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Implications of FIN 46 for Accruals Quality and Investment Efficiency

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IMPLICATIONS OF FIN 46 FOR ACCRUALS QUALITY

AND INVESTMENT EFFICIENCY

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by

Fang Zhao

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To: Dean David R. Klock
    College of Business

This dissertation, written by Fang Zhao, and entitled Implication of FIN 46 for Accruals Quality and Investment Efficiency, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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Florida International University, 2014

DEDICATION

This dissertation is dedicated to my husband, Geliang Song, and my mother, Guiying Ye.

Without their love and support, the completion of this work would not have been possible.

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ABSTRACT OF THE DISSERTATION

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The Financial Accounting Standards Board (FASB) issued Interpretation No. 46 (FIN 46), Consolidation of Variable Interest Entities – An Interpretation of ARB No. 51, in January 2003 and revised it in December 2003, with the objective to improve the transparency of financial information. Under FIN 46, companies are required to consolidate variable interest entities (VIEs) on financial statements if they are the primary beneficiaries of the VIEs. This dissertation empirically examines whether the implementation of this new financial reporting guidance affects firms' accruals quality and investment efficiency. A manually collected sample comprised of firms affected by FIN 46 and firms disclosing no material impact from FIN 46 is used in the empirical analyses.

The first part of the dissertation investigates the effects of FIN 46 on accruals quality. By using different accrual quality measures in prior studies, this study found that firms affected by FIN 46 experienced a decrease in accrual quality compared to firms reporting no material impact from FIN 46. Among the firms affected by FIN 46, firms consolidating VIEs were compared with firms terminating or restructuring VIEs. The

accruals quality of firms consolidating VIEs was found to be lower than that of firms terminating or restructuring VIEs. These results are consistent in tests using alternative control samples.

The second part of this dissertation examines the effects of FIN 46 on investment efficiency. Mixed results were found from using two different proxies used in prior literature. Using the investment-cash flow sensitivity to proxy for investment efficiency, firms affected by FIN 46 experienced a decrease in investment efficiency compared to firms reporting no material impact. It was also found that higher investment-cash flow sensitivity for firms consolidating VIEs during post-FIN 46 periods compared to both the no-impact firms and the matched pair control sample. Contrasting results were found when the deviation from expected investment is used as another proxy for investment efficiency. Empirical analyses show that FIN 46 firms experienced improved investment efficiency measured by the deviation from expected investment after their adoption of FIN 46. This study also provides explanations for the opposite results from the two different proxies.

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CHAPTER I: INTRODUCTION

The Enron Scandal in 2001 uncovers the financial reporting problems related to off-balance sheet debts and undisclosed losses from income statements by using special purpose entities (SPEs). In response to the widespread misuse of the consolidation rules relating to SPEs, the Financial Accounting Standards Board (FASB) issued Interpretation No. 46 (FIN 46), Consolidation of Variable Interest Entities – An Interpretation of ARB No. 51, in January 2003 and revised it in December 2003, with the objective to improve the transparency of financial information.[1] Under FIN 46, companies are required to consolidate SPEs on the financial statements if they are the primary beneficiaries of the SPEs, regardless of their voting interests in the entities.[2] This study investigates whether the implementation of this new guide affects accruals quality and investment efficiency of firms impacted by FIN 46.

The first part of my dissertation examines the effects of FIN 46 on accruals quality. By using SPEs, firms gain more flexibility to manage reported earnings and debts since sponsoring firms control both entities. Prior studies provide evidence that firms manage earnings through off-balance sheet items (e.g., Dechow and Shakespeare 2009; Feng et al. 2009; Dechow et al. 2010). Dechow and Shakespeare (2009) find that firms manage earnings by timing securitizations of assets by using SPEs. Feng et al. (2009) document that SPEs created for financial reporting purposes are more likely to be used to manage earnings. Their tests all focus on the pre-FIN 46 periods. Since FIN 46 mandates new consolidation rules and disclosure provisions for firms with SPEs, resultant

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[1] The revised version is FIN 46 (R). In this paper, I use FIN 46 to refer to both FIN 46 and FIN 46 (R).

[2] SPE is the general term for the off-balance sheet special purpose entities. SPEs subject to FIN 46 are named variable interest entities (VIEs) under FIN 46.

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enhanced transparency is expected to decrease opportunistic earnings management (Lobo and Zhou 2001; Hunton et al. 2006), thus improving the accrual quality. However, the accrual quality of firms impacted by FIN 46 may also deteriorate. Previous studies show that when one method of earnings management becomes costly or restrained, firms will resort to alternative ways to manage earnings (e.g., Zhang 2012; Chi et al. 2011). When firms are affected by FIN 46 and their VIEs are consolidated, they lose the reporting flexibilities that could be used to manage earnings. Impacted firms may resort to other methods, such as manipulating accounting accruals, in order to manipulate earnings on the consolidated financial statements. Thus, it is an empirically open question whether the implementation of FIN 46 has improved or deteriorated the accrual quality of affected firms.

To address this question, I compared accruals quality of firms affected by FIN 46 before and after the implementation of this accounting pronouncement. I used a manually identified sample of firms by examining their SEC filings (i.e., 10-K and 10-Q) and form three groups: (1) consolidation (on-book) group – consists of firms that have consolidated VIEs on their financial statements, (2) off-book group – consists of of firms that have restructured or terminated VIEs to avoid consolidation, and (3) no material impact group – consists of firms that have disclosed no material impact from FIN 46. In most analyses, I compared the accruals quality of consolidation group and off-book group while using no-material impact group as a control. In addition, I also used a matched pair control group to check the robustness of my results. I employed a difference-in-differences approach to test the difference in accruals quality between pre-and post-implementation of FIN 46. In pre-post tests, I used a sample period of four years before and four years

after the implementation of FIN 46. I conducted tests using three different sets of accrual quality measures: the absolute value of abnormal accruals, accruals estimation errors, and the standard deviation of accruals estimation errors. For abnormal accrual measures, I measured performance-matched abnormal total accruals and working capital accruals following Kothari et al. (2005). In order to measure accrual estimation errors I used the Dechow and Dichev (2002, DD model hereinafter) model and the modified version of DD model suggested by McNichols (2002, modified DD model hereinafter) as applied by Francis et al. (2005).

I find that firms affected by FIN 46 (i.e., firms either consolidating VIEs or terminating /restructuring VIEs), compared to firms reporting no material impact from FIN 46, experienced lower quality of accruals, measured by the accrual estimation errors from the modified DD model, the standard deviation of the residuals from the DD model, and modified DD model. In the additional analysis, I replaced the control sample with a matched pair sample. I find consistent results using the accrual quality measured by absolute accrual estimation errors and the standard deviation of the residuals from the modified DD model.

When it comes to the differences between the two subgroups in the FIN 46 firms (firms consolidating VIEs and firms terminating or restructuring VIEs), the results consistently show that the accrual quality of firms consolidating VIEs (group 1) are lower compared to that of firms in group 2, no matter which control sample is used. The differential change in accrual quality between the two groups can be partially attributed to the facts that group 1 has pressure to manage earnings when the consolidation brings

negative effects on earnings. This prediction is confirmed by the empirical tests using signed abnormal accrual measures.

The results of the first part of the dissertation help us understand the changes in accrual quality for firms impacted by FIN 46. Although the consolidation process and improved disclosure may constrain earnings management through previously used off-balance sheet SPEs, firms may resort to other methods that bypass VIEs to manipulate earnings, thus worsening the accrual quality in the post-FIN 46 periods.

Findings in the first part of this dissertation contribute to the literature in the following ways. First, my study adds to the literature on the impact of FIN 46 on financial reporting. Prior studies investigate the economic consequences of FIN 46 from the perspective of market participants' responsiveness such as cost of capital (Callahan et al. 2012), analyst forecast precision, and earnings response coefficients (Gurun et al. 2012). While these studies largely assume that the implementation of FIN 46 enhances financial reporting transparency and deters earnings management, no extant research examines the impact of the changes in SPE consolidation rules on the quality of reported accounting numbers. This study fills this void by examining the effects of FIN 46 on accrual quality. Second, this study contributes to the stream of studies on off-balance sheet items in general. While prior studies provide evidence that firms with SPEs manage earnings through off-balance sheet activities, this study extends prior research by testing whether the changes in rules related to SPEs affect the quality of accruals. Third, this study contributes to the literature that examines how mandatory changes in accounting standards affect financial reporting quality.

In the second part of the dissertation, I focus on the effects of FIN 46 on investment decisions made by affected firms. More specifically I examine the investment efficiency of affected firms during the pre- and post-FIN46 periods. This particular question is important for several reasons. First, the implementation of FIN 46 may have significant influence on financial reporting quality that includes quality of reported accounting numbers (i.e., accruals quality) and quality of disclosures. Second, FIN 46 is likely to reduce affected firms' financial flexibility by eliminating the opportunity to use certain off-balance sheet items, thus creating financial constraints. Prior studies show that investment efficiency is associated with quality of financial reporting as well as with financial constraints (e.g., Biddle and Hilary 2006; Biddle et al. 2009). Thus, FIN 46 provides a unique setting to test how the implementation of the accounting guide affects investment efficiency.

An important determinant of firms' economic productivity and future performance is investment efficiency, which can be affected by accounting information quality. Poor accounting quality (such as the opaqueness of accounting information caused by the use of off-balance sheet items) exacerbates information asymmetry between firms and investors. Prior research suggests that information asymmetry can create either liquidity constraints or excess liquidity, both of which are associated with investment inefficiency (Biddle and Hilary 2006). While the implementation of FIN 46 likely affects financial information quality, it may also impose indirect restrictions on certain off-balance sheet financing, which in turn affects real investment activities (Bens and Monahan 2008). Thus, this study addresses an empirically open question of whether FIN 46 improves investment efficiency.

To examine the effects of FIN 46 on investment efficiency, I compare firms affected by FIN 46 before and after the implementation of this accounting pronouncement by using the same sample and classifications for tests and control groups as used in the first part of the dissertation. More specifically, I compare investment efficiency of the consolidation group and the off-book group between pre-and post-FIN46 periods, using no material impact group as the control. In addition, I use a matched-pair control sample to test the robustness of the results. I use two different sets of measures for investment efficiency that are applied in the literature. First, I use investment-cash flow sensitivity as a proxy for investment efficiency following Biddle and Hilary (2006). Although there are debates on the investment-cash flow sensitivity measure in the Finance literature (i.e.,Kaplan and Zingles 1997, Fazzari et al. 2000, etc.), I use this measure to explain a different dimension of investment efficiency. Second, I use the absolute value of deviations from expected level of investment as a measure of investment efficiency. The expectation models from prior literature (e.g., Chen et al. 2011) are used to derive this measure.

I find mixed results from using two different proxies for investment efficiency in this study. Using the investment-cash flow sensitivity measure to proxy for investment efficiency, where higher sensitivity implies lower efficiency, I find firms affected by FIN 46 experienced decreased investment efficiency indicated by increased investment sensitivity to cash flows. The control sample in the tests consists of firms reporting no material impact from FIN 46.The same results are found using matched pairs as another control sample of FIN 46 firms. I also find the investment of firms consolidating VIEs is

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more sensitive to cash flows after their adoption of FIN 46, compared to both the no-impact firms and matched pairs.

I find contrasting results when I use the deviation from expected investment as a proxy for investment efficiency. When comparing FIN 46 firms and their matched pairs, I find that FIN 46 firms experience improved investment efficiency measured by the deviation from expected investment after their adoption of FIN 46. Furthermore, I find firms consolidating VIEs experience improved investment efficiency measured by the deviation from expected investment after FIN 46, compared to their matched peers. However, firms restructuring or terminating their VIEs do not exhibit such improvement.

The complete opposite results from using the two different proxies warrant further explanations. One possible explanation could be investment-cash flow sensitivity may be capturing different dimensions of investment decision compared to the deviation from expected investment. Another possible explanation could be the effects of the financial constraints faced by firms affected by FIN 46, because firms that are no longer allowed to use off-balance sheet financing may have less financing flexibility. To explore the possibility, I redo investment-cash flow sensitivity tests by splitting the test sample based on financial constraints and find evidence that the higher investment-cash flow sensitivity is driven by financial constraints.

The second study in the dissertation contributes to the literature by extending a relatively small but growing stream of research on how the quality of accounting information affects investment efficiency. It also contributes to the literature on the economic consequences of FIN 46.

I organize the remaining sections as follows. Chapter II provides the background of this study. I introduce the definitions of special purpose entities (SPEs) and variable interest entities (VIEs). I also provide the descriptions of FIN 46 and FIN 46 (R) with its application scope, important terms, and effective dates.

Chapter III is the first study of the dissertation, which examines the effects of FIN 46 on accruals quality. I measure accruals quality using several extensively used proxies in the literature like Dechow and Dichev (2002), McNichols (2002) and Francis et al. (2005). I find that compared to firms reporting no material impact from FIN 46, firms impacted by FIN 46 experience worsened accruals quality after consolidating, terminating or restructuring VIEs. The accruals quality is measured by the accrual estimation errors in the modified DD 2002 model (*ABS_MDD)* and the standard deviation of the residuals in the DD 2002 model and its modified version (*STD_DD* and *STD_MDD*), Furthermore, among firms impacted by FIN 46, firms consolidating VIEs experience lower accrual quality proxied by these measures, compared to firms terminating or restructuring VIEs.

Chapter IV is the second study of my dissertation, which examines the effects of FIN 46 on investment efficiency. Measuring investment efficiency using the deviation from expected investment (Chen et al. 2011), the empirical results show that firms affected by FIN 46 experience improved investment efficiency after the adoption of FIN 46, compared to a sample of matched firms that are not affected by FIN 46. Among these FIN 46 firms, firms consolidating VIEs experience greater improvement than those restructuring or terminating VIEs. However, when measuring investment using investment-cash flow sensitivity, I find opposite results.

Chapter V concludes this dissertation. In this chapter, I summarize the two studies in the dissertation, describe the contributions, and discuss potential limitations

CHAPTER II: BACKGROUND

In this chapter, I discuss the background of accounting guidance relating to special purpose entities (SPEs) and variable interest entities (VIEs). I provide descriptions of FIN 46 and FIN 46 (R) with its application scope, important terms in the standard and its effective dates.

Special Purpose Entities (SPEs)

SPEs are subsidiaries created for a limited purpose, with a limited life and limited activities, and designed to benefit their sponsoring companies. SPEs were best known for their use in leasing and asset securitization transactions (SEC, 2005). Although used in accounting practice in the early 1980s, SPEs received very limited attention from the academic and professional accounting literature until Enron's scandal in 2001, which revealed many concerns related to SPEs (Hartgraves and Benston 2002). SPEs usually have the legal forms of partnership, trust, joint venture or corporation.

The main applications of SPEs in early years include off-balance sheet securitizations, long-term lease and research and development (R&D) funds. Generally, special purpose entities have the following characteristics: thinly capitalized; no independent management or employees; a trustee serving as the intermediate between the SPE and the sponsoring company by performing administrative functions (Soroosh and Giesielski 2004).

Before the implementation of FIN 46, U.S. GAAP requires the consolidation of SPEs based solely on voting rights. Specifically, the sponsor of SPEs does not need to consolidate if a third party residual equity investment at risk is at least three percent of the SPE's total capital.

FIN 46 and FIN 46 (R)

In 2003, FASB issued interpretation No. 46, *Consolidation of Variable Interest Entities—An Interpretation of ARB No. 51* (FIN 46), in January and revised it in December. The revised version is FIN 46 (R). FIN 46 "clarifies the application of Accounting Research Bulletin No. 51, Consolidated Financial Statements, to certain entities in which equity investors do not have the characteristics of a controlling financial interest or do not have sufficient equity at risk for the entity to finance its activities without additional subordinated financial support" (FASB, 2003).

FIN 46 mandates consolidation by setting criteria on whether the sponsor is the primary beneficiary of the SPEs, instead of depending on the voting interest. Primary beneficiary is the party that absorbs the majority of the expected residual return or the expected losses of the SPE it sponsors.[3] FIN 46 also increases the consolidation threshold of third party investments from three percent to ten percent.

The SPEs that are affected by FIN 46 are called Variable Interest Entities (VIEs), and should be consolidated by their primary beneficiaries. FIN 46 also mandates new disclosure requirements for sponsoring firms that have significant interests in VIEs (FASB, 2003).

Variable Interest Entities (VIE)

FIN 46 defines "variable interest" as "contractual, ownership, or other pecuniary interests in an entity that change with changes in the fair value of the entity's net assets

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[3] The absorption of expected losses is a more important condition than the absorption of expected return when evaluating whether a party is the primary beneficiary. In the cases when one party absorb the majority of the expected return of a VIE, while another party absorb the majority of the expected losses, the lesser should be considered the primary beneficiary of the VIE and thus should consolidate the VIE (FASB, 2003).

exclusive of variable interests" (FASB, 2003). This includes "equity interests, debt obligations, leases, royalties or other contracts, and monetary interests in an entity that changes as the entity's net assets value fluctuates" (PricewaterhouseCoopers, 2004). Variable interest entities are the SPEs that are subject to FIN 46 and need to be consolidated by their primary beneficiaries.

Effective Dates

FIN 46 (R) are applied to SPEs no later than as of the end of the first reporting period that ends after December 15, 2013 (as of December 31, 2013 for firms with calendar-year reporting periods) for public companies (FASB, 2003). For nonpublic companies, FIN 46 (R) is applied to all the entities subject to this interpretation by the beginning of the first annual period beginning after December 15, 2004 (FASB, 2003).

In practice, some firms chose to early adopt FIN 46 when it was first issued in January 2003 (before the revision in December, 2013).

