:

The Company **did not maintain effective control over the valuation of certain inventory and the related cost of goods sold accounts**. Specifically, the Company did not maintain effective controls over the computation and review of its LIFO inventory calculation to ensure that appropriate components, such as the impact of steel surcharges, were properly reflected in the calculation (**emphasis added**).

The above weakness could result in inefficient pricing decisions. In sum, we hypothesize that managers in firms with inventory-related internal control problems are hindered in their attempt to manage inventory, and thus their firms operate inefficiently because of stock outages and overages, as well as inefficient pricing decisions.<sup>3</sup>

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<sup>3</sup> In addition to inefficient pricing decisions, to the extent that the internal management reports contain erroneous data, inefficient strategic decisions, such as business expansions or contractions, could occur. While not the focus of our paper, we do consider an overall efficiency measure (a firm's total efficiency relative to their industry peers) and find that overall efficiency is also lower for firms with inventory-related material weaknesses (t-statistic = 1.82; not tabled).

### 3. Data and Sample

Although we expect inventory management internal control problems to be associated with both stockouts and stock overages, we are not able to empirically observe stockouts, and thus focus on inventory turnover ratios (where both stock overages and underages are expected to result in lower turnover ratios) and impairments of inventory (where stock overages increase the risk of obsolescence or damage and thus will increase the likelihood of impairments).

Gaur et al. (2005) document that after controlling for firm strategy, higher inventory turnover ratios imply better operating performance. We examine two inventory turnover ratios:

$$\text{TurnoverCOGS} = \text{Cost of Goods Sold} / \text{Average Inventory}$$

$$\text{TurnoverSales} = \text{Sales} / \text{Average Inventory}$$

We also consider surplus inventory as an indication of inventory management problems. Companies holding surplus inventory or obsolete inventory will face a decline in inventory value resulting in inventory impairments. According to U.S. generally accepted accounting principles, inventory impairments must be written off in the period in which they are identified. The write-off is recorded as a loss and reduces operating income thereby having a negative effect on operating performance. We use both the existence and the magnitude of inventory impairments (*Impairment Indicator* and *Impairment Magnitude*, respectively) as indications of poor inventory management and deterioration of operating performance.

Data are available from *Audit Analytics* (internal control data) and *Compustat* (financial statement data). *Audit Analytics* includes both the evaluation of ICFR (effective or ineffective) as well as the underlying reason(s) for any material weaknesses in internal control (by definition, the existence of at least one material weakness in internal control implies ineffective internal controls). Thus, our initial sample is comprised of 20,704 firms with available data on internal control effectiveness. We then restrict our sample to firms with inventory data and necessary financial information on *Compustat*, which reduces our sample to 12,002 firm-year observations, of which 1,132 disclose internal control material weaknesses, and 274 disclose inventory-related material weaknesses. Because we wish to investigate if our results differ depending on whether the inventory problem relates to tracking (99 Cents Only Stores example above) or valuation (Dana Holding Corp example above), we manually read each of the 274 internal control reports to identify whether the material weakness relates to inventory tracking or inventory valuation. We cannot ascertain the type of inventory problems for 33 firms, thus we drop them from the sample. We match these 241 firm-year observations that have material weaknesses over

inventory management with similar firm-years that report effective internal control.<sup>4</sup> Our match is based on year, 2-digit SIC code, total assets, and inventory level. Specifically, within year and 2-digit SIC code, we first consider all match firms with total assets within 20 percent of the material weakness firm, and then identify the matched firm as the one with the closest inventory level. We fail to find matches for eight of the material weakness firms. Thus, the final sample is comprised of 466 firm-years, with 233 treatment firms having inventory material weakness (where 108 have a “tracking” related problem, 182 have a “valuation” related problems, and, of these, 57 have both types of problems), matched with 233 firms with effective ICFR (control firms). We summarize the sample selection procedure in Table 1.

We present descriptive statistics in Table 2. Relative to the control firms, the turnover ratios of the treatment firms are notably lower. For example, the mean *InventoryTurnoverCOGS* is 9.366 for firms with effective internal control whereas the ratio for firms with inventory-related weaknesses is 7.968. The inventory turnover differences are statistically lower in three of the four comparisons (the two measures; mean and median) for firms with inventory-related material weaknesses.

We also document significant differences in the existence and magnitude of inventory impairments across the two groups, consistent with our expectations. Specifically, 35.2% of treatment firms report inventory impairments whereas 21.0% of control firms incur inventory write-offs.

Turning to the control variables, among firms with inventory-related internal control problems, revenue recognition internal control problems are present in approximately half of the observations, and these firms tend to have two to three other internal control problems. The control sample has, by construction, no internal control problems (inventory-related or otherwise). There is no difference in the size of the firms, by construction, as size is a match variable. We find, consistent with prior research on internal control, that firms with ineffective internal control tend to be younger, more volatile, have higher sales growth, and be less profitable than firms with effective internal control, consistent with prior research on internal control (e.g., Ge and McVay 2005; Asbaugh-Skaife et al. 2007; Doyle et al. 2007b). We gain similar inferences from the correlation matrix in Table 3. We test our hypothesis more formally in the following section, where we conduct a multivariate analysis.

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<sup>4</sup> We opt to present the matched sample rather than using the *Compustat* population of 10,870 firms as the control group because we have to hand-collect the inventory impairment data from firms’ footnotes. Inventory turnover results are similar using the full sample, rather than a matched design; see our robustness analysis.



