



Does investment efficiency improve after the disclosure of material weaknesses in internal control over financial reporting? ☆

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ABSTRACT

We provide more direct evidence on the causal relation between the quality of financial reporting and investment efficiency. We examine the investment behavior of a sample of firms that disclosed internal control weaknesses under the Sarbanes-Oxley Act. We find that prior to the disclosure, these firms under-invest (over-invest) when they are financially constrained (unconstrained). More importantly, we find that after the disclosure, these firms' investment efficiency improves significantly.

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1. Introduction

Prior literature shows that firms with a lower quality of financial reporting under-invest (over-invest) when they are financially constrained (unconstrained) (Biddle et al., 2009). These results are important because they suggest that the quality of a firm's financial reporting has an association with real investment efficiency. However, the literature does not establish a causal relation for this association. In this study, we provide more direct evidence for this causal relation by taking advantage of a provision in the Sarbanes-Oxley (SOX) Act that requires a firm to disclose if it has a material internal control weakness (ICW) in its financial reporting (U.S. Congress, 2002).

An ICW suggests that there is an information problem in the firm's financial reporting system. Given this information problem and the findings from Biddle et al. (2009), we predict that firms that disclose ICWs (ICW firms) exhibit inefficient investment behavior prior to the disclosure. More importantly, because an ICW provides an adverse public signal, these

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firms are expected to address their past financial reporting problems subsequent to the disclosure. Thus, firms should show an increase in the quality of their financial reporting from the pre-disclosure period to the post-disclosure period. If the improvement in the quality of financial reporting increases investment efficiency, we predict that the pre-disclosure inefficiency in investment by the ICW firms will be mitigated or eliminated in the post-disclosure period.

We test these predictions by examining the investment behavior of a sample of ICW firms surrounding their first disclosure of ICWs. Following [Biddle et al. \(2009\)](#), we focus on the relation between the effectiveness of the internal control and investment levels conditional on a given firm's likelihood of over-investing or under-investing. We start our analyses with a pooled sample of ICW firms and control firms with effective internal control. Regression analyses show that in the year prior to the first disclosure of an ICW, relative to control firms with similar financial conditions, financially constrained ICW firms under-invest by about 1.79% (2.89%) of total assets, while financially unconstrained ICW firms over-invest by about 2.53% (2.76%) of total assets based on the pooled sample (pooled sample of survivors). These numbers represent about 14–23% of average investment levels of the sample (which is about 12.80% of total assets), suggesting that the magnitudes of the effects are economically significant.

Most importantly, we find that after the initial disclosure of material weaknesses, the investment inefficiency of ICW firms becomes small and insignificant relative to control firms. Regression analyses based on both the pooled sample and the pooled sample of survivors show that in the second year after the disclosure, the investment levels of ICW firms are no longer significantly different from those of the control firms with similar financial conditions. Further statistical tests also formally confirm significant reductions in both over-investment and under-investment.

Following [Armstrong et al. \(2010\)](#), we also employ a propensity-score matching procedure to generate a different control sample. This procedure provides a control sample that has similar characteristics to the ICW firms, but different levels of internal control effectiveness and hence financial reporting quality. When we examine all matched firms, regression analyses support both sets of our hypotheses: (1) in the year prior to disclosure, ICW firms significantly under-invest (over-invest) when firms are financially constrained (unconstrained); and (2) after the disclosure, there are significant reductions in both under-investment and over-investment. Two-sample statistical tests that compare ICW firms and control firms within groups of firms with high ex ante likelihood of over- and under-investment respectively are largely consistent with the regression analyses except that we find little evidence of decreases in under-investment. We also focus on a matched sample of surviving ICW and control firms. The survivorship requirement ensures that the ICW firms remain constant in our event period, which makes it more sensible for inferring over-time changes in investment efficiency. Both two-sample tests of the differences and regression tests based on this sample provide support for both sets of our hypotheses. Taken together, these results suggest that SOX disclosures of ICWs and the changes that follow reduce investment inefficiency.

Our study contributes to several streams of literature. First, we contribute to the emerging literature on the relation between the quality of financial reporting and investment efficiency ([Bens and Monahan, 2004](#); [Biddle and Hilary, 2006](#); [McNichols and Stubben, 2008](#); [Biddle et al., 2009](#); [Francis and Martin, 2010](#); [Bushman et al., 2011](#)). By examining the changes around disclosures of ICWs, we are able to provide more direct evidence of the causal relation between financial reporting quality and investment efficiency than research based on cross-sectional analyses (e.g., [Biddle et al., 2009](#); [Francis and Martin, 2010](#); [Bushman et al., 2011](#)).¹

Second, we shed light on the debate regarding the costs and benefits of SOX and, in particular, of the increased disclosure requirement under Section 404. The popular press and practitioners both argued that the requirement to disclose ICWs under Section 404 is burdensome to corporate shareholders as well as to corporate managers and might lead to the misallocation of corporate resources ([American Bankers' Association \(ABA\), 2005](#); [Charles River Associates, 2005](#)). In line with these concerns, [Berger et al. \(2005\)](#), [Zhang \(2007\)](#), and [Li et al. \(2008\)](#) document the costs of implementing the SOX requirements with regard to auditing and reporting on internal controls. However, other studies document the benefits of these requirements such as providing information to the executive labor market ([Li et al., 2010](#)), improving the quality of financial reporting ([Altamuro and Beatty, 2010](#)), and reducing the cost of capital for firms ([Ashbaugh-Skaife et al., 2009](#); [Dhaliwal et al., 2011](#)). We add to this debate by showing that the changes following ICW disclosures increase real investment efficiency.

The remainder of the study proceeds as follows. [Section 2](#) provides background on Sections 302 and 404 of the SOX and develops our empirical predictions. [Section 3](#) introduces our research design and describes the samples. [Section 4](#) presents our empirical results. [Section 5](#) concludes.

2. Background and hypotheses

2.1. Background on Sections 302 and 404 of the Sarbanes Oxley Act

The Sarbanes Oxley Act (SOX) became effective on July 29, 2002. Prior to the act, firms were only required to publicly disclose deficiencies in their internal control if they changed auditors ([Doyle et al., 2007a](#)). With the enactment of SOX,

¹ [Hope and Thomas \(2008\)](#) also provide a time-series analysis of the effects of disclosure on investment efficiency. There are at least two important differences between our study and theirs. First, we focus on investment efficiency in terms of both over-investment and under-investment, while their focus is on over-investment ("empire building") only. Second, we examine the effects of disclosing internal control weaknesses while they examine the effects of geographic earnings disclosure.

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