CHAPTER III: IMPLICATIONS OF FIN 46 FOR ACCRUALS QUALITY

MOTIVATION

This study investigates whether the implementation of this new guidance affects accrual quality of firms impacted by FIN 46. By using SPEs, firms gain more flexibility to manage reported earnings and debts since sponsoring firms control both entities. Prior studies provide evidence that firms manage earnings by using off-balance sheet items (e.g., Dechow and Shakespeare 2009; Feng et al. 2009; Dechow et al. 2010). Dechow and Shakespeare (2009) find that firms manage earnings by timing securitizations of assets by using SPEs. Feng et al. (2009) document that SPEs created for financial reporting purpose are more likely to manage earnings. Their tests all focus on the pre-FIN 46 periods. Since FIN 46 mandates new consolidation rules and disclosure provisions for firms with SPEs, resultant enhanced transparency is expected to decrease opportunistic earnings management (Lobo and Zhou 2001; Hunton et al. 2006), thus improve the accrual quality. However, the accrual quality of firms impacted by FIN 46 may deteriorate. Previous studies show that when one method of earnings management becomes costly, firms will resort to alternative ways to manage earnings (e.g., Zhang, 2012; Chi et al. 2011). When VIEs are consolidated, firms may resort to other methods that bypass the VIEs to manipulate earnings to window-dress the accounting numbers on the consolidated financial statements. Therefore, it is worthwhile to disentangle how the accrual quality changes for firms impacted by FIN 46.

LITERATURE REVIEW
Special Purpose Entities (SPEs) and Earnings Management

SPEs that are kept off the financial statements can be used not only to hide debt, but also to manage earnings (SEC, 2005). Feng et al. (2009) identify the determinants of using SPEs in a large cross-temporal sample. SPEs can be set up for financial reporting, economic and tax purposes. They also find that SPEs arranged for financial reporting purposes are associated with earnings management. While their sample period ranges from 1997 to 2004, they do not examine whether the use of SPEs to manage earnings changes after the implementation of FIN 46. Dechow and Shakespeare (2009) investigate earnings management behavior by focusing on a particular group of SPEs that are used for asset securitizations. They document that a significantly higher volume of securitization transactions occur in the last few days of the quarter during the first three quarters taking advantage of relax disclosure requirements for the quarterly financial reporting. They find these transactions are associated with incentives for earnings management. Dechow et al. (2010) also provide evidence consistent with firms with SPEs managing earnings by using flexibility available in accounting rules.

Impact of FIN 46

Callahan, Smith and Spencer (2012) find that firms with VIEs affected by FIN 46 experience increases in the cost of equity capital compared to firms reporting no material impact from the standard. They also find that firms consolidating VIEs experience larger increases in cost of capital compared to those keeping VIEs off the financial statements through restructuring or termination.

Callahan and Spencer (2012) focus on firms that are not the primary beneficiary but hold a significant variable interest in a variable interest entity (VIE) to examine the value relevance of the disclosure made under FIN 46 of these firms. FIN 46 requires such

firms to make additional disclosures about the off-balance sheet VIEs like firm's

maximum amount at risk, even though they don't need to consolidate the VIEs. They find

the maximum risk disclosures were only marginally priced. They also examine the

differential impact of off-balance sheet disclosure required by FIN 46 and the

Management's Discussion and Analysis (MD&A) disclosure required by SOX. They find

additional improvement in firm idiosyncratic risk for firms disclosing interests in VIEs

under FIN 46. Dickinson et al. (2010) examine the market reaction of FIN 46 and find

that from investors' perspective, the cost of complying with FIN 46 significantly

outweighs the intended improvements in the accounting information quality. However,

investors think that the information quality is improved for highly levered firms. Gurun et

al. (2012) find that firms affected by FIN 46 are perceived by the market as having higher

information risk. However, there is no such reaction for information users who have

access to off-balance sheet debt structure information prior to 2001. Luo and Warfield

(2014) examined the impact of FIN 46 on firms' earnings informativeness. They partition

firms into two groups based on their likelihood to manipulate earnings before FIN 46. For

firms that manipulated earnings less using SPEs before FIN 46, the perceived earnings

informativeness measured by earnings response coefficient (ERC), while no such

improvement is found for other firms. They also find that firms restructuring VIEs

experience differential market reaction compared to other VIE firms. Bonsall and

Bozanic (2012) find that consolidated VIEs are associated with less information

asymmetry than unconsolidated VIEs, suggesting that there are potential hidden risks of

the unconsolidated VIEs. The information asymmetry is reduced after consolidating VIEs

through the adoption of FIN 46.

Zhang (2009) examine the economic consequences of FIN 46. She finds that credit ratings for VIEs worsened after FIN 46 and that the pricing of information risk decreased for non-VIE firms, but not for VIE firms.

There are some prior studies that focus on certain categories of off-balance sheet items impacted by FIN 46. Synthetic leases are a common off-balance sheet item since they were qualified as operating lease before FIN 46. According to FIN 46, lessee companies should consolidate synthetic leases if they are held by SPEs classified as VIEs under the terms of FIN 46 (Danvers et al. 2003). Callahan, Smith and Spencer (2013) focus on firms with synthetic leases impacted by FIN 46 to examine the change in market valuation and related measurement reliability of these firms after FIN 46. They find that the synthetic lease liabilities recognized in the financial statements, as required by FIN 46, are valued with greater weight by the market than are those disclosed in the notes before FIN 46. This differential valuation effect is associated with the perceived measurement reliability across the adoption of FIN 46.

Another common form of off-balance sheet SPEs are asset-backed commercial papers (ABCPs). They are backed by receivables of companies and then issued by banks to investors as a short-term investment vehicle. The financial statements of ABCPs were not reported by the sponsors before FIN 46. According to the FIN 46 definitions, many of the ABCPs are VIEs and their sponsors become the primary beneficiary, which are required to consolidate ABCPs on the financial statements. Bens and Monahan (2008) find that the use of asset-backed commercial paper (ABCP) declined after FIN 46 and the decline is caused by the decrease in the ABCP sponsors. Banks in North America engaged in restructuring to avoid consolidating ABCPs on the financial statements.

Accrual Quality

One of the most widely used accrual quality metrics is proposed by Dechow and Dichev (2002), who suggested measuring accrual quality as the standard deviation of the residuals from firm-specific regressions of changes in working capital on past, present, and future operating cash flows. This measure is adjusted by McNichols (2002) and Francis et al. (2005) to include current year change in sales and current year property plant and equipment so that it is linked with the discretionary accruals model derived by Jones (1991). Accrual quality carries the information about the mapping of earnings and cash flows. The poorer the accrual quality is, the more information risk exists in the accounting information (Francis et al. 2005). This measure has been extensively used in accrual quality literature (e.g., Barua et al. 2010).

Prior studies also use other metrics to evaluate the quality of accruals. For example, the abnormal total accruals estimated using the modified Jones model (Dechow et al. 1995); performance-matched abnormal accruals (Francis et al. 2005). In this paper, I use all of these metrics to measure accrual quality to test the impact of FIN 46 on the accrual quality for firms adopted the standard.

Prior studies find that accrual quality is related to cost of equity. Francis et al. (2004) find that firms with the least favorable earnings attributes experience a higher cost of equity than firms with the most favorable earnings attributes. Among the seven attributes they examined, accrual quality is associated with the largest cost of equity effects. Francis et al. (2005) examine the market pricing of accrual quality and find that less favorable accrual quality is associated with higher cost of debt and equity, suggesting accrual quality captures the information risk perceived by investors.

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HYPOTHESIS DEVELOPMENT

Although SPEs are used by sponsoring firms predominantly to keep assets and obligations off-balance sheet for arranging external financing, they also provide managers with potential earnings management opportunities. For example, managers opportunistically time the recognition of gains on securitizations and use their discretion in the process of estimating gains or losses. Firms using SPEs to frame lease transactions can exercise discretion on fixing selling prices of assets, timing of asset transferring, recognition of depreciation and impairments etc. Similarly firms with research & development partnership can manage reported R&D expenses.

Feng et al. (2009) use a relatively bigger sample and provide evidence that SPEs arranged for financial reporting purposes are associated with earnings management. Their data period is from 1997 to 2004 and they didn't examine whether the use of discretionary accruals to manage earnings changes for VIE firms after FIN 46. Dechow and Shakespeare (2009) investigate whether firms manage earnings by using gain on securitizations of assets by using SPEs. They document that a significantly higher volume of securitization transactions occur in the last few days of the quarter during the first three quarters taking advantage of relax disclosure requirements for the quarterly financial reporting. They find these transactions are associated with incentives for earnings management. Dechow et al. (2010) also provide evidence consistent with firms with SPEs manage earnings by using flexibility available in accounting rules.

Firms with VIEs subject to FIN 46 respond to the standard by consolidating VIEs on the financial statements, or restructuring VIEs to avoid consolidation or terminating VIEs. In each case, the earnings management using VIEs can be mitigated. Besides,

increased disclosure improves accounting transparency and reduces information asymmetry, firms tend to engage in less earnings management and thus improve quality of accruals (Lobo and Zhou, 2001). However, the provision of FIN 46 can also be associated with more earnings management. The consolidation rules of VIEs result in not only increases in both assets and liabilities of the sponsoring firms, but also increases in the depreciation expenses of the fixed assets and interest expenses of the debts, which were previously kept away from the income statement. Thus consolidation of SPEs may lead to a decrease in net income. Due to the decrease in the accounting rate of returns, managers may have incentives to manage earnings upward.

Since the off-balance sheet SPEs were used to manage earnings, consolidating them on the financial statements or terminating them make firms lose such channels to manipulate earnings, thus the earnings may be manipulated in other ways that cannot be kept off the books any more. On the other hand, earnings management can be achieved using different methods including manipulating accruals or real activities, and there is a trade-off between these two methods, that is, if the costs of one method increase, firms may switch to another method to manage earnings (Zhang, 2012). If SPEs are used more for real-activity earnings management, firms consolidating or terminating previously off-book SPEs will lose the shelter for such earnings management, they may resort to more accrual-based earnings management.

Considering the discussion above on the possibility of decreasing or increasing earnings management, I expect FIN 46 may affect either direction of the change in accrual quality. More formally, my hypothesis is as follows:

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H1:   Firms with VIEs experience a change in accrual quality after FIN 46

compared to firms reporting no material impact by the standard.

Among the firms with VIEs under FIN 46, some respond to the standard by consolidating their VIEs on the financial statements, while some respond by restructuring or disposing of the VIEs so that they can keep the VIEs off books. Callahan et al. (2012) find that firms consolidating VIEs experience a differential effect on cost of capital compared to those that restructure or divest VIEs. It is worthwhile to examine whether there are differential effects of FIN 46 on the accrual quality between the two groups.

Firms consolidating VIEs on their financial statements provide more detailed accounting information about the VIEs to the public than those keeping VIEs off the books. Feng et al. (2009) find that the use of SPEs is associated with earnings management using discretionary accruals. Consolidating VIEs that were previously kept off the balance sheet is expected to decrease the opportunities of accrual-based earnings management for the sponsoring firms.

Compared to the consolidating firms, firms keeping the VIEs off the books still have opportunities to manipulate earnings through VIEs. These firms normally incur restructuring charges that represent continuing costs since they need to provide continuous services for the third party to which the VIEs are shifted to (Bens and Monahan 2008), such ongoing costs may make firms have incentives to smooth earnings after FIN 46.

Therefore, different responses after the adoption of FIN 46 between the two groups may have different impacts on their accrual quality. My second hypothesis is:

H2:   *Firms consolidating VIEs experience a differential change in accrual quality*

   compared to firms keeping VIEs off books by restructuring or terminating.

RESEARCH DESIGN

Accrual Quality Measures

I use several different accrual quality measures used in prior studies to conduct my empirical analyses.

My first accrual quality measure is the absolute value of performance-matched abnormal accruals as suggested by Kothari et al. (2005) based on the modified Jones model (Dechow et al. 1995).

$$TA_t = \alpha_0 + \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t - \Delta REC_t) + PPE_t + \varepsilon_t \qquad (1)$$

Where:

TA_t = total accruals in year t, measured as the difference between income before

   extraordinary items and operating cash flows, scaled by lagged total assets;

A_{t-1} = total assets in year t-1;

ΔREC_t = current year change in receivables scaled by lagged total assets;

ΔREV_t = current year change in sales scaled by lagged total assets;

PPE_t = current year level of property, plant and equipment scaled by lagged

   total assets.

I estimate equation (1) by industry-year. The residual from equation (1) is the abnormal total accruals. Then I adjust the abnormal total accruals using the performance match method used in Francis et al. (2005). First, I form the *ROA* deciles (performance deciles) for each industry and year, then calculate median abnormal total accruals for each decile.

The difference between abnormal total accruals and the median abnormal total accruals is the performance-matched abnormal total accruals. I use the absolute value of the performance matched abnormal total accruals (*ABS_PMAA*) as my first measure of accrual quality.

I also estimate the abnormal working capital accruals and use the absolute value of the performance matched abnormal working capital accruals (*ABS_PMAWCA*) as my second measure of accrual quality.

$$WC_t = \alpha_0 + \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t - \Delta REC_t) + \varepsilon_t \qquad (2)$$

Where:

WC_t = working capital accruals, calculated as total accruals plus depreciation and
amortization.

Other variables have been defined above. The residuals in equation (2) are the abnormal working capital accruals. I get the performance-matched abnormal working capital accruals (*ABS_PMAWCA*) following similar process as that of total accruals described before.

The next two sets of accrual quality measures are based on the accruals estimation error model developed by Dechow and Dichev (2002, DD Model hereinafter). Accruals estimation errors are derived from the following model that specifies working capital accruals as a function of previous, current and future period operating cash flow realizations.

$$\Delta WC_t = \alpha_0 + \alpha_1 CFO_{t-1} + \alpha_2 CFO_t + \alpha_3 CFO_{t+1} + \varepsilon_t \qquad (3)$$

Where:

ΔWC_t = change in working capital, calculated as: change in accounts payable +

change in inventory- change in taxes payable + change in other assets

(net);

CFO = cash flow from operations;

Following McNichols (2002) and Francis et al. (2005), I also include the current year change in sales (ΔREV) and the current year level of property, plant and equipment (PPE) as additional controls variables in Dechow and Dichev (2002)'s model (Modified DD Model hereinafter).

$$\Delta WC_t = \alpha_0 + \alpha_1 CFO_{t-1} + \alpha_2 CFO_t + \alpha_3 CFO_{t+1} + \Delta REV_t + PPE_t + \varepsilon_t \quad (4)$$

Following Francis et al. (2005), I estimate both equation (3) and equation (4) cross-sectionally by year and by the two-digic SIC code. The absolute value of firm-specific residuals ε_t in equation (3) denoted as *ABS_DD* and in equation (4) as *ABS_MDD,* which are the third and fourth measures for accrual quality used in this study.

My third set of accruals quality measures are based on the standard deviation of firm-and year-specific accrual estimation errors derived from equations (3) and (4). Smaller (larger) standard deviations of accrual estimation errors are relatively better (poorer) quality of accruals. I derive accruals quality measures by calculating standard deviations of firm-and year-specific residuals during the four years before and after the implementation of FIN 46. The fifth and sixth measures are respectively based on original model in equation (3) denoted as *STD_DD* and on the modified model in equation (4) denoted as *STD_MDD*.

Empirical Models for Hypotheses Testing

      To test H1, I use a sample including both FIN 46 firms (firms affected by FIN 46) and No-Impact firms (firms reporting no material impact from the standard). I use following model that specifies accruals quality (AQ) as a function of fundamental firm characteristics along with indicator variables for firms affected by FIN 46 and for the year of implementation of FIN 46, and interactions between them:

$$AQ_t = +\beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST \times FIN46_t + \beta_4 LEVERAGE_t +$$
$$\beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t +$$
$$\beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad\qquad (5)$$

Where:

      AQ_t = six accrual quality measures as described above;

      $FIN46$ = 1 for firms affected by FIN 46, 0 otherwise;

      $LEVERAGE_t$ = book value of total debt divided by book value of total assets;

      $GROWTH_t$ = change in sales from year t-1 to year t scaled by beginning total assets;

      ROA_t = return on assets;

      LOG_CYCLE_t = logarithm of the length of operating cycle;

      OCF_t = operating cash flow scaled by beginning total assets.

      OCF2t=the square of OCF.

      POST=indicator variable for the post-adoption period of FIN 46

The variable of interest is the interaction variable $POST \times FIN46$. The coefficient for the interaction term (β_3) indicates whether the accrual quality changed for firms affected by

FIN 46 during the post implementation period relative to firms reporting no material impact from the standard. A significant positive (negative) coefficient suggests that firms affected by FIN 46 are associated with poorer (better) quality of accruals during the post-implementation period compared firms not affected by FIN 46.

To test H2, I divide FIN 46 firms into two groups: firms consolidating VIEs (*FIN46_CON*) and firms keeping VIEs off the books (*FIN46_OFF*) following the approach used in Callahan et al. (2012), and test the change in accrual quality between these two groups. The sample includes all the three groups of firms.

$$AQ_t = \beta_0 + \beta_1 POST_t + \delta_1 FIN46\_CON_t \quad + \delta_2 FIN46\_OFF_t \quad + \delta_3 POST \times$$

$$FIN46\_CON_t \quad + \delta_4 POST \times FIN46\_OFF_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t +$$

$$\beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (6)$$

The variable of interest is *POST*FIN46_CON_t*, δ_3 indicates the direction and magnitude of effects on accrual quality for firms consolidating VIEs relative to firms keeping VIEs off books during the post FIN 46 period.

For the tests of *ABS_DD*, *ABS_MDD*, *STD_DD* and *STD_MDD*, *OCF* and *OCF2* are not used as control variables since these measures are estimated from the regressions of working capital on cash flows.