## 4. Test Design and Results

### 4.1. Inventory Turnover Ratios

To determine whether firms with inventory-related internal control problems have weaker operating performance, we first consider inventory turnover ratios as the dependant variable, and estimate the following Ordinary Least Squares regression:

$$TurnoverRatio = \alpha_0 + \alpha_1 Inventory\ Problem + Controls \quad (1)$$

We expect a negative coefficient on inventory-related internal control problems (*Inventory Problem*). We consider eleven control variables. First, we consider whether or not the firm discloses a material weakness related to an area other than inventory. We expect inventory-related control problems to directly affect inventory turnover, but it could be that poorly performing firms maintain weaker ICFR. If this is the case, we would expect similar findings on other types of weaknesses (e.g., revenue recognition). We consider revenue recognition weaknesses separately because these weaknesses may reflect managers' desire to manipulate reported earnings, which we expect to overstate sales, which may lead to higher turnover ratios, all else equal. Second, we control for determinants of both ICFR and inventor turnover ratios: the size of the firm, the age of the firm, historical sales volatility, prior year sales growth, the number of segments, prior year return on assets, the existence of a loss in the prior year, and profit margin to proxy for the firm's operating strategy. Finally, we include year indicator variables.

We present the results in Table 4. Consistent with our expectations, the coefficient on inventory-related material weaknesses (*Inventory Problem*) is associated with lower inventory turnover ratios. Moreover, both types of inventory problems (tracking- and valuation-related internal control problems) are associated with lower inventory turnover ratios.

Turning to the control variables, revenue-recognition problems are *positively* associated with both inventory turnover ratios, which could reflect earnings management. For example, the lack of policies over booking sales could result in inventory being pushed out to distribution channels and recorded as sold before customers accept title to the goods (i.e., channel stuffing). Other material weaknesses are not associated with inventory turnover, suggesting that we are not capturing an unidentified driver that is associated with poor internal control quality, in general. Rather, only the inventory-related weaknesses are negatively associated with lower turnover ratios. We find some evidence that large firms have higher turnover ratios, and that turnover is positively (negatively) associated with sales volatility (sales growth). More complex firms (measured using the number of segments) tend to have lower ratios, and finally, a firm's strategy (profit margin) is negatively associated with *TurnoverCOGS*, consistent with the strategic operating decision of high margins and low turnovers, or vice versa (see Gaur et al. 2005).

## 4.2. Inventory Impairments

We next consider the association between inventory-related internal control problems and inventory impairments (i.e., write-offs), and estimate the following equations:

$$\text{Impairment Indicator} = \alpha_0 + \alpha_1 \text{Inventory Problem} + \text{Controls} \quad (2)$$

$$\text{Impairment Magnitude} = \alpha_0 + \alpha_1 \text{Inventory Problem} + \text{Controls} \quad (3)$$

We expect positive coefficients on inventory-related internal control problems. We estimate Equation (2) using a Logistic regression and Equation (3) using a Tobit regression.<sup>5</sup> We consider the same 11 control variables as in Equation (1). Results are presented in Table 5.

Consistent with our expectations, we document a strong association between inventory-related internal control problems and inventory impairments. This association extends to both types of inventory problems (tracking and valuation). For example, in Equation (2), the coefficient on *Tracking Problem* is 0.866, suggesting that firms with these problems are 17.5 percent more likely to recognize an inventory impairment than firms with effective internal controls. This effect is large given the mean likelihood of inventory impairment in our sample is 28.1%.

Other types of material weaknesses are not associated with the existence of inventory impairments, but are weakly associated with the magnitude of impairments. The majority of our control variables are insignificant, although we find that older firms are less likely to experience inventory impairments. In contrast, firms with greater sales volatility are more likely to experience an inventory impairment. Firms with more segments tend to have impairments of higher magnitudes. Finally, firms' profit margin is positively associated with the existence and magnitude of inventory impairments. This finding suggests that firms following a "high margin" strategy allow their product to become obsolete rather than reducing the price.

## 4.3. Robustness Analysis

**4.3.1. Change Analysis.** If the lower inventory turnover, and higher incidence and magnitude of inventory impairments are a result of weak inventory-related internal control problems, we should see an improvement in inventory management following the remediation of these problems. Specifically, we expect to see an increase in the inventory turnover ratios and a decrease in the likelihood and magnitude of inventory impairments following remediation. Unfortunately, because inventory levels will include prior inventory purchases that have not yet been sold or impaired, a change analysis will have limited power. In other words, these tests are confounded with past inventory management, as the current level of inventory is not restricted to post-remediation inventory management. We do not examine changes in

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<sup>5</sup> The Tobit regression is used because impairment magnitude cannot be less than zero and thus is left censored.

the likelihood of impairments because it is impossible for us to know whether inventory that is written off was originally purchased during a period of ineffective or effective internal control, and it can take several years to realize impairments.<sup>6</sup> Inventory ratios, however, are less confounded with timing issues because purchases of inventory are continuous and thus mute any lingering effects of inefficient inventory acquisitions due to ineffective internal control.

We estimate the following equation to investigate whether there is an increase in the turnover ratio following improvements in internal controls:

$$\Delta \text{TurnoverRatio} = \alpha_0 + \alpha_1 \text{Inventory Remediation} + \Delta \text{Controls} \quad (4)$$

*Inventory Remediation* is equal to one if there was an inventory-related material weakness in the prior year, but not the current year (i.e., the problem was remediated), zero if there is no change in the effectiveness of inventory-related ICFR, and negative one if there is an inventory-related material weakness in the current year, but not the prior year. We expect a positive coefficient on *Remediation*. Specifically, as old problems are remediated we expect the turnover ratio to increase, and as new problem arise, we expect the turnover ratio to fall.

We document in Table 6 that there is an improvement following the remediation of inventory-related internal control problems for both measures of inventory turnover ratios. These differences extend, to some extent, to both types of inventory-related problems (tracking and valuation), though the results are notably weaker (perhaps because of low power). We find no relation between remediations of other types of weaknesses and changes in inventory turnover ratios.

**4.3.2. Compustat Population as the Control Sample.** Our main analyses are conducted on a matched sample because the inventory impairments require hand-collection. We replicate our tests of inventory turnover ratios using all available control firm-years (10,870) and firm-years with inventory-related control problems (241) and results are qualitatively and quantitatively similar (not tabled). Using the impairment data in Allen et al. (2010), we also conduct an analysis of impairments among the entire Compustat population for 2004; results are qualitatively and quantitatively similar (not tabled).

## 5. Concluding Remarks

We examine the association between inventory management and ineffective internal control over financial reporting. We hypothesize that managers in firms with inventory-related material weaknesses in internal control are hindered in their inventory management, and thus their firms experience more stock

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<sup>6</sup> Specifically, because disclosed impairments must be material, they are longer-term in nature (i.e., it generally takes several years for inventory balances to accumulate to “impairment” levels). Thus, we do not conduct a change analysis for our impairment tests.

shortages and overages leading to lower inventory turnover and more inventory impairments. Consistent with these expectations, we document that these firms have systematically lower inventory turnover ratios and have a higher likelihood and magnitude of inventory impairments. We also find some evidence that inventory turnovers improve when the weaknesses are remediated. Our findings suggest that an unintended benefit of having effective internal control over financial reporting is better inventory management.

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**Table 1**      **Sample Selection**

	Firm-Year Observations
Firm-years with Section 404 auditor reports for fiscal years 2004–2008	20,704
Less:	
Firm-years with zero or missing inventory balances in Compustat	8,178
Firm-years with Section 404 auditor reports and inventory information	12,526
<i>Firm-years with effective internal controls</i>	<i>11,325</i>
<i>Firm-years with internal control problems</i>	<i>1,201</i>
<i>Firm-years with inventory-related internal control problems</i>	<i>287</i>
Less:	
Firm-years missing necessary financial information from Compustat	524
Firm-years with Section 404 auditor reports, inventory information and financial data	12,002
<i>Firm-years with effective internal controls</i>	<i>10,870</i>
<i>Firm-years with internal control problems</i>	<i>1,132</i>
<i>Firm-years with inventory-related internal control problems</i>	<i>274</i>
Less:	
Inventory-related problems with insufficient information to categorize as tracking or valuation	33
Firm-years with inventory-related internal control problems used in the matched design	241
Less:	
Firm-years without matches	8
Number of firm-years with inventory-related internal control problems in the final sample	233
<i>Firm-years with inventory-tracking-related internal control problems</i>	<i>108</i>
<i>Firm-years with inventory-valuation-related internal control problems</i>	<i>182</i>

**Table 2**      **Descriptive Statistics**

	Full Sample		Effective Internal Controls		Ineffective Controls over Inventory		Ineffective Controls over Inventory Tracking		Ineffective Controls over Inventory Valuation	
	N = 466		N = 233		N = 233		N = 108		N = 182	
	mean	median	mean	median	mean	median	mean	median	mean	median
<i>InventoryTurnoverCOGS</i>	8.667	4.649	9.366	5.038	7.968	4.302*	8.273	4.300**	7.421**	4.277*
<i>InventoryTurnoverSales</i>	13.564	7.536	15.294	8.599	11.835**	6.907**	12.560	6.988**	10.773***	6.774*
<i>Impairment Indicator</i>	0.281	0.000	0.210	0.000	0.352***	0.000***	0.417***	0.000***	0.346***	0.000***
<i>Impairment Magnitude</i>	0.003	0.000	0.002	0.000	0.004***	0.000***	0.004***	0.000***	0.004***	0.000***
<i>Revenue Recog. Problem</i>	0.230	0.000	0.000	0.000	0.459***	0.000***	0.546***	1.000***	0.456***	0.000***
<i>Other MWs</i>	1.137	0.000	0.000	0.000	2.275***	1.000***	2.694***	2.000***	2.165***	1.000***
<i>Ln(Total Assets)</i>	5.931	5.865	6.024	5.883	5.837	5.864	5.805	5.702	5.967	5.946
<i>Ln(Firm Age)</i>	2.475	2.485	2.610	2.565	2.340***	2.398**	2.255***	2.350**	2.360***	2.398
<i>SalesVolatility</i>	0.252	0.183	0.227	0.177	0.276**	0.192	0.274*	0.202	0.276**	0.202
<i>SalesGrowth</i>	0.274	0.113	0.200	0.112	0.349**	0.115	0.358*	0.099	0.354**	0.118
<i>Ln(Segments)</i>	0.930	1.099	0.960	1.099	0.899	1.099	0.706	0.693**	0.976	1.099
<i>ROA</i>	-0.025	0.036	0.043	0.053	-0.094**	0.016***	-0.189***	0.004***	-0.011***	0.023***
<i>Loss</i>	0.313	0.000	0.193	0.000	0.434***	0.000***	0.491***	0.000***	0.396***	0.000***
<i>Strategy</i>	0.321	0.328	0.360	0.350	0.282***	0.292***	0.292**	0.319	0.284***	0.285***

\*, \*\*, \*\*\* denotes a two-tailed p-value of less than 0.10, 0.05, and 0.01, respectively, when testing the difference from effective internal control.