DATA AND SAMPLE

Empirical analyses in this study are mainly conducted on a sample formed by manually identifying firms that are affected by FIN 46 and that disclose no material impact from FIN 46 in 10-K or 10-Q filings. To identify those firms I follow the

approach used by Callahan et al. (2012). To test hypotheses I form three groups with sample firms depending on the effects of FIN 46 on those firms.

Group 1: Consolidation Group (On-Book Group)

I used 10-K wizard to identify a sample of firms that consolidated their variable interest entities (VIEs) in 2003 by searching 10-K and 10-Q forms reported in 2004. To ensure the accuracy of the search, I used different combinations of keywords that including the actual action of "consolidation" by the adoption of FIN 46, instead of the wording only describing the standard, like "have consolidated", "has consolidated", "we consolidated".[4] Some firms used passive voice, so I also used "was consolidated" and "were consolidated". In addition, some firms use "the company" to describe themselves so I also searched by "the company consolidated"[5]. These searching process identify 260 unique firms.

Group 2: Off-Book Group

I identify a sample of firms that keep their VIEs off the books. Some firms with VIEs try to avoid consolidation by terminating, restructuring, divesting or disposing the VIEs, therefore I searched 10-K and 10-Q forms using these four keywords combined with FIN 46. 113 unique firms are found through this searching method.

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[4] If only searching by 'FIN 46"and "consolidated", the results will include any companies that describe the standard, for example: "FIN 46 requires a variable interest entity to be consolidated by a company", not the companies that actually did the consolidation.

[5] This keyword will also return results including "the company's consolidated", like "the company's consolidated financial statements". Therefore, I refined the keywords as "(FIN p/3 46 p/50 the company consolidated) AND NOT (FIN p/3 46 p/50 the company's consolidated)", then the results will exclude those searched by the latter group of key words.

Feng et al. (2009) search likely VIEs in firms' exhibit 21 and consider entities with the forms ''Limited Partnership,'' ''L.P.,'' ''LP,'' ''LLC,'' ''L.L.C.,'' or ''trust''. As they stated, this selection process will possibly exclude SPEs that don't have these organization forms or include SPEs that have been already consolidated in the financial statement. Since my research question focus on the impact of FIN 46, I find firms consolidating, terminating or restructuring VIEs (group 1 and group 2) by directly searching the words "VIE", "consolidated", "terminated", "restructured" in 10 forms. To ensure the accuracy of the test sample, I read each 10-K form to find the description of such actions.

Group 3: No Impact Group

I find 1077 unique firms reporting "no impact" or "no material impact" from FIN 46 by searching in 10-K forms.[6]

Sample Derivation

Table 1 Panel A provides the sample derivation for empirical analyses of abnormal accrual measures: abnormal total accruals (*AA*), working capital accrual (AWCA), performance-matched abnormal total accrual *(PM_AA)* and working capital accruals *(PM_AWCA)*. Searching using 10-K wizard, 260 firms consolidated VIEs through the adoption of FIN 46 (group 1). The sample is narrowed down to 184 firms after excluding firms with missing observations to estimate abnormal accruals. After deleting firms in financial industries (SIC 6000-6999), 144 firms are left. There are 2580 firm-year observations from 1988 – 2012 for group 1. Since my testing period is 1998 – 2007, the final sample for group 1 includes 1225 firm-year observations.

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[6] I excluded those firms overlapping with group 1 and group 2 from the initial searching results.

Following the same sample deviation process, Group 2 and Group 3 have 592 and 5690 firm-year observations respectively from 1998 – 2007.

Table 1 Panel B provides the sample derivation for the tests on accrual quality measured using the accrual estimation errors from the DD model. Using the similar filtering process, Group 1, 2, 3 have 509, 159 and 2690 firm-year observations respectively from 1998 – 2007. The pre-FIN 46 periods are defined as 1998-2001, the post-FIN 46 periods are defined as 2004-2007. The transition periods 2002-2003 are excluded from the analyses because accounting adjustments during this transition period may artificially affect the results.[7][8]

EMPIRICAL FINDINGS

Descriptive Statistics

Table 2 Panel A provides the descriptive statistics of the (performance-matched) abnormal total accruals, (performance-matched) working capital accruals and the control variables for the three groups of firms from 1998 - 2007. The mean absolute values of abnormal total accruals (*ABS_AA*) are 0.060 for firms consolidating VIEs (group 1), 0.060 for firms terminating or restructuring VIEs (group 2) and 0.116 for firms reporting no material impact from FIN 46 (group 3). The mean absolute value of abnormal working capital accruals (*ABS_AWCA*) are 0.057, 0.051 and 0.107 respectively for the three groups. The absolute values of performance-matched abnormal total accruals (*ABS_PMAA*) are 0.072, 0.069 and 0.121 respectively for the three groups. The absolute

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[7] Initial development of FIN 46 started in early 2002 and adoption of the pronouncement could take several months over 2003. I expect full implementation of the pronouncement was completed by 2004 and financial statement for fiscal year 2004 onward would reflect the effect of FIN 46.

[8] In the regression analysis, I also require that same firms must be both in the pre- and post- FIN 46 periods.

values of performance-matched working capital accruals (*ABS_PMAWCA*) are 0.062, 0.055 and 0.109 respectively for the three groups.

The mean *SIZE* of group 1 and group 2 are 7.693 and 7.858 respectively, while the mean size of group 3 is 5.173. This is consistent with the fact that firms with SPEs (VIEs) are usually larger firms since they have better technical expertise to handle the complex financing arrangement (SEC 2005; Feng 2009). The mean *LEVERAGE* is 0.628 for group 1, 0.632 for group2, and 0.568 for group 3. This indicates that firms with SPEs (VIEs) usually have higher leverage than other firms. The mean *ROA* of group 3 is -0.111, which is lower than group 1 (mean *ROA*=0.005) and group 2 (mean *ROA*=0.014).

Table 2 Panel B reports the descriptive statistics for the accrual estimation errors from Dechow and Dichev (2002) model, the standard deviation for the accrual estimation errors developed by Dechow and Dichev (2002), and the control variables in the regression models. The mean absolute values of the accrual estimation errors (*ABS_DD*) are 0.043 for group 1, 0.037 for group 2 and 0.066 for group 3. *ABS_MDD* is the mean absolute value of the accrual estimation errors from the modified Dechow and Dichev (2002) model in McNichols (2002) and Francis et al. (2005). The mean *ABS_MDD* is 0.034 for group 1, 0.031 for group 2 and 0.058 for group 3. *STD_DD* is the standard deviation of the accrual estimation errors, which is the accrual quality measure in Dechow and Dichev (2002). *STD_DD* is 0.046 for group 1, 0.043 for group 2 and 0.078 for group 3. There is less variation in accrual estimation errors for firms with SPEs than those without SPEs. *STD_MDD* is the accrual quality measure used in McNichols (2002) and Francis et al. (2005). Group 1 has mean *STD_MDD* at 0.032, while group 2 has 0.037

and group 3 has 0.065. The descriptive statistics of the control variables are similar to those in Table 1 Panel A.

Multiple Regression Analyses

Accruals Quality: Firms affected by FIN 46 versus No Impact Firms

To test hypothesis 1 (H1) I estimate equation (3) by using three sets of proxies for accruals quality as dependent variables: (a) absolute value of performance matched abnormal total accruals— *ABS_PMAA,* and performance matched abnormal working capital accruals— *ABS_PMAWCA,* (b) absolute value of accruals estimations errors using the DD model— *ABS_DD* and absolute value of accruals estimations errors from the Modified DD model — *ABS_MDD,* and (c) accruals quality measures using the DD model and Modified DD Model.

Absolute Value Performance-Matched Abnormal Accruals

Table 3 provides the regression results of equation (3) using the performance-matched abnormal total accruals (*ABS_PMAA*) and the performance-matched abnormal working capital accruals (*ABS_PMAWCA).* All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3. For both measures, the coefficients of the variable of interest *POST*FIN46* are not significant.[9]

The coefficients for the control variables are consistent with prior studies. The coefficient of *LEVERAGE* is positive and significant (p<0.0001), indicating that firms with high leverage are more likely to have higher abnormal accruals. The coefficient for

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[9] I also use the non-performance matched measure, absolute value of abnormal total accruals (*ABS_AA*) and absolute value of abnormal working capital accruals (*ABS_AWCA),* for additional tests, the results are not significant either.

SGROWTH is positive and significant (p<0.0001) since sales growth is associated with higher abnormal accruals. The coefficient for *SIZE* is negative and significant (p<0.0001) since larger firms tend to have lower abnormal accruals. *LOG_CYCLE* is positively associated with abnormal accruals, suggesting firms with longer operating cycle have higher abnormal accruals. The adjusted R^2 is 27.50% for the *ABS_PMAA* test and 29.28% for the *ABS_PMAWCA* test. The adjusted R^2 is higher for the *ABS_PMAWCA* regression. Prior research argues that firms have more discretion on managing working capital accruals compared to long term accruals.

Absolute Value of Accrual Estimation Errors

I then estimate equation (3) by using absolute values of accruals estimation errors (*ABS_DD* and *ABS_MDD* respectively) from the DD model and the Modified DD model. Results are presented in Table 4. Adjusted R^2 for *ABS_DD* and *ABS_MDD* are 18 percent and 22 percent, respectively. Coefficients of all control variables are consistent with those reported in previous table with abnormal accruals measures. *ROA* is negatively associated with *ABS_DD* and *ABS_MDD*, consistent with firms with better performance have higher accrual quality. The correlation is negative since the accrual quality is taken the absolute value, and lower value of the dependent variable indicates higher accrual quality. The coefficients of the variable of interest *POST*FIN46* are not significant for *ABS_DD* but positive and significant for *ABS_MDD* (p=0.032), suggesting that firms impacted by FIN 46 are likely to experience lower level of accruals quality measured by *ABS_MDD* compared to firms reporting no impact from the standard during the post implementation periods.

Standard Deviation of Accruals Estimation Errors

I then use a third set of proxies for accruals quality, which are measured as the standard deviation of firm-specific accruals estimation errors (*STD_DD* and *STD_MDD* respectively) from the DD model and Modified DD model. Standard deviations are estimated by using firm specific accrual estimation errors from cross sectional regressions during four years pre-and post-FIN46 periods. Results are presented in Table 5.

The adjusted R^2 is 22.23% for the regression with *STD_DD* and 24.92% for *STD_MDD* as the dependent variable. An increase in adjusted R-square for the measure from the augmented model is consistent with the assertion made by Francis et al. (2005) that the modified model lead to "a better –specified stream of residuals". Control variables are consistent with prior studies. Sales growth and operating cycle are positively associated with the accruals quality suggesting that the higher the sales growth or the larger the operating cycle, it is more difficult to estimate accruals. On the other hand, the coefficients of size are significantly negative suggesting that larger firms have more stable operations and less difficult to estimate accruals. The variable of interest *POST*FIN46* are consistently significant in both estimations (p=0.035, p=0.075 respectively). These findings are consistent with results with absolute value of accruals estimation errors (*ABS_MDD*) reported in the previous table.

Overall, by using three different set of proxies for accruals quality I find mixed results. For accrual quality measured by *ABS_MDD*, *STD_DD* and *STD_MDD*, the results are significant and consistent, suggesting that firms affected by FIN 46 are more

likely to experience poorer accruals quality during the post-implementation period compared to firms that disclose no material impact by FIN 46.

Accruals Quality: Firms Consolidated versus Restructured or Terminated

The second hypothesis predicts differential effects of FIN 46 on accruals quality for firms consolidating their VIEs on the book (group1) versus firms either restructure VIEs to keep them off the book or terminate VIEs (group 2). Similar to the analyses reported for hypothesis 1, I conduct three sets of analyses by using absolute value of abnormal accruals and accruals estimation errors and standard deviation of accrual estimation errors as the dependent variables in equation (6)

Absolute Value Performance-Matched Abnormal Accruals

Table 6 provides the regression results of equation (6) using the absolute value performance-matched abnormal total accruals (*ABS_PMAA*) and the performance-matched abnormal working capital accruals (*ABS_PMAWCA)*. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3. The variable of interests are interaction terms *POST*FIN46_CON* and *POST*FIN46_OFF*, which reflect differential effects of FIN 46 implementation conditional upon whether the affected firm has consolidated VIEs with their financial statements, or restructured or terminated VIE to avoid consolidation.

Coefficients of all control variables are consistent with that reported in table 3. The variable of interests, both interaction terms *POST*FIN46_CON* and *POST*FIN46_OFF*, are not significant.

Accruals Estimation Errors

I then use two sets of accruals quality metrics based on accruals estimation errors. The first set is absolute values of accrual estimation errors from the DD model and Modified DD model and the second set is standard deviations of accrual estimation errors. Table 7 provides the regression results using absolute values of accrual estimation errors. Consistent with absolute value of accruals results, the variable of interests are the interaction terms *POST*FIN46_CON* and *POST*FIN46_OFF*. For the *ABS_MDD* test, the coefficient of *POST*FIN46_CON* is positive and significant while the coefficient of *POST*FIN46_OFF* is not significant. This is consistent with the hypothesis that firms consolidating VIEs experience decrease in accrual quality (measured by *ABS_MDD*) compared to firms avoiding consolidation. All other control variables are consistent with previous analyses.

Table 8 reports regression results of equation (6) where dependent variables are standard deviation of accrual estimation errors. Coefficients of *POST*FIN46_CON* are positive and significant in both regressions (p=0.026 and p=0.051 respectively). The other interaction term is not significant. This is consistent with the hypothesis that firms consolidating VIEs experience decrease in accrual quality (measured by *STD_DD* and *STD_MDD*) compared to firms avoiding consolidation.

Analyses with Matched Pair Control Groups

FIN 46 Firms (Group 1&2) vs. Matched Pairs

In the previous sections, all empirical analyses use Group 3 as the control group that comprises firms disclosing no material impact from FIN 46. Table 2 shows observations in this group are significantly smaller and poor performers compared to

firms in Group 1 and 2. So I control for firms characteristics in all my preceding

multivariate regressions. In this section, I provide complementary analyses by using a

matched-pair sample as control group. I form this control sample by selecting matched

observation for each FIN 46 firm-year observation. Specifically, for each firm-year

observation in the test sample, I chose a matched pair from all the firms not affected by

FIN 46, in the same year and same industry, requiring the closest ROA by restricting size

difference less than 1.[10]

      Table 9 panel A provides the univariate test for the difference between the accrual

quality measures in the pre- and post- FIN 46 periods for the FIN 46 firms and the

matched pairs. For *ABS_DD,* FIN 46 firms experience no significant change while the

matched pairs experience significant decrease. There are same changes with regard to

ABS_MDD. For *STD_DD*, there is no significant change between the pre- and post- FIN

46 periods for both groups. For *STD_MDD*, FIN 46 firms experience significant increase

while the matched pairs experience no significant change. For *ABS_AA, ABS_AWCA,*

ABS_PMAA and ABS_PMAWCA, the change between the pre- and post- FIN 46 periods

is similar for both groups.

      The regression results are shown in Table 9 panel B. By using the matched pairs

as the new control group, only *ABS_MDD* and *STD_MDD* are significant different

between the test and control sample. The coefficient of *POST*FIN46* are positive and

significant for both measures (p=0.015 and 0.029 respectively). This is consistent as the

results in Table 4 and table 5. The significant differences in *ABS_MDD and STD_MDD*

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[10] The duplicate matches are deleted.

between the test and different control samples shed some light to explain the accrual quality changes for the FIN 46 firms.

Group 1 vs. Matched Pairs and Group 2 vs. Matched Pairs

To see the differences between the changes in accrual quality for firms consolidating VIEs (group 1) and firms terminating or restructuring VIEs (group 2), I selected a matched pair for group 1 and group 2 respectively. There is no significant difference between group 2 and its matched pairs after FIN 46 (untabulated). However, the accrual quality measured by *ABS_MDD* and *STD_MDD* for group 1 is decreased after the implementation of FIN 46 compared to the matched pairs, as shown in Table 10. The coefficients of *POST*FIN46* are positive and significant (p=0.010 and 0.027 respectively). This indicate that firms consolidating VIEs experiences worse accrual quality measured by *ABS_MDD and STD_MDD* compared to the matched pairs.

Group 1 vs. Group 2

When using group 1 as the test sample and group 2 as the control sample, I find the accrual quality measured by *ABS_MDD*, *STD_DD* and *STD_MDD* for group 1 decreases in the post-FIN 46 periods compared to group 2 (shown in Table 11), suggesting that the consolidation process affects accrual quality more than the termination or restructuring. The results are consistent with those in Table 7 and Table 8, and provide further evidence suggesting that group 1 experiences decrease in accruals quality measured by *ABS_MDD*, *STD_DD* and *STD_MDD* compared to group 2.

Analyses with Signed Abnormal Accrual Measures

Although the decrease in accrual quality cannot be totally attributed to accrual-based earnings management (Dechow and Dichev 2002), it is worthwhile to examine

whether the accruals management can explain the decrease in accrual quality in this study. I conduct tests for H1 and H2 using signed abnormal accrual measures and find no significant change for FIN 46 firms overall. However, among the FIN 46 firms, I find that firms consolidating VIEs (group 1) experience increase in all the four abnormal accrual measures (*AA, AWCA, PMAA, PMAWCA*) in the post-FIN 46 period compared to firms restructuring or terminating VIEs (group 2). As shown in Table 12 and Table 13, the coefficients of *POST*FIN46_CON* are positive and significant for all the four measures. This provides partial explanation for the results for H2. Firms consolidating VIEs experiences bigger loss after the consolidation, they may have more pressure and incentive to conduct income-increasing earnings management using accruals.

Robustness Tests

I also do the tests by excluding 2004 as transitory period and the results still hold. To be consistent with some previous studies, I also control for *OCF* and *OCF2* for the *ABS_DD*, *ABS_MDD*, *STD_DD*, *STD_MDD* tests, the results are consistent (untabulated).

SUMMARY

This study examines how the accruals quality for firms affected by FIN 46 changes in the post-implementation periods. I compare accruals quality of firms affected by FIN 46 before and after the implementation of this accounting pronouncement by using a number of proxies for accruals quality. I find that compared to firms reporting no material impact from FIN 46, firms adopting the new accounting guidance relating to SPEs experience lower quality of accruals, measured by the accrual estimation errors

from the modified DD 2002 model (*ABS_MDD)* and the standard deviation of the residuals from the DD 2002 model and its modified version (*STD_DD* and *STD_MDD*). I then use matched pair control sample replacing "no material impact" group from the estimation and I find the accrual quality measured by *ABS_MDD* and *STD_MDD* have consistent results as before.

When it comes to the differences between the two subgroups in the FIN 46 firms (firms consolidating VIEs and firms terminating or restructuring VIEs), the results consistently show that the accrual quality measured by *ABS_MDD* and *STD_MDD* for firms consolidating VIEs (group 1) are consistently worsened compared to group 2, no matter which control sample is used. The differential change in accrual quality between the two groups can be partially attributed to the facts that group 1 have pressure to manage earnings when the consolidation bring negative effect on earnings. The empirical results of income-increasing earnings management confirm this point.

These results help us understand the changes in accrual quality for firms impacted by FIN 46. Although the consolidation process and improved disclosure may constrain earnings management through previously off-balance sheet SPEs, firms may resort to other methods that bypass VIEs to manipulate earnings, thus worsen the accrual quality in the post-FIN 46 periods.

My study is subject to limitations. First, the small sample size of the test sample affects the estimation accuracy of the regression analysis; second, the types of VIEs are not separated in the analysis. It is possible that the results are driven by certain category of VIEs, but not all.

CHAPTER IV: IMPLICATIONS OF FIN 46 FOR INVESTMENT EFFICIENCY

MOTIVATION

The first part of this dissertation research shows how the financial reporting

quality changes with the implementation of the Financial Accounting Standards Board

(FASB) issued Interpretation No. 46 (FIN 46 hereinafter), *Consolidation of Variable*

Interest Entities- An Interpretation of ARB No. 51. I now focus on effects of FIN 46 on

investment decisions made by affected firms. More specifically I examine the investment

efficiency of affected firms during the pre- and post-FIN46 periods. This particular

question is important because of the following reasons. First, the implementation of FIN

46 may have significant influence on financial reporting quality that includes quality of

reported accounting numbers (i.e., accruals quality) and quality of disclosures. Second,

FIN 46 likely to reduce affected firms' financial flexibility by eliminating the opportunity

to use certain off-balance sheet items and thus create financial constraints. Prior studies

show that investment efficiency is associated with quality of financial reporting as well as

with financial constraints (e.g., Biddle and Hilary 2006, Biddle et al. 2009 etc.). Thus,

FIN 46 provides a unique setting to test how the implementation of the accounting

guidance affects investment efficiency.

Since the stated objectives of FIN 46 are to improve the transparency of financial

reporting of firms with VIEs and to reduce the information asymmetry between firms and

investors, the investment efficiency of firms affected by FIN 46 is expected to improve

after the adoption of the standard. However, as the empirical findings of the first part of

the dissertation suggest, the accruals quality of firms affected by FIN 46 becomes poorer

after the adoption of FIN 46 compared to firms not affected by the standard. Prior studies show that there is a positive relation between accruals quality and investment efficiency (e.g., Biddle and Hilary 2006). From such perspective, the investment efficiency of firms affected by FIN 46 may decrease during the post-implementation periods since the quality of accruals for affected firms deteriorates. On the other hand, provisions in FIN 46 mandate enhanced disclosures relating to VIEs, which may help improve information flow relating off-balance sheet activities through special purpose entities, which can mitigate information asymmetry and thus, may have positive effects on investment decisions. Therefore, it is worthwhile to investigate how FIN 46 affects investment efficiency of firms affected by the standard.

LITERATURE REVIEW

Firms' investment is influenced by the marginal q and marginal cost of capital increase (Yoshikawa 1980; Hayashi 1982). Investment is efficient when firms choose projects that have positive net present value and when firms continue to invest efficiently until the marginal rate of return to investment become zero (Biddle et al. 2009). Prior research suggests that information asymmetries between firms' management and investors can influence investment efficiency by creating economic frictions such as moral hazard and adverse selection, which can each lead to inefficient investment (Stein 2003). The Moral hazard models suggest managers could choose to invest in projects that do not necessarily maximize the value of the firm when their incentives are incongruent with those of the investors (Berle and Means 1932; Williamson 1974; Jensen and Meckling, 1976). Adverse selection occurs when managers have more information about the firm than investors, managers tend to act in favor of their own benefits (Myers and

Majluf, 1984). The level of investment is also affected by the availability of financial resources. Financial-constrained firms are more likely to under-invest and financial-unconstrained firms are more likely to over-invest (e.g., Jensen 1986; Myers 1997; Opler et al. 1999; Richardson 2006).

Prior studies have shown that accounting quality is associated with investment efficiency (e.g., Bushman and Smith 2001; Healy and Palepu 2001; Bens and Monahan 2004; Lambert et al. 2007; Beatty et al. 2008; McNichols and Stubben 2008; Francis and Martin 2010; Bushman et al. 2011). Higher financial reporting quality can reduce moral hazard and adverse selection, thus mitigate information asymmetry and increase investment efficiency (e.g., Leuz and Verrecchia 2000; Verrecchia 2001). Biddle and Hilary (2006) find higher accounting information quality enhances investment efficiency measured by investment-cash flow sensitivity, since the information asymmetry between managers and investors is reduced by higher-quality financial information. Biddle et al. (2009) provide further evidence that higher quality accounting information improves investment efficiency by reducing both over-investment and under-investment. Cheng et al. (2013) use a sample of firms disclosing internal control weakness (ICW) and find that these firms experience reduced under- (over-) investment after the disclosing of ICWs. The information problem signaled by ICWs should be fixed after the disclosure, thus the financial reporting quality is enhanced in the post-disclosure period.

The relation of financial accounting quality and investment efficiency is also investigated in international context. By focusing a sample of Spanish firms, Gomariz et al. (2014) investigate how investment efficiency is affected by financial reporting quality and debt maturity. They find over-investment is reduced by higher financial reporting

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quality, and find both over- and under- investment can be reduced by lower debt

maturity. Chen et al. (2011) focus private firms in emerging market to investigate the

relation between financial reporting quality and investment efficiency. They find a

positive relation between financial reporting quality and investment efficiency, and the

relation is affected by bank financing and tax saving incentives. Shroff et al. (2014)

examine how the investment decisions of multinational corporations (MNCs) are affected

by the information environment of the country-industry where the foreign subsidiary is

located. They find the external information environment reduces the information frictions

for the MNCs. In the country-industry where the information environment is more

transparent, the investment decisions of the foreign subsidiaries are more related to the

growth opportunities.

Some other factors also affect investment efficiency. The gap between the

executive compensation leverage ratio and the firm leverage ratio is associated with

managers' likelihood of either under-investment or over-investment, thus affect

investment efficiency (Eisdorfer et al. 2013). Beatty et al. (2013) examine how the

investment of the peer companies of the fraud firms is affected the fraud committed.

They find peer companies increase investment during the fraud period, and increase

investment in "industries with higher investor sentiment, lower cost of capital and higher

private benefit of control".

Investment efficiency is affected by financial accounting standards, which usually

improve the disclosure. Biddle et al. (2011) find the mandatory adoption of IFRS helps

increase investment efficiency since IFRS increases the disclosure and comparability of

financial information, thus mitigate the information asymmetry. They measure

investment efficiency not only using the investment cash-flow sensitivity, but value enhancing-risk taking.

An extensively used measure for investment efficiency is investment – cash flow sensitivity. Fazzari et al. (1988) estimate investment – cash flow sensitivity by regressing investment on cash flows by controlling for Tobin's Q, which is proxied by market-to-book ratio. They find that financially constrained firms have investment that is more sensitive to cash flows than unconstrained firms. Kaplan and Zingales (1997) find opposite results by using different method to partition the constrained and unconstrained firms. These conflicted results are reconciled by Moyen (2004), who find consistent results for either study by using different models.

HYPOTHESIS DEVELOPMENT

Before FIN 46, SPEs are kept off the financial statements, causing information asymmetry between company's internal management and external investors. Information asymmetry between managers and investors creates economic frictions resulting in inefficient investment decisions. FIN 46 improves disclosure and likely to reduce information asymmetry, which may mitigate problems of moral hazard and adverse selection. Specifically, firms with VIEs affected by FIN 46 respond to the standard by consolidating, terminating, or restructuring their VIEs. Irrespective of responses by firms whether consolidating or restructuring VIEs, affected firms need to disclose detailed information about the nature, type and magnitude of transactions carried by those subsidiaries. Since more information is made available to investors after the implementation of FIN 46 by the affected firms, the information asymmetry between

managers and investors likely to reduce, thus the moral hazard caused by information asymmetry is mitigated. The decrease in the economic frictions due to the improvement in financial information disclosures is expected to result in increased investment efficiency.

However, as it is shown by the empirical results in the first part of the dissertation, the accrual quality of firms affected by FIN 46 decreases in the post-FIN 46 periods compared to firms not affected by the standards. The lower quality of accruals after the implementation of FIN 46 is likely to have an adverse effects on the quality of investment decisions made by the affected firms.

Thus the implementation of FIN 46 may have either positive or adverse effects on investment efficiency of firms depending upon which effect dominates. Considering the two perspectives above, I formulate a non-directional hypothesis, stated as follows:

H3:   After FIN 46, firms with VIEs experience a change in investment efficiency compared to firms not affected by the standard.

Among the firms having VIEs and affected by FIN 46, some firms consolidated their VIEs while others avoid consolidation by restructuring or terminating the VIEs. Callahan et al. (2012) find that there is deferential effect on cost of capital between these two groups of firms. Firms consolidating their VIEs may have adverse effects on their leverage and profitability ratios, which create pressures on firms' ability and flexibility in financing options and thus influence investment decisions. On the other hand, firms restructuring or terminating VIEs (group 2) have the flexibility or ability to avoid consolidation. Different features for the two groups can be reflected in the consequences from the empirical regularities relating to FIN 46. Furthermore, Bonsall IV and Bozanic

(2012) find that there is less information asymmetry related to consolidated VIEs than unconsolidated VIEs. Since reduced information asymmetry is associated with enhanced investment efficiency, firms consolidating VIEs are expected to experience greater improvement in investment efficiency than firms bypassing the consolidation by restructuring or terminating VIEs.

However, the first part of the dissertation shows that firms consolidating VIEs experience decreased accruals quality after the adoption of FIN 46 compared with firms keeping VIEs off the financial statements by terminating or restructuring these entities. Considering the opposite perspectives, the fourth hypothesis is stated as follows:

H4:   *After FIN 46, firms consolidating VIEs experience a change in investment efficiency compared to firms that terminate or restructure VIEs to avoid consolidation.*

RESEARCH DESIGN

Investment Efficiency Measures

I use two complementary measures of investment efficiency, which are used in the extant Accounting and Finance literature.

Cash Flow Sensitivity of Investment (CFSI)

I use cash flow sensitivity of investment (*CFSI*) as a proxy for investment efficiency following Biddle and Hilary (2006). Underlying rationale of this measure as a proxy for investment efficiency is that the current level of investments should not be associated with the cash flows generated by the operation. In the absence of any economic frictions that trigger capital rationing or investing beyond optimum level,

investment decisions should be based on the expected rate of marginal returns from the investment projects, thus any association between investments and cash flows after controlling for growth opportunities is a reflection of inefficient investment. This measure is used extensively in prior literature (e.g., Fazzari et al. 1988; Hoshi et al. 1991).

$$Investment_{i,t} = \beta_0 + \beta_1\,OCF_t + \beta_2\,MB_{i,t} + \xi_{i,t} \qquad (7)$$

Investment is the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q. β_1 is the measure of investment-cash flow sensitivity.

Deviation from Expected Investment

Another measure of investment efficiency is the deviation from expected investment used by Biddle et al. (2009). Investment efficiency is measured based on the likelihood that a firm deviates from the expected investment level. They use a firm-specific model of investment as a function of growth opportunities (as measured by sales growth) and use the residuals as a firm-specific proxy for deviations from expected investment. Considering the relation between investment and sales growth is related to the increase or decrease of the sales, Chen et al. (2011) also include an indicator variable of negative sales growth and its interaction with sales growth in the model to estimate the deviation from expected investment. I used the absolute value of the residuals of the following model (*INVEFF*) as used in Chen et al. (2011) for my second measure of investment efficiency.

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{i,t-1} + \lambda_2\, SalesGrowth_{i,t-1} + \lambda_3\, NEG * SalesGrowth_{i,t-1} + \xi_{i,t} \quad (8)$$

Investment$_t$ is the sum of research and development expenditure, capital

expenditure, and acquisition expenditure less cash receipts from sale of property, plant,

and equipment scaled by lagged total assets. *SalesGrowth$_{t-1}$* is the percentage change in

sales in year *t-1*. *NEG$_{t-1}$* is an indicator variable for negative sales growth in year t-1.

Equation (8) is estimated for each industry-year based on the Fama and French 48-

industry classification for all industries with at least 20 observations in a given year from

a sample of all observations in the Compustat database with available data. The absolute

value of the residuals (*INVEFF1)* is the investment efficiency measure.

I also use two additional measures of investment efficiency, as used in Chen et al.

(2011). The first one is estimated by adding lagged investment in Equation (8) (as shown

in equation (9). The second one is estimated by replacing revenue growth with asset

growth in Equation (8) (as shown in equation (10)) as the proxy for investment

opportunities (first used by McNichols and Stubben, 2008).

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{t-1} + \lambda_2\, SalesGrowth_{i,t-1} + \lambda_3\, NEG * SalesGrowth_{i,t-1}$$
$$+ \lambda_4\, Investment_{i,t-1} + \xi_{i,t+1} \quad (9)$$

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{t-1} + \lambda_2\, AssetGrowth_{i,t-1} + \lambda_3\, NEG * AssetGrowth_{i,t-1}$$
$$+ \xi_{i,t} \quad (10)$$

The absolute values of the residuals from these regressions are *INVEFF2* and

INVEFF3 respectively.

Regression Models for Testing Hypotheses

To provide support for H3, I examine the change in cash flow sensitivity of

investment for firms affected by FIN 46 and firms reporting no material impact by the

standard. I extend equation (7) by adding two indicator variables and interacting those

indicator variables with the cash flow variable in the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46 * OCF_{i,t}$$

$$+ \eta_3 POST * OCF_{i,t} + \eta_3 POST * FIN46 * OCF_{i,t} + b_2 MB_{i,t}$$

$$+ b_3 Size_{i,t} + \varepsilon_{i,t,} \tag{11}$$

The variables are as described in previous equations. The variable of interest is

$POST*FIN46* OCF_{i,t}$.

The absolute values of firm-specific residuals from Equation (8) and the two

additional regressions described above are another set of investment efficiency measures

(*INVEFF1, INVEFF2, INVEFF3*) that I use as dependent variables in the following

model:

$$INVEFF_t = \beta_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t +$$

$$\sum \gamma \, Control + \varepsilon_t \tag{12}$$

The control variables in equation (12) include the following: *SIZE,* logarithm of

lagged total assets; *Leverage*, measured as total liability divided by total assets; *ROA*,

income before extraordinary items divided by lagged total assets; *MB*, the market value

of equity divided by total assets; *Tangibility,* measured as property, plant and equipment

divided by total assets; *K-structure,* measured as long-term debt divided by the sum of

long-term debt and the market value of equity; *CFOsale,* operating cash flow divided by

sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator

variable for firm paid a dividend; *OPCycle*, operating cycle measured as the sum of 365

divided by inventory turnover and 365 divided by receivable turnover.

Alternative Tests

I also did a set of alternative tests by combining the estimation of deviation from expected investment and the regression in the same equation.

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1}$$
$$+ \lambda_2 SalesGrowth_{i,t-1} + \lambda_3 NEG * SalesGrowth_{i,t-1} + \Sigma\gamma Control + \xi_{i,t}$$

$$(13)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1}$$
$$+ \lambda_2 SalesGrowth_{i,t-1} + \lambda_3 NEG * SalesGrowth_{i,t} + \lambda_4 Investment_{i,t-1}$$
$$+ \Sigma\gamma Control + \xi_{i,t} \qquad (14)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1}$$
$$+ \lambda_2 AssetGrowth_{i,t-1} + \lambda_3 NEG * AssetGrowth_{i,t-1} + \Sigma\gamma Control + \xi_{i,t}$$

$$(15)$$

To test H4, I use group 2 as the control sample for group 1 to directly test the difference between them. I also use the same models above by adding indicator variables *ONBOOK* for firms consolidating VIEs and *OFFBOOK* for firms restructuring or terminating VIEs and their interaction with *POST* respectively (*POST*ONBOOK* and *POST*OFFBOOK*).

DATA AND SAMPLE

Empirical analyses in this study are mainly conducted on a sample formed by manually identifying firms that are affected by FIN 46 and that disclose no material impact from FIN 46 in 10-K or 10-Q filings. To identify those firms I follow the

approach used by Callahan et al. (2012). To test hypotheses, I form three groups with sample firms depending on the effects of FIN 46 on those firms.

Group 1: Consolidation Group (On-Book Group)

I used 10-K wizard to identify a sample of firms that consolidated their variable interest entities (VIEs) in 2003 by searching 10-K and 10-Q forms reported in 2004. To ensure the accuracy of the search, I used different combinations of key words that including the actual action of "consolidation" by the adoption of FIN 46, instead of the wording only describing the standard, like "have consolidated", "has consolidated", "we consolidated". Some firms used passive voice, so I also used "was consolidated" and "were consolidated". In addition, some firms use "the company" to describe themselves so I also searched by "the company consolidated". These searching methods returned 260 unique firms.