**Table 2, Continued**

Variable definitions:

<i>InventoryTurnoverCOGS</i>	The inventory turnover ratio measured as cost of sales in year $t$ / average inventory over years $t - 1$ and $t$ .
<i>InventoryTurnoverSales</i>	The inventory turnover ratio measured as sales in year $t$ / average inventory over years $t - 1$ and $t$ .
<i>Impairment Indicator</i>	An indicator variable that is equal to one if there is an impairment of inventory in year $t$ , and zero otherwise.
<i>Impairment Magnitude</i>	The magnitude of the inventory impairment in year $t$ .
<i>Inventory Problem</i>	An indicator variable that is equal to one if there is a material weakness in internal control over inventory in year $t$ , and zero otherwise.
<i>Tracking Problem</i>	An indicator variable that is equal to one if there is a material weakness in internal control over inventory tracking in year $t$ , and zero otherwise.
<i>Valuation Problem</i>	An indicator variable that is equal to one if there is a material weakness in internal control over inventory valuation in year $t$ , and zero otherwise.
<i>Revenue Rec. Problem</i>	An indicator variable that is equal to one if there is a material weakness in internal control over revenue recognition in year $t$ , and zero otherwise.
<i>Other Material Weaknesses</i>	The number of material weaknesses in internal control in year $t$ other than those over inventory tracking, inventory valuation or revenue recognition.
<i>Ln(Total Assets)</i>	The natural logarithm of total assets at the end of year $t - 1$ .
<i>Ln(Firm Age)</i>	The natural logarithm of the number of years that a company is covered by CRSP at the end of year $t - 1$ .
<i>SalesVolatility</i>	The standard deviation of annual sales divided by average of total assets in year $t$ and $t - 1$ over the prior 7 years (requiring at least three non-missing observations).
<i>SalesGrowth</i>	Sales growth from year $t - 2$ to year $t - 1$ ((sales in year $t - 2$ less sales in year $t - 1$ ) / sales in year $t - 2$ ).
<i>Ln(Segments)</i>	The natural logarithm of the total number of geographic and operating segments in year $t - 1$ .
<i>ROA</i>	Earnings before extraordinary items in year $t - 1$ / total assets at the end of year $t - 2$ .
<i>Loss</i>	An indicator variable equal to one if net income in year $t - 1$ is less than zero, and zero otherwise.
<i>Strategy</i>	Profit Margin: the gross profit margin ratio measured as (sales – cost of sales) / sales in year $t$ .



**Table 3**      **Correlation Matrix**

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. <i>InventoryTurnoverCOGS</i>	<b>0.92</b>	<b>-0.14</b>	<b>-0.14</b>	-0.02	<b>-0.10</b>	0.03	-0.02	-0.02	-0.03	<b>0.14</b>	<b>-0.09</b>	<b>-0.24</b>	<b>-0.09</b>	-0.07	<b>-0.17</b>	<b>-0.17</b>
2. <i>InventoryTurnoverSales</i>	1.00	<b>-0.13</b>	<b>-0.14</b>	-0.03	<b>-0.14</b>	0.03	-0.03	-0.03	-0.05	0.06	-0.07	<b>-0.23</b>	0.05	<b>-0.11</b>	0.05	0.05
3. <i>Impairment Indicator</i>		1.00	<b>0.59</b>	<b>0.17</b>	<b>0.12</b>	<b>0.08</b>	<b>0.14</b>	0.07	<b>-0.08</b>	0.07	0.01	0.04	0.00	0.01	0.07	0.07
4. <i>Impairment Magnitude</i>			1.00	<b>0.11</b>	<b>0.16</b>	0.07	<b>0.16</b>	-0.03	<b>-0.12</b>	<b>0.08</b>	<b>0.08</b>	<b>0.09</b>	-0.03	<b>0.08</b>	0.06	0.06
5. <i>Inventory Problem</i>				1.00	<b>0.55</b>	<b>0.80</b>	<b>0.55</b>	<b>0.51</b>	-0.06	<b>-0.15</b>	<b>0.11</b>	<b>0.09</b>	-0.04	<b>-0.11</b>	<b>0.26</b>	<b>-0.13</b>
6. <i>Tracking Problem</i>					1.00	<b>0.15</b>	<b>0.41</b>	<b>0.38</b>	-0.05	<b>-0.14</b>	0.06	0.06	<b>-0.15</b>	<b>-0.14</b>	<b>0.21</b>	-0.05
7. <i>Valuation Problem</i>						1.00	<b>0.43</b>	<b>0.37</b>	0.02	-0.10	<b>0.09</b>	<b>0.08</b>	0.05	0.02	<b>0.14</b>	<b>-0.10</b>
8. <i>Revenue Rec. Problem</i>							1.00	<b>0.43</b>	0.02	-0.07	<b>0.08</b>	0.02	0.05	0.01	<b>0.17</b>	0.01
9. <i>Other Material Weaknesses</i>								1.00	-0.02	-0.06	0.04	0.06	0.03	<b>-0.17</b>	<b>0.15</b>	-0.06
10. <i>Ln(Total Assets)</i>									1.00	<b>0.22</b>	<b>-0.24</b>	<b>-0.21</b>	<b>0.35</b>	<b>0.26</b>	<b>-0.08</b>	0.06
11. <i>Ln(Firm Age)</i>										1.00	<b>-0.22</b>	<b>-0.20</b>	<b>0.16</b>	<b>0.10</b>	<b>-0.12</b>	0.03
12. <i>SalesVolatility</i>											1.00	<b>0.13</b>	<b>-0.08</b>	<b>-0.24</b>	0.04	<b>-0.11</b>
13. <i>SalesGrowth</i>												1.00	<b>-0.10</b>	<b>-0.17</b>	0.07	<b>-0.08</b>
14. <i>Ln(Segments)</i>													1.00	0.07	<b>0.09</b>	0.07
15. <i>ROA</i>														1.00	<b>-0.28</b>	<b>0.41</b>
16. <i>Loss</i>															1.00	<b>-0.22</b>
17. <i>Strategy</i>																1.00

Statistically significant correlations ( $p < 0.10$ ; two-tailed) are in bold. Please see Table 2 for variable definitions.