Group 2: Off-Book Group

I identified a sample of firms which keep their VIEs off books. Some firms with VIEs try to avoid consolidation by terminating, restructuring, divesting or disposing the VIEs, therefore I searched 10-K and 10-Q forms using these four key words combining with FIN 46. 113 unique firms are found through this searching method.

Feng et al. (2009) search likely VIEs in firms' exhibit 21 and consider entities with the forms ''Limited Partnership,'' ''L.P.,'' ''LP,'' ''LLC,'' ''L.L.C.,'' or ''trust''. As they stated, this selection process will possibly exclude SPEs that don't have these organization forms or include SPEs that have been already consolidated in the financial statement. Since my research question focus on the impact of FIN 46, I find firms consolidating, terminating or restructuring VIEs (group 1 and group 2) by directly

searching the words "VIE", "consolidated", "terminated", "restructured" in 10 forms. To ensure the accuracy of the test sample, I read each 10-K form to find the description of such actions.

Group 3: No Impact Group

I found 1077 unique firms reporting "no impact" or "no material impact" from FIN 46 by searching in 10-K forms.

Sample Derivation

Table 14 provides the sample selection process. Through the searching process using 10-K wizard and manually verifying 10-K and 10-Q , I find 260 firms that have adopted FIN 46 and consolidated VIEs in their financial statements (group 1). After eliminating firms with missing value to estimate variables used in empirical analyses and deleting firms in financial industries (SIC 6000-6999), this group is left with 135 firms. There are 1791 firm-year observations from 1988 – 2012 for group 1. Since my testing period is 1998 – 2007, the final sample for group 1 includes 784 firm-year observations.

Following the same sample deviation process, Group 2 and Group 3 have 361 and 4728 firm-year observations respectively from 1998 – 2007.

The pre-FIN 46 periods are defined as 1998-2001, the post-FIN 46 periods are defined as 2004-2007. The transition periods 2002-2003 are excluded from the testing period.

EMPIRICAL FINDINGS

Descriptive Statistics

Table 15 presents the descriptive statistics for FIN 46 firms (group 1 & 2) and firms not impacted by FIN 46 (group 3) from 1998 to 2007. The mean of *INVEFF1*, the absolute value of the residual of Chen et al. 2011 model, is 0.116 for the FIN 46 firms and 0.193 for the no impact firms. The mean of *INVEFF2*, the absolute value of residuals from equation (9), is 0.099 and 0.156 respectively for the two groups. The mean of *INVEFF3*, the absolute value of residuals from equation (10), is 0.119 and 0.174 for the test sample and the control sample respectively. Firms in group 3 "no impact group" that is used as control sample in empirical analyses are characterized with relatively smaller in size, less profitable in terms of ROA and proportion of firms reporting losses, longer operating cycle and lower operating cash flows compared to firms in group 1 and 2, firms affected by FIN 46. Since firm characteristics of control group differ nontrivially from the test samples, I control for all firm characteristics in multiple regression models. In addition to controlling for the firm characteristics, I also use matched pair control sample to ensure the robustness of the results.

Multiple Regression Analyses

Investment Efficiency: Firms affected by FIN 46 versus Firms not Materially Impacted

Investment Cash-Flow Sensitivity Tests

I test investment-cash flow sensitivity of firms affected by FIN 46 by using equation (11) and estimating it with two sets of control groups—firms disclosing no material impact (group 3) and matched pair control sample.

Group 3 as Control Sample

The regression results for the test of investment-cash flow sensitivity are presented in Table 16. Here test sample includes firms having VIEs affected by FIN 46 (group 1 and 2). The control sample includes firms reporting no (material) impact from FIN 46 (group 3). The coefficient for market-to-book (MB) ratio is positive and highly significant (p<.0001) suggesting the level of investment is increasing in the firm's growth opportunity. The coefficients for *OCF* and interaction variable *FIN46*OCF* are both negative and the coefficient for *POST* OCF* positive, which are all highly significant (p<.0001). These results suggest the investment-cash flow association is negative for the whole sample of firms either affected or disclosed no impact by FIN 46 and the investment-cash flow sensitivity increased significantly after the implementation FIN 46 for all firms.

The variable of interest is a three way interaction term *POST*FIN46*OCF,* which tests the difference-in-differences for investment-cash flow sensitivity between pre-and post-implementation period comparing firms affected by FIN 46 versus firms reporting no material impact. The coefficient of *POST*FIN46*OCF* is positive and highly significant (p<0.0001) which suggests that the investment of firms affected by FIN 46 is more sensitive to their cash flows after their adoption for FIN 46. While the investment-cash flow sensitivity increased during the post implementation period for all firms included in the test, firms affected by FIN 46 have highly significant incremental effects. An increase in sensitivity of investment to cash flow for is an evidence of deterioration investment efficiency for firms affected by FIN 46.

Matched Pairs as Control Sample

As discussed in descriptive statistics, fundamental characteristics (viz. size, profitability, cash flow etc.) of firms group 3 that is used as control sample are significantly different from those of firms in test sample (group 1 and2). To address this concern, I also use a matched pair control sample that is formed by identifying a matched firms for each firm in test sample by using industry, size and ROA as matching variables.. Specifically, for each firm-year observation in the test sample, I chose a matched pair from all the firms not affected by FIN 46, in the same year and same industry, requiring the closest ROA by restricting size difference less than 1.

I estimate investment-cash flow sensitivity equation (11) with all observations in group 1 and 2 and matched pair sample. Results reported in Table 17 are consistent with those presented in the previous table, from the analyses using group 3 as control, with one exception that *FIN46*OCF* become insignificant. The coefficient of *POST*FIN46*OCF* is positive and highly significant (p<0.0001). Taken together, these findings suggests during the pre-implementation period firms subject to FIN 46 exhibit nontrivial sensitivity, which become incrementally significant during the post-implementation period.

Deviation from Expected Investment Analyses

In this subsection, I use three measures of investment efficiency, which are based on the deviation from the expected level of investments following prior studies (i.e., Biddle et al. 2009; Chen et al. 2011 etc.). These three measures, labeled as *INVEFF1, INVEFF2 and INVEFF3,* absolute values of residuals from equation (8), (9) and (10) respectively, which are used as proxies for how the investment level is deviated from the

expected level in both directions. Using these three proxies for investment efficiency, I estimate equation (12) to test H3 by using the matched pairs as the control sample and results are reported in Table 18. The coefficients for *FIN46* are positive and significant at p-value below 5% level in all three estimations, suggesting that firms subject to FIN 46 are less inefficient in investment decisions compared to matched pair control firms. The coefficient of *POST*FIN46* is negative and significant for all the three measures (p=0.096 for *INVEFF1*; p=0.017 for *INVEFF2*; p=0.052 for *INVEFF3*). These results suggest that the investment association are likely to improve for firms that are affected by FIN 46 (either consolidate VIEs or terminate/ restructure) and support hypothesis –H3.

I then equations (13- 15) that use a specification combining both expectation models (eq. 9-11) and testing model (eq. 12). The results of these alternative tests for H3 by using matched pairs as the control sample are presented in Table 19. The coefficients of *POST*FIN46* are negative and significant for all the three models (p=0.071, 0.024 and 0.008 respectively). These results suggest that FIN 46 firms experience improved investment efficiency measured by deviation from expected investment compared to their matched pairs.

Investment Efficiency: Firms Consolidated VIEs versus Firms Avoided Consolidation (H4)

Hypothesis 4 predicts firms consolidating VIEs are subject to a change in investment efficiency compared to firms that restructure or terminate VIEs to avoid consolidation. Consistent with previous section, I use two sets of measures— Investment-cash flow sensitivity and deviation from expected level of investments.

Investment-Cash Flow Sensitivity Tests

The regression results for the test of investment-cash flow sensitivity are presented in Table 20. Here test sample includes firms consolidating VIEs (group 1) and the control sample includes firms that either terminate or restructure VIEs to avoid consolidation (group 2). The coefficient for market-to-book (MB) ratio is positive and highly significant (p<.0001) suggesting the level of investment is increasing in the firm's growth opportunity. The coefficients for *OCF* is not significant however the interaction variable *FIN46*OCF* is negative and significant (p=.028). The coefficient for *POST* OCF* positive and significant (p=.053). These results suggest that the investment-cash flow association is negative for the consolidating firms before FIN 46 and the sensitivity increases significantly after the implementation FIN 46 for both groups of firms.

The variable of interest is a three way interaction term *POST*FIN46*OCF,* which tests the difference-in-differences for investment-cash flow sensitivity between pre-and post-implementation period comparing firms consolidating VIEs versus firms avoid consolidating. The coefficient of *POST*FIN46*OCF* is positive and marginally significant (p=.084 *two tailed test*) which suggests that the investment of firms consolidating VIEs is more sensitive to their cash flows after their adoption for FIN 46 compared firms that restructure or terminate VIEs. An increase in sensitivity of investment to cash flow for is an evidence of deterioration investment efficiency for firms affected by FIN 46.

Deviation from Expected Investment Analyses

I modify equations (13, 14 and 15) by replacing indicator variable *FIN46* by two indicator variables *ONBOOK* (takes value of 1 if firms consolidate VIEs in their financial

statements) and *OFFBOOK* (takes value of 1 if firms restructure or terminate VIEs to avoid consolidation) to test how the investment efficiency change in firms consolidating VIEs are different from those firms restructuring or terminating VIEs. I use matched pair firms as the control sample to estimate these models and results are presented in Table 21. The coefficients of *POST*FIN46* are negative and significant for all the three models (p=0.071, 0.024 and 0.008 respectively). These results suggest that FIN 46 firms experience improved investment efficiency measured by deviation from expected investment compared to their matched pairs. The coefficients for *POST*ONBOOK* are negative and significant (p values are 0.054, 0.019 and 0.019 respectively) for all the three models and *POST*OFFBOOK* is negative and marginally significant in one measure only. This result supports my hypothesis H4.

However, for the other test (*INVEFF*) for H4, the same sample construction yields no results.

Additional Tests: Group 1 vs. Matched Pairs

Table 22 and Table 23 provide the results of the tests about the difference between group 1 and its matched pairs. The coefficient of *POST*FIN46* is negative and significant for all the models. The same tests for group 2 and its matched pairs have no significant results. This represents the difference between group 1 and 2 from another perspective, suggesting that the investment efficiency for firms consolidating VIEs improves after FIN 46 compared to their peer firms, while firms restructuring or terminating VIEs don't experience such improvement compared to their peers. However, when measuring investment efficiency using investment – cash flow sensitivity, I find opposite results (untabulated).

Explanation for Opposite Results using Investment – Cash Flow Sensitivity

I use two empirical proxies for investment efficiency, which are used in the extant literature, however, find completely opposite results. This subsection provides some explanations for the opposite results using investment-cash flow sensitivity. Prior literature shows that the extent to which firms are financial constrained affects investment – cash flow sensitivity (e.g., Fazzari et al. 2000). One possible explanation is that the higher investment-cash flow sensitivity for firms affected by FIN 46 could be due to the effect of financial constraints. Therefore, I partition the test sample into a financial constrained group and a financial unconstrained group to further examine the change of investment – cash flow sensitivity for FIN 46 firms in the pre- and post- FIN 46 periods. I construct an index following Kaplan and Zingales (1997) and Lamont et al. (2001) by using the following model:

$KZindex = -1.002*CashFlow + 0.283*Q + 3.139*Leverage - 39.368*Dividends$

$-1.315*CashHoldings$

I assign the top (bottom) two quartiles as the financial constrained (unconstrained) group.

Table 24 present the regression results of H3 using no-impact firms as the control sample. For the financial constrained group, the coefficient of *POST*FIN46*OCF* is positive and highly significant (p<0.0001). On the other hand, the coefficient of *POST*FIN46*OCF* for unconstraint group is marginally significant and smaller than that of constraint group.. The results of the same test using matched pairs as the control sample is reported in Table 25. The coefficient of *POST_FIN46_OCF* for the constrained group is positive and significant (p=0.001), while that for the unconstrained group is not significant (p=0.319).

Thus, finding from this analysis provide explanation that higher investment-cash flow sensitivity for firms affected by FIN 46 is driven due to the financial constraints, which also suggest that this proxy measures different dimension of investment decision.

SUMMARY

This study examines the change in investment efficiency for firms affected by FIN 46. The results are mixed based on different proxies of investment efficiency. When using the investment – cash flow sensitivity to proxy for investment efficiency, I find firms affected by FIN 46 experience decreased investment efficiency indicated by increased investment sensitivity to cash flows, compared to firms reporting no material impact from FIN 46. The same results are found using matched pairs as the control sample of FIN 46 firms. I also find the investment of firms consolidating is more sensitive to cash flows after their adoption of FIN 46, compared to both the no-impact firms and matched pairs.

However, opposite results are found when using the deviation from expected investment as the proxy for investment efficiency. When comparing FIN 46 firms and their matched pairs, I find that FIN 46 firms experience improved investment efficiency measured by the deviation from expected investment after their adoption of FIN 46. Furthermore, I find firms consolidating VIEs experience improved investment efficiency measured by the deviation from expected investment after FIN 46 compared to their matched peers, while firms restructuring or terminating their VIEs don's exhibit such improvement.

This study contributes the literature about the economic consequence of FIN 46. It also adds to a growing stream of literature about investment efficiency. Nevertheless, there are some limitations in this study. First, the small sample size affects the generalization of the empirical results. Second, the mixed results are based on different models. Third, the models to estimate investment efficiency is still evolving, thus the interpretation of the results is subject to the validity of different models.

CHAPTER V: CONCLUSION

The Financial Accounting Standards Board (FASB) issued Interpretation No. 46 (FIN 46), Consolidation of Variable Interest Entities- An Interpretation of ARB No. 51, in January 2003 and revised it in December 2003, with an objective to improve the transparency of financial information. Under FIN 46, companies are required to consolidate special purpose entities (SPEs) on the financial statements if they are the primary beneficiaries of the SPEs, regardless of their voting interests in the entities. This study investigates whether the implementation of this new guidance affects accruals quality and investment efficiency of firms impacted by FIN 46.

The first part of my dissertation examines the effects of FIN 46 on accruals quality. I conduct tests using several different measures of accrual quality: the absolute value of performance-matched abnormal total accruals and working capital accruals suggested by Kothari et al. (2005); the accrual estimation errors of the DD 2002 model and its modified version suggested by McNichols (2002); the original DD 2002 accrual quality measures and its modified version suggested by McNichols (2002) and applied in Francis et al. (2005). I find that compared to firms reporting no material impact from FIN 46, firms impacted by FIN 46 experience worsened accrual quality, measured by the accrual estimation errors in the modified DD 2002 model (*ABS_MDD)* and the standard deviation of the residuals in the DD 2002 model and its modified version (*STD_DD* and *STD_MDD*), after consolidating, terminating or restructuring their VIEs. In additional analysis, I replace the control sample with a matched pair sample. The accrual quality measured by *ABS_MDD* and *STD_MDD* have consistent results as before.

I also examine the differences between the two subgroups in the FIN 46 firms (firms consolidating VIEs and firms terminating or restructuring VIEs). The results of the tests consistently show that the accrual quality measured by *ABS_MDD* and *STD_MDD* for firms consolidating VIEs (group 1) are consistently lower compared to firms terminating or restructuring VIEs (group 2), no matter which control sample is used. The differential change in accrual quality between the two groups can be partially attributed to the facts that group 1 have pressure to manage earnings when the consolidation brings negative effects on earnings, which are confirmed by the empirical tests using signed abnormal accrual measures.

In the second part of the dissertation, I focus on the effects of FIN 46 on investment decisions made by affected firms. More specifically, I examine the investment efficiency of affected firms during the pre- and post-FIN46 periods. An important determinant of firms' economic productivity and future performance is the investment efficiency, which can be affected by accounting information quality. Poor accounting quality (such as the opaqueness of accounting information caused by the use of off-balance sheet items) exacerbates information asymmetry between firms and investors. Prior research suggests that information asymmetry can create either liquidity constraints or excess liquidity, both of which are associated with investment inefficiency (Biddle and Hilary 2006). Measuring investment efficiency using the deviation from expected investment (Chen et al. 2011), the empirical results show that firms affected by FIN 46 experience improved investment efficiency after the adoption of FIN 46, compared to a sample of matched firms that are not affected by FIN 46. Among these FIN 46 firms, firms consolidating VIEs experience greater improvement than those restructuring or

terminating VIEs. However, when measuring investment efficiency using the investment – cash flow sensitivity, I find opposite results. The investment of firms affected by FIN 46 becomes more sensitive to cash flows after the adoption of FIN 46, compared to both no-impact firms and matched pairs. The investment of firms consolidating VIEs is more sensitive to cash flows compared to firms terminating or restructuring VIEs after their adoption of FIN 46.

The findings in my study are subject to some limitations. First, the small sample size of the test sample affects the estimation accuracy of the regression analysis. Second, the types of VIEs are not separated in the analysis. It is possible that the results are driven by certain category of VIEs, but not all. Third, the results are based on the measures of investment efficiency estimated from several models. The models to estimate investment efficiency are still evolving, thus the interpretation of the results is subject to the validity of different models.