**Table 4 Regression Analysis of Inventory Turnover Ratios on Inventory-Related Material Weaknesses**

	+/-	<i>Dependent variable =</i>			
		<i>InventoryTurnover COGS</i>		<i>InventoryTurnover Sales</i>	
		Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)
<i>Intercept</i>		11.850 <sup>***</sup> (4.40)	11.589 <sup>***</sup> (4.36)	19.690 <sup>***</sup> (4.45)	19.192 <sup>***</sup> (4.40)
<i>Inventory Problem</i>	-	<b>-3.192<sup>***</sup></b> <b>(-2.79)</b>		<b>-6.046<sup>***</sup></b> <b>(-3.22)</b>	
<i>Tracking Problem</i>	-		<b>-2.454<sup>**</sup></b> <b>(-2.05)</b>		<b>-4.168<sup>**</sup></b> <b>(-2.12)</b>
<i>Valuation Problem</i>	-		<b>-3.072<sup>***</sup></b> <b>(-2.99)</b>		<b>-6.119<sup>***</sup></b> <b>(-3.64)</b>
<i>Revenue Rec. Problem</i>		3.057 <sup>**</sup> (2.42)	3.460 <sup>***</sup> (2.72)	4.992 <sup>**</sup> (2.40)	5.717 <sup>***</sup> (2.74)
<i>Other Material Weakness</i>		0.039 (0.17)	0.070 (0.30)	0.216 (0.56)	0.271 (0.71)
<i>Ln(Total Assets)</i>		0.516 <sup>*</sup> (1.52)	0.595 <sup>**</sup> (1.76)	0.406 (0.73)	0.550 (0.99)
<i>Ln(Firm Age)</i>		-0.176 (-0.34)	-0.230 (-0.44)	-0.921 (-1.08)	-1.018 (-1.20)
<i>SalesVolatility</i>		5.210 <sup>**</sup> (2.55)	5.268 <sup>**</sup> (2.58)	3.979 (1.18)	4.145 (1.24)
<i>SalesGrowth</i>		-1.455 <sup>**</sup> (-2.56)	-1.409 <sup>**</sup> (-2.48)	-1.561 <sup>*</sup> (-1.67)	-1.466 (-1.57)
<i>Ln(Segments)</i>		-3.120 <sup>***</sup> (-5.35)	-3.204 <sup>***</sup> (-5.41)	-5.007 <sup>***</sup> (-5.22)	-5.113 <sup>***</sup> (-5.26)
<i>ROA</i>		-0.733 (-0.91)	-0.650 (-0.80)	0.434 (0.33)	0.651 (0.49)
<i>Loss</i>		-1.811 <sup>**</sup> (-1.77)	-1.815 <sup>**</sup> (-1.79)	-2.033 (-1.21)	-2.076 (-1.25)
<i>Strategy</i>		-5.875 <sup>***</sup> (-3.55)	-5.921 <sup>***</sup> (-3.58)	1.102 (0.40)	0.930 (0.34)
<i>Year Indicators</i>		Included	Included	Included	Included
N =		466	466	466	466
F-value =		5.40	5.36	3.61	3.79
Adjusted R <sup>2</sup> =		12.4%	13.1%	7.8%	8.8%

\*, \*\*, \*\*\* denotes a p-value of less than 0.10, 0.05, and 0.01, respectively (one-tailed if there is a sign prediction, two-tailed otherwise).

Please see Table 2 for variable definitions.

**Table 5 Logistic (Tobit) Regression Analysis of the Existence (Magnitude) of Inventory Impairments**

	+/-	<i>Dependent variable =</i>			
		<i>Impairment Indicator</i>		<i>Impairment Magnitude</i>	
		Coeff. ( $\chi^2$ )	Coeff. ( $\chi^2$ )	Coeff. ( $\chi^2$ )	Coeff. ( $\chi^2$ )
<i>Intercept</i>		-2.328*** (10.40)	-2.256*** (9.84)	-0.022*** (8.41)	-0.021*** (7.73)
<i>Inventory Problem</i>	+	<b>0.764***</b> <b>(7.24)</b>		<b>0.009***</b> <b>(8.27)</b>	
<i>Tracking Problem</i>	+		<b>0.866***</b> <b>(9.04)</b>		<b>0.008***</b> <b>(7.28)</b>
<i>Valuation Problem</i>	+		<b>0.481**</b> <b>(3.66)</b>		<b>0.006**</b> <b>(4.76)</b>
<i>Revenue Rec. Problem</i>		-0.307 (1.04)	-0.417 (1.81)	-0.004 (1.23)	-0.004 (1.72)
<i>Other Material Weakness</i>		0.081 (2.16)	0.076 (1.93)	0.001* (3.46)	0.001* (3.22)
<i>Ln(Total Assets)</i>		0.176** (4.22)	0.152** (3.13)	0.001 (0.64)	0.001 (0.25)
<i>Ln(Firm Age)</i>		-0.178* (1.92)	-0.164 (1.61)	-0.002** (3.27)	-0.002** (3.08)
<i>SalesVolatility</i>		0.672* (1.88)	0.720* (2.11)	0.006 (1.47)	0.007 (1.63)
<i>SalesGrowth</i>		0.015 (0.01)	0.003 (0.01)	0.001 (0.42)	0.001 (0.33)
<i>Ln(Segments)</i>		0.067 (0.21)	0.128 (0.72)	0.002* (2.36)	0.003** (3.33)
<i>ROA</i>		-0.135 (0.45)	-0.114 (0.31)	-0.001 (0.10)	-0.001 (0.09)
<i>Loss</i>		-0.201 (0.63)	-0.218 (0.73)	0.000 (0.01)	0.000 (0.01)
<i>Strategy</i>		1.240** (5.18)	1.205** (4.73)	0.012** (4.98)	0.012** (4.83)
<i>Year Indicators</i>		Included	Included	Included	Included
N =		466	466	466	466
Chi-square =		37.10	41.64	183.42	184.94
Pseudo R <sup>2</sup> =		11.0%	12.3%	n.a.	n.a.