My dissertation contributes to the literature in the following ways. First, it adds to the literature on impact of FIN 46. Prior studies investigate the economic consequences of FIN 46 from the perspective of market participants' responsiveness such as cost of capital (Callahan et al. 2012), analyst forecast precision and earnings response coefficients (Gurun et al. 2012). No extant research tests the impact of the changes in SPE consolidation rules on the quality of reported accounting numbers. This study fills this void by examining the effects of FIN 46 on accrual quality. Second, this study contributes to the stream of studies about off-balance sheet items in general. While prior studies provide evidence that firms with SPEs manage earnings through off-balance sheet activities, this study extends prior research by testing whether the changes in rules related

to SPEs affect the quality of accruals. Third, this study contributes to the literature that examines how mandatory changes in accounting standards affect financial reporting quality. Fourth, it contributes to the literature by extending a relatively smaller but growing stream of research on how the quality of accounting information affects investment efficiency.

TABLE 1 Panel A: Sample Deviation - AA Measures

Group 1:

Number of firms found in 10-K wizard	260
Number of firms that have non-missing values for AA measures	184
After excluding financial firms	144
Number of observations for non-financial firms for year 1988 – 2012	2580
Number of observations for non-financial firms for year 1998 – 2007	1225

Group 2:

Number of firms found in 10-K wizard	113
Number of firms that have non-missing values for AA measures	85
After excluding financial firms	69
Number of observations for non-financial firms for year 1988 – 2012	1301
Number of observations for non-financial firms for year 1998 – 2007	592

Group 3:

Number of firms found in 10-K wizard	1077
Number of firms that have non-missing values for AA measures	775
After excluding financial firms	719
Number of observations for non-financial firms for year 1988 – 2012	10632
Number of observations for non-financial firms for year 1998 – 2007	5690

Table 1 panel A provides the sample derivation for empirical analyses of abnormal accrual measures: abnormal total accruals (*AA*), working capital accrual (AWCA), performance-matched abnormal total accrual *(PM_AA)* and working capital accruals *(PM_AWCA)*. Group 1 is defined for firms consolidating VIEs. Group 2 is defined for firms restructuring or terminating VIES to avoid consolidating. Group 3 is defined for firms reporting no (material) impact from FIN 46. Searching using 10-K wizard, 260 firms are found in group 1. The sample is narrowed down to 184 firms after excluding firms with missing observations to estimate abnormal accruals. After deleting firms in financial industries (SIC 6000-6999), 144 firms left. There are 2580 firm-year observations from 1988 – 2012 for group 1. Since my testing period is 1998 – 2007, the final sample for group 1 includes 1225 firm-year observations. Following the same sample deviation process, Group 2 and Group 3 have 592 and 5690 firm-year observations respectively from 1998 – 2007.

TABLE 1 Panel B: Sample Deviation – DD Measures

Group 1:

Number of firms found in 10-K wizard	260
Number of firms that have non-missing values for DD, MDD	121
After excluding financial firms	104
Number of observations for non-financial firms for year 1988 – 2012	1074
Number of observations for non-financial firms for year 1998 – 2007	509

Group 2:

Number of firms found in 10-K wizard	113
Number of firms that have non-missing values for DD, MDD	49
After excluding financial firms	45
Number of observations for non-financial firms for year 1988 – 2012	360
Number of observations for non-financial firms for year 1998 – 2007	159

Group 3:

Number of firms found in 10-K wizard	1077
Number of firms that have non-missing values for DD, MDD	593
After excluding financial firms	562
Number of observations for non-financial firms for year 1988 – 2012	4672
Number of observations for non-financial firms for year 1998 – 2007	2690

Table 1 panel B provides the sample derivation for the tests on accrual quality measured using the accrual estimation errors from the DD model. Group 1 is defined for firms consolidating VIEs. Group 2 is defined for firms restructuring or terminating VIES to avoid consolidating. Group 3 is defined for firms reporting no (material) impact from FIN 46. Searching using 10-K wizard, 260 firms are found in group 1. The sample is narrowed down to 121 firms after excluding firms with missing observations to estimate DD and MDD. After deleting firms in financial industries (SIC 6000-6999), 104 firms left. There are 1074 firm-year observations from 1988 – 2012 for group 1. Since my testing period is 1998 – 2007, the final sample for group 1 includes 509 firm-year observations. Following the same sample deviation process, Group 2 and Group 3 have 159 and 2690 firm-year observations respectively from 1998 – 2007.

TABLE 2 Panel A: Descriptive Statistics - Sample for AA Measures

Group 1

	Mean	Q1	Median	Q3	SD
Size	7.693	6.488	7.931	9.243	2.116
Leverage	0.628	0.491	0.663	0.761	0.224
OCF	0.064	0.039	0.076	0.122	0.147
SGROWTH	0.122	-0.004	0.050	0.159	0.385
ROA	0.005	0.008	0.033	0.059	0.149
LOG_CYCLE	4.533	4.059	4.561	5.001	0.837
AA	-0.007	-0.034	-0.001	0.028	0.097
AWCA	-0.003	-0.028	-0.002	0.026	0.093
PMAA	0.032	0.006	0.039	0.068	0.097
PMAWCA	0.021	-0.004	0.023	0.050	0.093
ABS_AA	0.060	0.014	0.031	0.069	0.089
ABS_AWCA	0.057	0.012	0.027	0.060	0.091
ABS_PMAA	0.072	0.027	0.049	0.083	0.084
ABS_PMAWCA	0.062	0.017	0.035	0.068	0.091
# of firms	144				
# of observations	1225				

Group 2

	Mean	Q1	Median	Q3	SD
Size	7.858	6.446	7.673	9.266	1.959
Leverage	0.632	0.487	0.642	0.773	0.242
OCF	0.084	0.041	0.077	0.122	0.090
SGROWTH	0.114	-0.014	0.042	0.148	0.305
ROA	0.014	0.000	0.028	0.055	0.104
LOG_CYCLE	4.547	4.092	4.599	4.937	0.702
AA	-0.010	-0.043	-0.005	0.027	0.088
AWCA	-0.008	-0.031	-0.005	0.020	0.080
PMAA	0.030	-0.004	0.034	0.066	0.088
PMAWCA	0.016	-0.006	0.019	0.045	0.080
ABS_AA	0.060	0.015	0.036	0.074	0.079
ABS_AWCA	0.051	0.011	0.025	0.060	0.078
ABS_PMAA	0.069	0.025	0.046	0.083	0.080
ABS_PMAWCA	0.055	0.015	0.032	0.063	0.078
# of firms	69				
# of observations	592				

Group 3

	Mean	Q1	Median	Q3	SD

Size		5.173	3.701	5.179	6.581	2.142
Leverage		0.568	0.278	0.498	0.701	0.470
OCF		-0.023	-0.056	0.058	0.127	0.323
SGROWTH		0.132	-0.019	0.068	0.222	0.406
ROA		-0.111	-0.140	0.014	0.067	0.359
LOG_CYCLE		4.763	4.369	4.766	5.173	0.715
AA		-0.028	-0.070	-0.008	0.045	0.191
AWCA		-0.020	-0.058	-0.006	0.041	0.180
PMAA		0.012	-0.030	0.031	0.085	0.191
PMAWCA		0.004	-0.034	0.018	0.065	0.180
ABS_AA		0.116	0.024	0.058	0.134	0.160
ABS_AWCA		0.107	0.020	0.049	0.121	0.153
ABS_PMAA		0.121	0.031	0.067	0.139	0.156
ABS_PMAWCA		0.109	0.023	0.054	0.123	0.151
# of firms	719					
# of observations	5690					

Table 2 panel A provides the descriptive statistics of the (performance-matched) abnormal total accruals, (performance-matched) working capital accruals and the control variables for the three groups of firms from 1998 - 2007. Variable descriptions are as follows: *ABS_AA* is the absolute values of abnormal total accruals; *ABS_AWCA* is the absolute value of abnormal working capital accruals; *ABS_PMAA* is the absolute values of performance-matched abnormal total accruals; *ABS_PMAWCA* is the absolute values of performance-matched working capital accruals; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

TABLE 2 Panel B: Descriptive Statistics - Sample for DD Measures

Group 1

		Mean	Q1	Median	Q3	SD
Size		7.301	6.335	7.550	8.800	2.060
Leverage		0.632	0.463	0.674	0.757	0.242
OCF		0.058	0.034	0.071	0.116	0.141
SGROWTH		0.109	-0.007	0.048	0.179	0.341
ROA		-0.004	0.007	0.030	0.055	0.164
LOG_CYCLE		4.519	4.179	4.534	4.925	0.744
ABS_DD		0.043	0.010	0.024	0.048	0.060
ABS_MDD		0.034	0.008	0.020	0.041	0.045
STD_DD		0.046	0.018	0.031	0.052	0.058
STD_MDD		0.032	0.014	0.023	0.037	0.037
# of firms	104					
# of observations	509					

Group 2

		Mean	Q1	Median	Q3	SD
Size		6.836	5.936	7.013	7.836	1.597
Leverage		0.524	0.279	0.529	0.672	0.260
OCF		0.070	0.020	0.078	0.120	0.108
SGROWTH		0.192	-0.020	0.060	0.220	0.442
ROA		-0.012	-0.015	0.030	0.060	0.191
LOG_CYCLE		4.690	4.298	4.723	5.132	0.555
ABS_DD		0.037	0.012	0.028	0.051	0.033
ABS_MDD		0.031	0.013	0.023	0.042	0.027
STD_DD		0.043	0.021	0.038	0.059	0.027
STD_MDD		0.037	0.021	0.032	0.045	0.025
# of firms	45					
# of observations	159					

Group 3

	Mean	Q1	Median	Q3	SD
Size	4.767	3.297	4.720	6.187	2.098
Leverage	0.525	0.236	0.446	0.683	0.418
OCF	-0.049	-0.099	0.043	0.120	0.328
SGROWTH	0.139	-0.032	0.069	0.235	0.428
ROA	-0.149	-0.212	0.005	0.067	0.425
LOG_CYCLE	4.851	4.453	4.844	5.223	0.738
ABS_DD	0.066	0.018	0.041	0.083	0.076
ABS_MDD	0.058	0.015	0.034	0.071	0.071

STD_DD		0.078	0.030	0.054	0.097	0.080
STD_MDD		0.065	0.023	0.041	0.082	0.069
# of firms	562					
# of observations	2690					

Table 2 panel B reports the descriptive statistics for the accrual estimation errors from Dechow and Dichev (2002) model, the standard deviation for the accrual estimation errors developed by Dechow and Dichev (2002), and the control variables in the regression models. *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

TABLE 3: Regression of Absolute Value of
Performance-Matched Abnormal Accruals (H1)

Variable	ABS_PMAA		ABS_PMAWCA	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.072	<0.0001	0.059	<0.0001
POST	-0.006	0.097	-0.004	0.187
FIN46	0.000	0.970	-0.004	0.378
POST*FIN46	0.007	0.304	0.010	0.142
Leverage	0.046	<0.0001	0.043	<0.0001
SGROWTH	0.058	<0.0001	0.057	<0.0001
ROA	-0.101	<0.0001	-0.094	<0.0001
SIZE	-0.012	<0.0001	-0.012	<0.0001
OCF	-0.063	<0.0001	-0.063	<0.0001
OCF2	0.010	<0.0001	0.013	<0.0001
LOG_CYCLE	0.014	<0.0001	0.014	<0.0001
Adj. R^2	27.50%		29.28%	
N	4670		4670	

Table 3 provides the regression results of the following model:

$$AQ_t = +\beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t +$$
$$\beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t +$$
$$\beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \quad\quad\quad (5)$$

AQ here are the performance-matched abnormal total accruals (*ABS_PMAA*) and the performance-matched abnormal working capital accruals (*ABS_PMAWCA)*. *ABS_PMAA* is the absolute values of performance-matched abnormal total accruals; *ABS_PMAWCA* is the absolute values of performance-matched working capital accruals. *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms affected by FIN 46, that is, firms having VIEs subject to consolidation requirement. These firms chose either consolidated VIEs or

keeping VIEs off the financial statement by restructuring or terminating VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *OCF2* is the quadratic term of *OCF*; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

TABLE 4: Regression of Accrual Estimation Errors (H1)

Variable	ABS_DD		ABS_MDD	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.047	0.007	0.030	0.047
POST	-0.004	0.406	0.000	0.972
FIN46	0.000	0.960	-0.004	0.479
*POST*FIN46*	0.012	0.205	0.017	0.032
Leverage	0.039	<0.0001	0.037	<0.0001
SGROWTH	0.025	<0.0001	0.025	<0.0001
SIZE	-0.010	<0.0001	-0.009	<0.0001
ROA	-0.045	<0.0001	-0.050	<0.0001
LOG_CYCLE	0.01	0.002	0.010	0.000
Adj. R^2	18.32%		22.00%	
N	1557		1557	

Table 4 provides the regression results of the following model:

$$AQ_t = +\beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t +$$
$$\beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t +$$
$$\beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (5)$$

AQ here are *ABS_DD* and *ABS_MDD*. *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms affected by FIN 46, that is, firms having VIEs subject to consolidation requirement. These firms chose either consolidated VIEs or keeping VIEs off the financial statement by restructuring or terminating VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

TABLE 5: Regression of Standard Deviation of Accrual Estimation Errors (H1)

Variable	STD_DD		STD_MDD	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.016	0.036	0.025	0.049
POST	-0.018	<0.0001	-0.007	0.026
FIN46	-0.007	0.337	-0.005	0.321
POST*FIN46	0.019	0.035	0.012	0.075
Leverage	0.025	0.001	0.020	0.000
SGROWTH	0.026	<0.0001	0.021	<0.0001
SIZE	-0.012	<0.0001	-0.010	<0.0001
ROA	-0.024	0.006	-0.022	0.000
LOG_CYCLE	0.024	<0.0001	0.016	<0.0001
Adj. R^2	22.23%		24.92%	
N	1321		1320	

Table 5 provides the regression results of the following model:

$$AQ_t = +\beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \quad (5)$$

AQ here are *STD_DD* and *STD_MDD*. *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms affected by FIN 46, that is, firms having VIEs subject to consolidation requirement. These firms chose either consolidated VIEs or keeping VIEs off the financial statement by restructuring or terminating VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

TABLE 6: Regression of Absolute Value of Performance-Matched Abnormal Accruals (H2)

Variable	ABS_PMAA Coefficient	ABS_PMAA p-value	ABS_PMAWCA Coefficient	ABS_PMAWCA p-value
Intercept	0.072	<0.0001	0.059	<0.0001
POST	-0.006	0.097	-0.004	0.187
FIN46_CON	-0.001	0.894	-0.002	0.699
FIN46_OFF	0.002	0.781	-0.009	0.238
POST*FIN46_CON	0.006	0.420	0.008	0.309
POST*FIN46_OFF	0.008	0.465	0.013	0.191
Leverage	0.046	<0.0001	0.042	<0.0001
SGROWTH	0.058	<0.0001	0.058	<0.0001
ROA	-0.101	<0.0001	-0.094	<0.0001
SIZE	-0.012	<0.0001	-0.012	<0.0001
OCF	-0.063	<0.0001	-0.063	<0.0001
OCF2	0.010	<0.0001	0.013	<0.0001
LOG_CYCLE	0.014	<0.0001	0.014	<0.0001
Adj. R^2	27.47%		29.26%	
N	4670		4670	

Table 6 provides the regression results of the following model:

$$AQ_t = \beta_0 + \beta_1 POST2003_t + \delta_1 FIN46\_CON_t + \delta_2 FIN46\_OFF_t + \delta_3 POST2003 \times FIN46\_CON_t + \delta_4 POST2003 \times FIN46\_OFF_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (6)$$

AQ here are *ABS_PMAA* and *ABS_PMAWCA*. *ABS_PMAA* is the absolute values of performance-matched abnormal total accruals; *ABS_PMAWCA* is the absolute values of performance-matched working capital accruals; *POST* is an indicator variable for testing years

after 2003; *FIN46_CON* is an indicator variable for firms in groups 1- firms consolidating VIEs; *FIN46_OFF* is an indicator variable for firms in group 2- firms avoiding consolidating by keeping VIEs off the financial statement. They terminated or restructured VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *OCF2* is the quadratic term of *OCF*; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

TABLE 7: Regression of Accrual Estimation Errors (H2)

Variable	ABS_DD		ABS_MDD	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.046	0.008	0.030	0.048
POST	-0.003	0.419	0.000	0.960
FIN46_CON	0.003	0.692	-0.002	0.765
FIN46_OFF	-0.008	0.500	-0.009	0.365
POST*FIN46_CON	0.014	0.170	0.018	0.042
POST*FIN46_OFF	0.003	0.837	0.013	0.372
Leverage	0.038	<0.0001	0.036	<0.0001
SGROWTH	0.026	<0.0001	0.025	<0.0001
SIZE	-0.011	<0.0001	-0.010	<0.0001
ROA	-0.045	<0.0001	-0.050	<0.0001
LOG_CYCLE	0.010	0.001	0.010	0.000
Adj. R^2	18.40%		21.98%	
N	1557		1557	

Table 7 provides the regression results of the following model:
$$AQ_t = \beta_0 + \beta_1 POST2003_t + \delta_1 FIN46\_CON_t + \delta_2 FIN46\_OFF_t + \delta_3 POST2003 \times FIN46\_CON_t + \delta_4 POST2003 \times FIN46\_OFF_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (6)$$

AQ here are *ABS_DD* and *ABS_MDD*. *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46_CON* is an indicator variable for firms in groups 1- firms consolidating VIEs; *FIN46_OFF* is an indicator variable for firms in group 2- firms avoiding consolidating by keeping VIEs off the financial statement. They terminated or restructured VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items

divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

TABLE 8: Regression of Standard Deviation of
Accrual Estimation Errors (H2)

Variable	STD_DD Coefficient	STD_DD p-value	STD_MDD Coefficient	STD_MDD p-value
Intercept	0.016	0.370	0.025	0.048
POST	-0.018	<0.0001	-0.007	0.026
FIN46_CON	-0.004	0.668	-0.005	0.437
FIN46_OFF	-0.013	0.264	-0.006	0.516
POST*FIN46_CON	0.023	0.026	0.014	0.051
POST*FIN46_OFF	0.008	0.624	0.003	0.768
Leverage	0.024	0.001	0.020	0.000
SGROWTH	0.026	<0.0001	0.021	<0.0001
SIZE	-0.012	<0.0001	-0.010	<0.0001
ROA	-0.024	0.005	-0.022	0.000
LOG_CYCLE	0.025	<0.0001	0.016	<0.0001
Adj. R^2	22.37%		24.91%	
N	1321		1320	

Table 8 provides the regression results of the following model:

$$AQ_t = \beta_0 + \beta_1 POST2003_t + \delta_1 FIN46\_CON_t + \delta_2 FIN46\_OFF_t + \delta_3 POST2003 \times FIN46\_CON_t + \delta_4 POST2003 \times FIN46\_OFF_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (6)$$

AQ here are *STD_DD* and *STD_MDD*. *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46_CON* is an indicator variable for firms in groups 1- firms consolidating VIEs; *FIN46_OFF* is an indicator variable for firms in group 2- firms avoiding consolidating by keeping VIEs off the financial statement. They terminated or restructured VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the

change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory. All three groups of firms in the sample are used in estimating regressions, where the test sample consists of observations in Groups 1 and 2, and control sample with observations in Group 3.