\*, \*\*, \*\*\* denotes a p-value of less than 0.10, 0.05, and 0.01, respectively (one-tailed if there is a sign prediction, two-tailed otherwise).

Please see Table 2 for variable definitions.

**Table 6 Regression Analysis of Changes in Inventory Turnover Ratios on Remediation of Inventory-Related Material Weaknesses**

	+/-	<i>Dependent variable =</i>			
		<i>ΔInventoryTurnover COGS</i>		<i>ΔInventoryTurnover Sales</i>	
		Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)
<i>Intercept</i>		-0.212 (-1.39)	-0.211 (-1.42)	-0.316 (-1.37)	0.317 (1.40)
<i>Remediation -- Inventory</i>	+	<b>0.492**</b> <b>(1.69)</b>		<b>0.806**</b> <b>(1.84)</b>	
<i>Remediation -- Tracking</i>	+		<b>0.336</b> <b>(1.04)</b>		<b>0.693*</b> <b>(1.41)</b>
<i>Remediation -- Valuation</i>	+		<b>0.442*</b> <b>(1.60)</b>		<b>0.658*</b> <b>(1.58)</b>
<i>Remediation – Revenue Rec</i>		0.194 (0.50)	0.199 (0.52)	0.534 (0.91)	0.525 (0.92)
<i>Remediation – Other</i>		-0.074 (-1.06)	-0.072 (-1.04)	-0.103 (-0.97)	-0.102 (-0.97)
<i>ΔLn(Total Assets)</i>		-0.890** (-2.31)	-0.887** (-2.30)	-0.036 (-0.06)	-0.026 (-0.04)
<i>ΔSalesVolatility</i>		-0.162 (-0.13)	-0.189 (-0.14)	1.360 (0.69)	1.269 (0.64)
<i>ΔSalesGrowth</i>		-0.486* (-1.94)	-0.496* (-1.98)	-0.169 (-0.45)	-0.191 (-0.50)
<i>ΔLn(Segments)</i>		0.182 (0.39)	0.185 (0.40)	0.582 (0.83)	0.576 (0.82)
<i>ΔROA</i>		-0.315 (-0.60)	-0.281 (-0.53)	-0.100 (-0.13)	-0.077 (-0.10)
<i>ΔLoss</i>		0.028 (0.08)	0.020 (0.06)	0.140 (0.27)	0.118 (0.23)
<i>ΔStrategy</i>		1.279* (1.99)	1.265* (1.97)	3.080** (3.17)	3.067** (3.16)
<i>Year Indicators</i>		Included	Included	Included	Included
N =		345	345	345	345
F-value =		1.94	1.86	1.86	1.82
Adjusted R <sup>2</sup> =		2.7%	2.7%	2.4%	2.6%

\*, \*\*, \*\*\* denotes a p-value of less than 0.10, 0.05, and 0.01, respectively (one-tailed if there is a sign prediction, two-tailed otherwise).

Please see Table 2 for variable definitions.

## SARAH ELIZABETH MCVAY

1645 E. Campus Center Dr.  
Salt Lake City, Utah 84112

(801) 585-5263  
sarah.mcvay@utah.edu

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### APPOINTMENTS

David Eccles School of Business, University of Utah  
Associate Professor of Accounting, 2011 to present  
Assistant Professor of Accounting, 2007 to 2011

Stern School of Business, New York University  
Assistant Professor of Accounting, 2004 to 2007

### EDUCATION AND CERTIFICATION

Ph.D., Business Administration (Accounting)  
University of Michigan; 2004

B.A., Business Administration (Accounting)  
University of Oregon; 1997

Certified Public Accountant (Washington); 1998

### PUBLISHED AND FORTHCOMING RESEARCH ARTICLES

‘Quantifying Managerial Ability: A New Measure and Validity Tests.’  
(with P. Demerjian and B. Lev) *Management Science*, forthcoming

‘Manager-Specific Effects on Earnings Guidance: An Analysis of Top Executive Turnovers.’  
(with F. Brochet and L. Faurel) *Journal of Accounting Research*, December 2011.

‘Non-GAAP Earnings and Board Independence.’ (with R. Frankel and M. Soliman)  
*Review of Accounting Studies*, December 2011.

‘Analysts’ Incentives to Overweight Management Guidance When Revising Their Short-Term Earnings Forecasts.’ (with M. Feng) *The Accounting Review*, 2010, 85: 1617–1646.