**Table 9 Panel A: Additional Analysis of H1
- FIN 46 Firms and Matched Pairs**

	FIN46=1 (Group 1&2)			FIN46=0 (matched pair)			Difference-in differences
	pre-2003	post-2003	Change	pre-2003	post-2003	Change	
Accrual Quality							
ABS_DD	0.040	0.039	0.001	0.037	0.028	(0.009)***	0.011**
N	991	443		865	401		
ABS_MDD	0.030	0.032	0.002	0.030	0.024	(0.006)***	0.008**
N	991	443		865	401		
STD_DD	0.040	0.044	0.004	0.036	0.034	(0.002)	0.010**
N	551	360		459	325		
STD_MDD	0.029	0.036	0.007**	0.029	0.029	0.000	0.007**
N	551	360		459	325		
ABS_AA	0.072	0.057	(0.015)***	0.066	0.056	(0.010)*	0.001
N	735	686		643	594		
ABS_AWCA	0.065	0.052	(0.013)**	0.059	0.048	(0.011)**	0.004
N	735	686		643	594		
ABS_PMAA	0.083	0.068	(0.015)***	0.078	0.063	(0.015)***	0.005
N	735	686		643	594		
ABS_PMAWCA	0.069	0.059	(0.010)*	0.065	0.052	(0.013)**	0.007
N	735	686		643	594		

Table 9 panel A provides the univariate test for the difference between the accrual quality measures in the pre- and post- FIN 46 periods for the FIN 46 firms and the matched pairs. *ABS_AA* is the absolute values of abnormal total accruals; *ABS_AWCA* is the absolute value of abnormal working capital accruals; *ABS_PMAA* is the absolute values of performance-matched abnormal total accruals; *ABS_PMAWCA* is

the absolute values of performance-matched working capital accruals; *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model.

Table 9 Panel B: Additional Analysis of H1
- FIN 46 Firms and Matched Pairs

Variable	ABS_MDD Coefficient	p-value	STD_MDD Coefficient	p-value	ABS_DD Coefficient	p-value	STD_DD Coefficient	p-value
Intercept	0.017	0.014	0.020	0.020	0.014	0.112	0.005	0.658
POST	0.002	0.471	0.004	0.127	0.001	0.643	0.006	0.096
FIN46	-0.002	0.366	-0.001	0.721	0.000	0.985	0.003	0.311
POST*FIN46	0.008	0.015	0.008	0.029	0.006	0.165	0.006	0.195
Leverage	0.002	0.575	-0.004	0.448	0.013	0.027	0.005	0.387
SGROWTH	0.021	<0.0001	0.018	<0.0001	0.035	<0.0001	0.030	<0.0001
SIZE	-0.005	<0.0001	-0.006	<0.0001	-0.008	<0.0001	-0.008	<0.0001
ROA	-0.043	<0.0001	-0.057	<0.0001	-0.027	0.018	-0.074	<0.0001
LOG_CYCLE	0.010	<0.0001	0.012	<0.0001	0.014	<0.0001	0.019	<0.0001
Adj. R^2	12.82%		14.73%		15.03%		19.40%	
N	2296		1462		2296		1462	

Table 9 Panel B provides the regression results of the following model:

$$AQ_t = \beta_0 + \beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t +$$

$$\beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (5)$$

AQ here are *ABS_DD*, *ABS_MDD, STD_DD* and *STD_MDD*. *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms affected by FIN 46, that is, firms having VIEs subject to consolidation requirement. These firms chose either consolidated VIEs or keeping VIEs off the financial statement by restructuring or terminating VIEs; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

Table 10: Additional Analysis of H2
-Group 1 and Matched Pairs

| Variable | ABS_MDD | | STD_MDD | | ABS_DD | | STD_DD | |
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.019	0.010	0.020	0.039	0.024	0.013	0.009	0.452
POST	0.002	0.424	0.007	0.043	0.004	0.336	0.009	0.022
FIN46	-0.002	0.256	-0.002	0.499	0.000	0.916	0.002	0.492
POST*FIN46	0.010	0.010	0.010	0.027	0.007	0.148	0.007	0.220
Leverage	0.003	0.602	0.003	0.680	0.008	0.233	0.010	0.194
SGROWTH	0.017	<0.0001	0.013	0.000	0.026	<0.0001	0.016	0.000
SIZE	-0.006	<0.0001	-0.007	<0.0001	-0.008	<0.0001	-0.010	<0.0001
ROA	-0.034	<0.0001	-0.025	0.068	-0.033	0.010	-0.021	0.238
LOG_CYCLE	0.013	<0.0001	0.013	<0.0001	0.014	<0.0001	0.021	<0.0001
Adj. R^2	13.91%		15.63%		15.05%		19.67%	
N	1798		1158		1798		1158	

Table 10 provides the regression results of the following model:

$$AQ_t = \beta_0 + \beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t +$$

$$\beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \tag{5}$$

AQ here are *ABS_DD*, *ABS_MDD, STD_DD* and *STD_MDD*. The test sample includes firms consolidating VIEs (group 1), the control sample includes group 1 firms' matched pairs. *ABS_DD* is the absolute value of the estimation errors from DD 2002 model; *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms consolidating VIEs (group 1); *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

Variable	ABS_DD		ABS_MDD		STD_DD		STD_MDD	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.047	0.007	0.030	0.049	0.016	0.364	0.025	0.047
POST	-0.003	0.459	0.001	0.759	-0.017	<0.0001	-0.007	0.029
FIN46_CON	0.004	0.607	-0.001	0.857	-0.002	0.808	-0.004	0.498
*POST*FIN46_CON*	0.014	0.176	0.018	0.051	0.022	0.031	0.014	0.055
Leverage	0.038	<0.0001	0.036	<0.0001	0.024	0.001	0.020	0.000
SGROWTH	0.025	<0.0001	0.025	<0.0001	0.027	<0.0001	0.021	<0.0001
SIZE	-0.011	<0.0001	-0.010	<0.0001	-0.013	<0.0001	-0.010	<0.0001
ROA	-0.045	<0.0001	-0.050	<0.0001	-0.024	0.006	-0.022	0.000
LOG_CYCLE	0.010	0.001	0.010	0.000	0.025	<0.0001	0.016	<0.0001
Adj. R^2	18.47%		22.04%		22.40%		25.00%	
N	1557		1557		1321		1320	

Table 11 provides the regression results of the following model:

$$AQ_t = \beta_0 + \beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t +$$

$$\beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t \qquad (5)$$

AQ here are *ABS_DD*, *ABS_MDD, STD_DD* and *STD_MDD*. The test sample includes firms consolidating VIEs (group 1), the control sample includes firms terminating or restructuring VIEs (group 2). *ABS_MDD* is the absolute value of the estimation errors from modified DD 2002 model; *STD_DD* is the standard deviation of the estimation errors from DD 2002 model; *STD_MDD* is the standard deviation of the estimation error from modified DD 2002 model; *POST* is an indicator variable for testing years after 2003; *FIN46* is an indicator variable for firms consolidating VIEs (group 1); *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

Table 12: Additional Analysis for Group 1 and 2
- AA and AWCA

Variable	AA		AWCA	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.079	<0.0001	0.079	<0.0001
POST	-0.018	0.000	-0.011	0.013
FIN46_CON	-0.009	0.048	-0.001	0.862
*POST*FIN46_CON*	0.012	0.049	0.010	0.072
Leverage	0.018	0.030	-0.012	0.101
SGROWTH	-0.030	<0.0001	-0.015	<0.0001
SIZE	-0.004	<0.0001	-0.003	<0.0001
ROA	0.800	<0.0001	0.696	<0.0001
OCF	-0.588	<0.0001	-0.608	<0.0001
LOG_CYCLE	-0.003	0.168	-0.002	0.177
Adj. R^2	62.43%		64.14%	
N	1174		1174	

Table 12 provides the regression results of the following model:

$$EM_t = \beta_0 + \beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t$$

EM is earnings management measured by *AA* and *AWCA*. The test sample includes firms consolidating VIEs (group 1), the control sample includes firms terminating or restructuring VIEs (group 2). *AA* is abnormal total accruals; *AWCA* is abnormal working capital accruals; *POST* is an indicator variable for testing years after 2003; *FIN46_CON* is an indicator variable for firms consolidating VIEs (group 1); *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

Table 13: Additional Analysis for Group 1 and 2
- PMAA and PMAWCA

Variable	PMAA		PMAWCA	
	Coefficient	p-value	Coefficient	p-value
Intercept	0.118	<0.0001	0.103	<0.0001
POST	-0.018	0.000	-0.011	0.013
FIN46_CON	-0.009	0.048	-0.001	0.862
POST*FIN46_CON	0.012	0.049	0.010	0.072
Leverage	0.018	0.030	-0.012	0.101
SGROWTH	-0.030	<0.0001	-0.015	<0.0001
SIZE	-0.004	<0.0001	-0.003	<0.0001
ROA	0.800	<0.0001	0.696	<0.0001
OCF	-0.588	<0.0001	-0.608	<0.0001
LOG_CYCLE	-0.003	0.168	-0.002	0.177
Adj. R^2	62.43%		64.14%	
N	1174		1174	

Table 13 provides the regression results of the following model:

$$EM_t = +\beta_1 POST2003_t + \beta_2 FIN46_t + \beta_3 POST2003 \times FIN46_t + \beta_4 LEVERAGE_t + \beta_5 GROWTH_t + \beta_6 SIZE_t + \beta_7 ROA_t + \beta_8 OCF_t + \beta_9 OCF2_t + \beta_{10} LOG\_CYCLE_t + \varepsilon_t$$

EM is earnings management measured by *PMAA* and *PMAWCA*. The test sample includes firms consolidating VIEs (group 1), the control sample includes firms terminating or restructuring VIEs (group 2). *PMAA* is performance-matched abnormal total accruals; *PMAWCA* is the absolute values of performance-matched working capital accruals; *POST* is an indicator variable for testing years after 2003; *FIN46_CON* is an indicator variable for firms consolidating VIEs (group 1); *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *OCF* is measured as operating cash flow divided by lagged total assets; *SGROWTH* is measured as the change in sales divided by lagged total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *LOG_CYCLE* is logarithm of operating cycle, which is measured as the sum of average days of accounts receivable and average days of inventory.

TABLE 14: Sample Deviation

Group 1:

Number of firms found in 10-K wizard	260
Number of non-financial firms that have non-missing values	135
Number of observations for non-financial firms for year 1988 – 2012	1791
Number of observations for non-financial firms for year 1998 – 2007	784

Group 2:

Number of firms found in 10-K wizard	113
Number of non-financial firms that have non-missing values	66
Number of observations for non-financial firms for year 1988 – 2012	845
Number of observations for non-financial firms for year 1998 – 2007	361

Group 3:

Number of firms found in 10-K wizard	1077
Number of non-financial firms that have non-missing values	700
Number of observations for non-financial firms for year 1988 – 2012	8876
Number of observations for non-financial firms for year 1998 – 2007	4728

Note: this table provides the sample deviation for the tests on investment efficiency measured by the deviation from expected investment. Group 1 is defined for firms consolidating VIEs. Group 2 is defined for firms restructuring or terminating VIES to avoid consolidating. Group 3 is defined for firms reporting no (material) impact from FIN 46. 260 firms are found for group 1 through 10K wizard. After deleting firms with missing values to estimating variables and firms in financial industries, 135 firms left. There are 1791 firm-year observations from 1988 to 2012. There are 784 firm-year observations in the final sample for group 1 from 1998 to 2007. Using similar filtering process, group 2, 3 have 361 and 4728 firm-year observations respectively from 1998 – 2007.

TABLE 15: Descriptive Statistics

FIN 46 firms

	Mean	Q1	Median	Q3	SD
INVEFF1	0.116	0.032	0.071	0.128	0.187
INVEFF2	0.099	0.024	0.051	0.109	0.187
INVEFF3	0.119	0.032	0.075	0.138	0.195
ROA	-0.009	0.004	0.032	0.060	0.210
SIZE	7.109	5.897	7.246	8.517	1.974
MB	1.380	0.427	0.775	1.485	2.129
Tangibility	0.331	0.103	0.259	0.510	0.260
Kstructure	0.247	0.038	0.176	0.402	0.240
CFOsale	-0.275	0.025	0.088	0.174	3.773
Slack	1.811	0.031	0.155	0.792	6.366
Dividend	0.527	0.000	1.000	1.000	0.500
OPCycle	136.694	58.910	91.839	152.063	154.597
Loss	0.231	0.000	0.000	0.000	0.422
N	893				

No Impact Firms

	Mean	Q1	Median	Q3	SD
INVEFF1	0.193	0.048	0.112	0.209	0.299
INVEFF2	0.156	0.038	0.085	0.167	0.252
INVEFF3	0.174	0.046	0.107	0.197	0.267
ROA	-0.147	-0.161	0.015	0.068	0.471
SIZE	4.308	3.122	4.337	5.546	2.099
MB	1.813	0.482	0.902	1.768	3.033
Tangibility	0.352	0.096	0.284	0.559	0.290
Kstructure	0.159	0.000	0.059	0.253	0.213
CFOsale	-1.428	-0.083	0.053	0.170	7.648
Slack	2.347	0.009	0.149	1.052	7.751
Dividend	0.275	0.000	0.000	1.000	0.447
OPCycle	169.849	80.872	123.771	193.050	177.712
Loss	0.441	0.000	0.000	1.000	0.497
N	4263				

Note: this table presents the descriptive statistics for FIN 46 firms (group 1 and 2) and no impact firms (group 3). *INVEFF1* is the absolute value of the residuals from equation (8). *INVEFF2* is the absolute value of the residuals from equation (9). *INVEFF3* is the absolute value of the residuals from equation (10). *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by

lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility is measured as* property, plant and equipment divided by total assets; *K-structure is measured as* long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover.

TABLE 16: Multivariate Regression Results for Investment-Cash Flow Sensitivity

Variable	*Investment*	
	Coefficient	**p-value**
Intercept	0.166	<0.0001
POST	-0.042	<0.0001
FIN46	-0.024	0.105
OCF	-0.177	<0.0001
*FIN46*OCF*	-0.299	<0.0001
*POST*OCF*	0.156	<0.0001
*POST*FIN46*OCF*	0.591	<0.0001
SIZE	0.001	0.762
MB	0.027	<0.0001
Adj. R^2	21.82%	
N	4188	

Table 16 provides the regression results of the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46* OCF_{i,t} + \eta_3 POST* OCF_{i,t}$$

$$+ \eta_3 POST*FIN46* OCF_{i,t} + b_2 MB_{i,t} + b_3 Size_{i,t} + \varepsilon_{i,t,} \tag{11}$$

The test sample includes firms having VIEs affected by FIN 46 (group 1 and 2). The control sample includes firms reporting no (material) impact from FIN 46 (group 3).
The dependent variable is *Investment* measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q.

TABLE 17 Regression Results for H3

Investment-Cash Flow Sensitivity - FIN 46 Firms and Matched Pairs

Variable	Investment	
	Coefficient	**p-value**
Intercept	0.212	<0.0001
POST	-0.051	<0.0001
FIN46	-0.010	0.421
OCF	-0.406	<0.0001
*FIN46*OCF*	-0.056	0.247
*POST*OCF*	0.351	<0.0001
*POST*FIN46*OCF*	0.400	<0.0001
SIZE	-0.010	0.001
MB	0.044	<0.0001
Adj. R^2	27.86%	
N	1456	

Table 17 provides the regression results of the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46 * OCF_{i,t} + \eta_3 POST * OCF_{i,t}$$
$$+ \eta_3 POST*FIN46* OCF_{i,t} + b_2 MB_{i,t} + b_3 Size_{i,t} + \varepsilon_{i,t,} \quad (11)$$

The test sample includes firms having VIEs affected by FIN 46 (group 1 and 2). The control sample includes the matched pairs of FIN 46 firms. The dependent variable is *Investment* measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q.