‘Internal Control and Management Guidance.’ (with M. Feng and C. Li)  
*Journal of Accounting and Economics*, 2009, 48: 190–209.

‘SEC Scrutiny and the Evolution of Non-GAAP Earnings Numbers.’  
(with K. Kolev and C. Marquardt) *The Accounting Review*, 2008, 83 (1): 157–184.

‘Accruals Quality and Internal Control over Financial Reporting.’  
(with J. Doyle and W. Ge) *The Accounting Review*, 2007, 82 (5): 1141–1170.

## **PUBLISHED RESEARCH ARTICLES, CONTINUED**

‘Determinants of Weaknesses in Internal Control over Financial Reporting.’  
(with J. Doyle and W. Ge) *Journal of Accounting and Economics*, 2007, 44: 193–223.

‘Trading Incentives to Meet the Analyst Forecast.’ (with V. Nagar and W. Tang)  
*Review of Accounting Studies*, 2006, 11 (4): 575–598.

‘Earnings Management Using Classification Shifting: An Examination of Core Earnings and Special Items.’ *The Accounting Review*, 2006, 81 (3): 501–531.

‘The Disclosure of Material Weaknesses in Internal Control after the Sarbanes-Oxley Act.’  
(with W. Ge) *Accounting Horizons*, 2005, 19 (3): 137–158.

## **OTHER PUBLICATIONS**

Invited discussion of ‘Do Control Effectiveness Disclosures Require SOX 404(b) Internal Control Audits? A Natural Experiment with Small U.S. Public Companies,’ *Journal of Accounting Research*, 49 (2): 449–546.

‘The Financial Reporting Policy Committee’s Response to the Preliminary Views on Financial Statement Presentation.’ *Accounting Horizons*, 2010, 24 (2): 279–296. Principle co-author (with Mark Bradshaw) within the FARS Financial Reporting Policy Committee.

Invited book review of ‘Line-item Analysis of Earnings Quality" (Foundations and Trends in Accounting, 2009), by Nahum D. Melumad and Doron Nissim. *The Accounting Review*, 2010, 85 (3): 1121–1122.

‘Response to the SEC’s Proposed Rule—Roadmap for the Potential Use of Financial Statements Prepared in Accordance with International Financial Reporting Standards (IFRS) by U.S. Issuers.’ *Accounting Horizons*, 2010, 24 (1): 117–128 (FARS Financial Reporting Policy Committee).

## **WORKING PAPERS AND WORK IN PROGRESS**

‘Managerial Ability and Earnings Quality.’ (with P. Demerjian, B. Lev, M. Lewis)

‘The Use of Non-GAAP Earnings Information in the Presence of Transitory Gains.’  
(with A. Curtis and B. Whipple)

‘A Comprehensive Analysis of Special Items.’ (with C. Cain and K. Kolev)

‘An Analysis of the Implications of Discontinued Operations for Continuing Income.’  
(with A. Curtis and M. Wolfe)

‘Inventory Management and Ineffective Internal Control over Financial Reporting.’  
(with F. Feng, C. Li and H. Skaife)

‘Forecasting Sales: A Model and Some Evidence from the Retail Industry.’  
(with R. Lundholm and T. Randall)

## **TEACHING EXPERIENCE**

### ***University of Utah***

Financial Accounting (Introductory Accounting; MBAs)  
Financial Accounting I (Intermediate Accounting; Undergraduate)  
Financial Accounting II (Intermediate Accounting; Undergraduate)  
Financial Statement Analysis (Elective; MBAs)  
Emerging Issues and Continued Learning (Topics Course; Masters of Accounting)

### ***New York University***

Financial Accounting and Reporting (Introductory Accounting; MBAs)  
Principles of Financial Accounting (Introductory Accounting; Undergraduate)

### ***University of Michigan***

Intermediate Financial Accounting (Undergraduate)

## **BUSINESS EXPERIENCE**

Senior Auditor (1998–2000), Arthur Andersen, Portland Oregon  
Staff Accountant (1997–1998), Moss Adams & Co., Vancouver Washington  
Staff Intern (1996), Bidwell & Co., Portland Oregon

## **HONORS AND AWARDS**

*Contemporary Accounting Research* Outstanding Reviewer Award, 2011  
Doctoral Faculty Teaching Excellence Award, 2011  
David Eccles Faculty Fellow, 2011–present  
David Eccles Emerging Scholar, 2008–2011  
Deloitte and Touche Fellowship, 2002  
Beta Alpha Psi, President (Oregon Chapter), 1996–1997  
Oregon State Society of CPAs Outstanding Student Award, 1997

## **SERVICE AND PROFESSIONAL ACTIVITIES**

### **University of Utah Service:**

Member—PhD Program Committee and Faculty Representative (2011–2012)  
Member—Masters of Accounting Curriculum Committee (2007–present)  
Member—PMBA Task Force (2010)  
Member—College Council (2009–2010)  
Member—Ad Hoc Building Committee (2009–2010)  
Member—Recruiting Committee (2007–2009)  
Member—Dissertation Committees  
    Susan McMahon (graduated 2010; placement: Texas Christian)  
    Dongyoung Lee (in process)  
    Ben Whipple (in process)  
Member—Supervisory Committees  
    2011–present: Jing He and Erin McKenzie  
    2010–2011: Ben Whipple  
    2009–2010: Brett Rixom  
    2008–2009: Marcus Burger and Jennifer Wen  
Supervisor—University Honors Thesis  
    2008–2009: Michael Baumker

**External Service:**

Editorial Advisory and Review Board, *Accounting Horizons* 2008–present  
Editorial Advisory and Review Board, *The Accounting Review* 2008–present  
Editorial Board, *Contemporary Accounting Research* 2010–present  
Editorial Board, *Accounting and Finance* 2012–2014

**AAA/FARS Committees:**

FARS Research Program Committee for the 2012 AAA Meeting  
New Faculty Consortium Committee, 2010–2011, 2011–2012  
FARS Financial Reporting Policy Committee, 2008–present  
FARS Steering Committee, 2008–present  
FARS Research Program Committee for the 2010 AAA Meeting  
Deloitte Wildman Award Committee, 2009–2010  
Competitive Manuscript Award Committee, 2008–2009  
FARS Best Paper Award Committee, 2006–2007

**Ad Hoc Referee:**

*Accounting and Business Research; Auditing: A Journal of Practice and Theory; Communications of the ACM; International Journal of Auditing; International Journal of Hospitality Management; Journal of Accounting and Economics; Journal of Accounting and Public Policy; Journal of Accounting, Auditing and Finance; Journal of Accounting Research; Journal of Business, Finance and Accounting; Journal of Finance; Journal of Financial and Quantitative Analysis; Management Science; Managerial Auditing Journal; MIS Quarterly; Production and Operations Management; Review of Accounting Studies; Review of Quantitative Finance and Accounting; American Accounting Association Annual Meeting; AAA Western Region Meeting; Auditing Section Mid-Year Meeting; Financial Economics and Accounting Meeting; Financial Accounting and Reporting Section Mid-Year Meeting; Management Accounting Section Mid-Year Meeting*

**Research Presentations:**

2011/12: 2011 University of Alberta Accounting Research Conference, University of Tennessee (scheduled), University of Texas-Arlington (scheduled);  
2010/11: University of British Columbia, University of Oklahoma, University of Washington;  
2009/10: 2010 Western Region Meeting, Florida International University, University of Connecticut, University of Michigan;  
2008/09: Cornell University, Emory University, London Business School, University of Arizona, University of Missouri, Wharton Operations Management Conference;  
2007/08: Minnesota Mini Empirical Conference, MIT, Temple University, Texas Christian University, University of Waterloo;  
2006/07: 2007 AAA Annual Meeting, Harvard Business School, Indiana University, Morgan Stanley, University of California–Berkeley, University of Texas–Austin, University of Utah;  
2005/06: 2005 Journal of Accounting and Economics Conference, 2006 AAA Financial Accounting and Reporting Section Mid-Year Meeting, 2006 AFAANZ Annual Meeting, 2006 International Symposium on Audit Research, NYU Accounting Summer Camp, State University of New York–Buffalo, State University of New York–Binghamton, University of Oregon;



### **Research Presentations (continued):**

2004/05: 4-School Conference, at Columbia, 5<sup>th</sup> Annual Utah Winter Conference, 12<sup>th</sup> Annual Securities and Financial Markets Conference (Research Award Recipient), 2005 AAA Annual Meeting, 2005 AAA Financial Accounting and Reporting Section Mid-Year Meeting, 2005 AFAANZ Annual Meeting, New York University, Rutgers University;  
2003/04: Columbia University, Emory University, New York University, Northwestern University, Rice University, Stanford University, University of Chicago, University of Michigan, University of Pennsylvania, University of Southern California, University of Utah;  
2002/03: University of Oregon, University of Michigan.

### **Conference Participation:**

Journal of Accounting and Economics Conference, 2003, 2005 (*presenter*), 2006–2011 AAA Annual Meeting, 2004, 2005 (*presenter*), 2006, 2007 (*presenter, discussant*), 2008 (*discussant*), 2009 (*discussant*), 2011 (*discussant*)  
University of Alberta Accounting Research Conference, 2011  
Journal of Accounting Research Conference, 2007, 2009–2011  
Utah Winter Accounting Conference, 2005 (*presenter*), 2006–2011  
FARS Mid-Year Meeting, 2005 (*presenter*), 2006 (*presenter*), 2008 (*discussant*), 2009, 2010 (*discussant*), 2011  
Kapnick Accounting Conference (University of Michigan), 2010 (*presenter*)  
Western Region AAA, 2008, 2010 (*presenter, best paper award*)  
Review of Accounting Studies Conference, 2002, 2005, 2006, 2009  
Contemporary Accounting Research Conference, 2009 (*discussant*)  
American Accounting Association's Trueblood Seminar, 2009  
Wharton Operations Management Conference, 2008 (*presenter*)  
Minnesota Mini Empirical Conference, 2008 (*presenter*)  
Financial Economics and Accounting Conference, 2000, 2007 (*discussant*)  
AAA/FASB Financial Reporting Issues Conference, 2006  
Academe Meets Practice Conference (Baruch College), 2005 (*panelist*), 2006 (*panelist*)  
Columbia University's Burton Conference, 2006  
JAAF/KPMG Foundation Conference, 2005, 2006  
AFAANZ Annual Meeting, 2005 (*presenter, discussant*), 2006 (*presenter, discussant*)  
Australian Graduate School of Management Conference, 2006  
International Symposium on Audit Research, 2006 (*presenter*)  
NYU Accounting Summer Camp, 2005, 2006 (*presenter*)  
CARE Financial Statement Analysis Conference, 2006  
Accounting Research Conference at Penn State, 2005  
12<sup>th</sup> Annual Securities and Financial Markets Conference, 2004 (*presenter, discussant*)  
AAA Doctoral Consortium, 2003  
Business Measurement and Assurance Services Conference, 2003  
Big 10 Doctoral Consortium, 2001