TABLE 18:
Deviation from Expected Investment Analyses:
FIN 46 Firms and Matched Pairs

Variable	Model 1 INVEFF1		Model 2 INVEFF2		Model 3 INVEFF3	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.082	0.000	0.089	<0.0001	0.072	0.001
POST	0.020	0.114	0.032	0.010	0.029	0.019
FIN46	0.026	0.024	0.030	0.006	0.027	0.014
POST*FIN46	-0.029	0.096	-0.039	0.017	-0.031	0.052
ROA	-0.214	<0.0001	-0.218	<0.0001	-0.239	<0.0001
SIZE	0.000	0.918	-0.005	0.036	0.000	0.975
MB	0.014	<0.0001	0.015	<0.0001	0.015	<0.0001
Tangibility	0.023	0.266	0.016	0.421	0.024	0.218
Kstructure	-0.014	0.561	0.008	0.730	-0.014	0.546
CFOsale	-0.002	0.837	0.025	0.023	0.019	0.077
Slack	-0.002	0.153	-0.001	0.561	0.000	0.950

Dividend	-0.006	0.497	-0.001	0.914	-0.004	0.648
OPCYCLE	0.000	0.023	0.000	0.052	0.000	0.664
LOSS	-0.011	0.432	-0.004	0.794	-0.021	0.129
Adj. R^2	6.52%		7.15%		6.37%	
N	970		884		884	

Table 18 presents the regression results of the following models:

$$INVEFF_t = \beta_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \sum \gamma \, Control + \varepsilon_t \qquad (12)$$

The test sample includes firms affected by FIN 46. The control sample includes the matched pairs of FIN 46 firms. The dependent variables INVEFF1, INVEFF2, INVEFF3 are the absolute values of the residuals from equation (8), (9) and (10) respectively.

$$Investment_{i,t} = \lambda_0 + \lambda_1 \, NEG_{i,t-1} + \lambda_2 \, SalesGrowth_{i,t-1} + \lambda_3 \, NEG * SalesGrowth_{i,t-1} + \xi_{i,t} \qquad (8)$$

$$Investment_{i,t} = \lambda_0 + \lambda_1 \, NEG_{t-1} + \lambda_2 \, SalesGrowth_{i,t-1} + \lambda_3 \, NEG * SalesGrowth_{i,t-1} + \lambda_4 \, Investment_{i,t-1} + \xi_{i,t+1} \qquad (9)$$

$$Investment_{i,t} = \lambda_0 + \lambda_1 \, NEG_{t-1} + \lambda_2 \, AssetGrowth_{i,t-1} + \lambda_3 \, NEG * AssetGrowth_{i,t-1} + \xi_{i,t} \qquad (10)$$

FIN46 is an indicator variable, 1 for firms with VIEs and affected by FIN 46, 0 for the matched pairs; *POST* is an indicator variable for testing years after 2003. The control variables are defined as the following: *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility* is measured as property, plant and equipment divided by total assets; *K-structure* is measured as long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover.

Table 19: Additional Analysis of H3
FIN 46 Firms and Matched Pairs

Variable	Alternative Model 1 *Investment* Coefficient	p-value	Alternative Model 2 *Investment* Coefficient	p-value	Alternative Model 3 *Investment* Coefficient	p-value
Intercept	0.064	0.047	0.057	0.082	0.066	0.098
POST	0.036	0.056	0.046	0.015	0.044	0.046
FIN46	0.027	0.102	0.034	0.043	0.055	0.004
*POST*FIN46*	-0.044	0.071	-0.056	0.024	-0.076	0.008
ROA	-0.345	<0.0001	-0.364	<0.0001	-0.520	<0.0001
SIZE	-0.001	0.896	-0.002	0.636	0.001	0.846
MB	0.033	<0.0001	0.027	<0.0001	0.044	<0.0001
Tangibility	0.117	0.000	0.102	0.001	0.106	0.003
Kstructure	-0.026	0.438	-0.034	0.337	-0.034	0.401
CFOsale	-0.003	0.837	0.018	0.303	0.048	0.017
Slack	-0.006	0.001	-0.006	0.005	-0.005	0.034

Dividend	-0.024	0.070	-0.016	0.241	-0.005	0.766
OPCYCLE	0.000	0.066	0.000	0.144	0.000	0.139
LOSS	-0.021	0.327	-0.030	0.164	-0.019	0.449
NEG	-0.015	0.402	-0.025	0.172	-0.078	0.000
RevGrowth	0.172	<0.0001	0.154	<0.0001		
*NEG*RevGrowth*	-0.152	0.043	-0.204	0.012		
Lag_Invest			0.138	<0.0001		
AssetGrowth					0.418	<0.0001
*NEG*AssetGrowth*					-0.026	0.779
Adj. R^2	43.67%		39.59%		18.76%	
N	970		884		884	

Table 19 presents the regression results of the following models:

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1} + \lambda_2 SalesGrowth_{i,t-1}$$
$$+ \lambda_3 NEG * SalesGrowth_{i,t-1} + \Sigma\gamma Control + \xi_{i,t} \qquad (13)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1} + \lambda_2 SalesGrowth_{i,t-1}$$
$$+ \lambda_3 NEG * SalesGrowth_{i,t} + \lambda_4 Investment_{i,t-1} + \Sigma\gamma Control + \xi_{i,t} \qquad (14)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1 NEG_{t-1} + \lambda_2 AssetGrowth_{i,t-1}$$
$$+ \lambda_3 NEG * AssetGrowth_{i,t-1} + \Sigma\gamma Control + \xi_{i,t} \qquad (15)$$

The test sample includes firms affected by FIN 46. The control sample includes the matched pairs of FIN 46 firms. *FIN46* is an indicator variable, 1 for firms with VIEs and affected by FIN 46, 0 for the matched pairs; *POST* is an indicator variable for testing years after 2003. The dependent variable *Investment* is measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *FIN46* is an indicator variable for firms affected by FIN46; *POST* is an indicator variable for testing years after 2003; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility* is measured as property, plant and equipment divided by total assets; *K-structure* is measured as long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover; *LOSS* is an indicator variable, 1 if net income before extraordinary items is negative and 0 otherwise; *RevGrowth* is the annual revenue growth rate for firm i in year t; *NEG* is an indicator variable for negative revenue growth; *Lag_Invest* is lagged investment; *AssetGrowth* is logarithm of total assets in year t divided by total assets in year t-1, following McNichols and Stubben (2008) and Chen et al. (2011).

TABLE 20 Regression Results for H4

Investment-Cash Flow Sensitivity - Group 1 vs. Group 2

Variable	Investment	
	Coefficient	p-value
Intercept	0.192	<0.0001
POST	-0.079	<0.0001
FIN46	-0.001	0.979
OCF	-0.073	0.698
FIN46*OCF	-0.419	0.028
POST2003*OCF	0.448	0.053
POST2003*FIN46*OCF	0.417	0.084
SIZE	-0.007	0.107
MB	0.037	<0.0001
Adj. R^2	27.94%	
N	741	

Table 20 provides the regression results of the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46 * OCF_{i,t} + \eta_3 POST * OCF_{i,t}$$
$$+ \eta_3 POST*FIN46* OCF_{i,t} + b_2 MB_{i,t} + b_3 Size_{i,t} + \varepsilon_{i,t,} \qquad (11)$$

The test sample includes firms consolidating VIEs (group 1). The control sample includes firms terminating or restructuring VIEs (group 2). *FIN46* is an indicator variables for firms in group 1; *POST* is an indicator variable for testing years after 2003; The dependent variable is *Investment* measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q.

TABLE 21: Investment Efficiency: Firms consolidating VIEs versus Firms Terminating/Restructuring VIE H4 Matched Pairs

Variable	Alternative Model 1 Investment		Alternative Model 2 Investment		Alternative Model 3 Investment	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.059	0.067	0.052	0.115	0.057	0.155
POST	0.035	0.060	0.045	0.016	0.043	0.049
ONBOOK	0.020	0.274	0.027	0.152	0.037	0.086
OFFBOOK	0.041	0.070	0.049	0.032	0.090	0.001
POST*ONBOOK	-0.052	0.054	-0.065	0.019	-0.075	0.019
POST*OFFBOOK	-0.031	0.358	-0.040	0.226	-0.080	0.039
ROA	-0.345	<0.0001	-0.363	<0.0001	-0.518	<0.0001
SIZE	0.000	0.987	-0.001	0.739	0.002	0.688
MB	0.033	<0.0001	0.028	<0.0001	0.044	<0.0001
Tangibility	0.122	<0.0001	0.107	0.001	0.114	0.001
Kstructure	-0.033	0.329	-0.041	0.242	-0.046	0.262

CFOsale	-0.004	0.815	0.018	0.304	0.048	0.016
Slack	-0.005	0.003	-0.005	0.008	-0.005	0.056
Dividend	-0.024	0.070	-0.015	0.243	-0.005	0.741
OPCYCLE	0.000	0.096	0.000	0.204	0.000	0.212
LOSS	-0.018	0.402	-0.027	0.224	-0.014	0.583
NEG	-0.017	0.337	-0.028	0.134	-0.080	0.000
RevGrowth	0.172	<0.0001	0.153	<0.0001		
NEG*RevGrowth	-0.150	0.046	-0.200	0.014		
Lag_Invest			0.139	<0.0001		
AssetGrowth					0.434	<0.0001
NEG*AssetGrowth					-0.021	0.824
Adj. R^2	43.76%		39.74%		19.17%	
N	970		884		884	

Table 21 presents the regression results of the following models:

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 ONBOOK_t + \beta_3 OFFBOOK_t + \beta_4 POST_t \times ONBOOK_t + \beta_5 POST_t \times OFFBOOK_t$$

$$+ \lambda_1 \, NEG_{t-1} + \lambda_2 \, SalesGrowth_{i,t-1} + \lambda_3 \, NEG * SalesGrowth_{i,t-1} + \sum \gamma \, Control + \xi_{i,t}$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 ONBOOK_t + \beta_3 OFFBOOK_t + \beta_4 POST_t \times ONBOOK_t + \beta_5 POST_t \times OFFBOOK_t$$

$$+ \lambda_1 \, NEG_{t-1} + \lambda_2 \, SalesGrowth_{i,t-1} + \lambda_3 \, NEG * SalesGrowth_{i,t-1} + \sum \gamma \, Control + \lambda_4 \, Investment_{i,t-1} + \xi_{i,t}$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 ONBOOK_t + \beta_3 OFFBOOK_t + \beta_4 POST_t \times ONBOOK_t + \beta_5 POST_t \times OFFBOOK_t$$

$$+ \lambda_1 \, NEG_{t-1} + \lambda_2 \, AssetGrowth_{i,t-1} + \lambda_3 \, NEG * AssetGrowth_{i,t-1} + \sum \gamma \, Control + \xi_{i,t}$$

The test sample includes firms affected by FIN 46. The control sample includes the matched pairs of FIN 46 firms. *ONBOOK* is an indicator variable for firms consolidating VIEs*; OFFBOOK* is an indicator variable for firms terminating or restructuring VIEs; *POST* is an indicator variable for testing years after 2003. The dependent variable *Investment* is measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *FIN46* is an indicator variable for firms affected by FIN46; *POST* is an indicator variable for testing years after 2003; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility* is measured as property, plant and equipment divided by total assets; *K-structure* is measured as long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover; *LOSS* is an indicator variable, 1 if net income before extraordinary items is negative and 0 otherwise; *RevGrowth* is the annual revenue growth rate for firm i in year t; *NEG* is an indicator variable for negative revenue growth; *Lag_Invest* is lagged investment; *AssetGrowth* is logarithm of total assets in year t divided by total assets in year t-1, following McNichols and Stubben (2008) and Chen et al. (2011).

TABLE 22: Additional Analysis of H4
Group 1 and Matched Pairs

	Model 1		Model 2		Model 3	
	INVEFF1		*INVEFF2*		*INVEFF3*	
Variable	**Coefficient**	**p-value**	**Coefficient**	**p-value**	**Coefficient**	**p-value**
Intercept	0.122	<0.0001	0.110	<0.0001	0.094	<0.0001
POST	0.030	0.061	0.039	0.006	0.028	0.043
FIN46	0.024	0.105	0.029	0.029	0.021	0.099
POST*FIN46	-0.036	0.097	-0.046	0.017	-0.028	0.137
ROA	-0.156	0.002	-0.166	0.000	-0.185	<0.0001
SIZE	-0.004	0.256	-0.006	0.042	-0.001	0.812
MB	0.010	0.002	0.007	0.053	0.009	0.007
Tangibility	-0.011	0.673	0.004	0.851	0.011	0.643
Kstructure	-0.020	0.504	-0.028	0.316	-0.027	0.319
CFOsale	0.010	0.490	0.020	0.118	0.012	0.352
Slack	-0.002	0.123	-0.001	0.515	0.000	0.936

Dividend	-0.003	0.822	0.002	0.872	-0.007	0.516
OPCYCLE	0.000	0.048	0.000	0.081	0.000	0.533
LOSS	0.002	0.897	0.012	0.471	-0.010	0.517
Adj. R^2	5.13%		7.07%		5.94%	
N	662		604		604	

Table 22 presents the regression results of the following models:

$$INVEFF_t = \beta_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \sum \gamma\, Control + \varepsilon_t \qquad (12)$$

The test sample includes firms affected by FIN 46. The control sample includes the matched pairs of FIN 46 firms. The dependent variables INVEFF1, INVEFF2, INVEFF3 are the absolute values of the residuals from equation (8), (9) and (10) respectively.

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{i,t-1} + \lambda_2\, SalesGrowth_{i,t-1} + \lambda_3\, NEG^* SalesGrowth_{i,t-1} + \xi_{i,t} \qquad (8)$$

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{t-1} + \lambda_2\, SalesGrowth_{i,t-1} + \lambda_3\, NEG^* SalesGrowth_{i,t-1} + \lambda_4\, Investment_{i,t-1} + \xi_{i,t+1} \qquad (9)$$

$$Investment_{i,t} = \lambda_0 + \lambda_1\, NEG_{t-1} + \lambda_2\, AssetGrowth_{i,t-1} + \lambda_3\, NEG^* AssetGrowth_{i,t-1} + \xi_{i,t} \qquad (10)$$

FIN46 is an indicator variable, 1 for firms consolidating VIEs (group 1), 0 for group 1 firms' matched pairs; *POST* is an indicator variable for testing years after 2003. The control variables are defined as the following: *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility* is measured as property, plant and equipment divided by total assets; *K-structure* is measured as long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover.

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TABLE 23: Additional Analysis of H4
Group 1 and Matched Pairs

| | Alternative Model 1 | | Alternative Model 2 | | Alternative Model 3 | |
| | *Investment* | | *Investment* | | *Investment* | |
Variable	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Intercept	0.102	0.003	0.086	0.013	0.121	0.004
POST	0.033	0.099	0.038	0.056	0.036	0.124
FIN46	0.024	0.188	0.027	0.132	0.038	0.076
*POST*FIN46*	-0.055	0.039	-0.063	0.018	-0.072	0.021
ROA	-0.259	<0.0001	-0.301	<0.0001	-0.418	<0.0001
SIZE	-0.003	0.445	-0.001	0.710	-0.003	0.578
MB	0.025	<0.0001	0.019	0.000	0.028	<0.0001
Tangibility	0.103	0.002	0.107	0.001	0.101	0.009
Kstructure	-0.047	0.205	-0.066	0.081	-0.084	0.059
CFOsale	0.006	0.740	-0.002	0.899	0.027	0.206
Slack	-0.004	0.015	-0.005	0.007	-0.004	0.058

Dividend	-0.022	0.142	-0.019	0.195	0.002	0.927
OPCYCLE	0.000	0.114	0.000	0.239	0.000	0.487
LOSS	-0.014	0.547	-0.023	0.320	-0.009	0.748
NEG	-0.022	0.277	-0.032	0.114	-0.078	0.001
RevGrowth	0.142	<0.0001	0.143	<0.0001		
NEG*RevGrowth	-0.134	0.088	-0.188	0.027		
Lag_Invest			0.082	0.004		
AssetGrowth					0.263	0.002
NEG*AssetGrowth					-0.004	0.972
Adj. R^2	40.25%		41.62%		18.84%	
N	662		604		604	

Table 23 presents the regression results of the following models:

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1\, NEG_{t\text{-}1} + \lambda_2\, SalesGrowth_{i,t\text{-}1}$$
$$+ \lambda_3\, NEG * SalesGrowth_{i,t\text{-}1} + \Sigma\gamma Control + \xi_{i,t} \qquad (13)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1\, NEG_{t\text{-}1} + \lambda_2\, SalesGrowth_{i,t\text{-}1}$$
$$+ \lambda_3\, NEG * SalesGrowth_{i,t} + \lambda_4\, Investment_{i,t\text{-}1} + \Sigma\gamma Control + \xi_{i,t} \qquad (14)$$

$$Investment_{i,t} = \lambda_0 + \beta_1 POST_t + \beta_2 FIN46_t + \beta_3 POST_t \times FIN46_t + \lambda_1\, NEG_{t-1} + \lambda_2\, AssetGrowth_{i,t-1}$$
$$+ \lambda_3\, NEG * AssetGrowth_{i,t-1} + \Sigma\gamma Control + \xi_{i,t} \tag{15}$$

The test sample only includes firms consolidating VIEs (group 1). The control sample includes the matched pairs of group 1 firms. *FIN46* is an indicator variable, 1 for firms consolidating VIEs, 0 for the matched pairs; *POST* is an indicator variable for testing years after 2003. The dependent variable *Investment* is measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *FIN46* is an indicator variable for firms affected by FIN46; *POST* is an indicator variable for testing years after 2003; *SIZE* is logarithm of lagged total assets; *Leverage* is measured as total liability divided by total assets; *ROA* is the income before extraordinary items divided by lagged total assets; *MB* is the market value of equity divided by total assets; *Tangibility* is measured as property, plant and equipment divided by total assets; *K-structure* is measured as long-term debt divided by the sum of long-term debt and the market value of equity; *CFOsale* is operating cash flow divided by sales; *Slack* is cash divided by property, plant and equipment; *Dividend* is an indicator variable for firm paid a dividend; *OPCycle* is operating cycle measured as the sum of 365 divided by inventory turnover and 365 divided by receivable turnover; *LOSS* is an indicator variable, 1 if net income before extraordinary items is negative and 0 otherwise; *RevGrowth* is the annual revenue growth rate for firm i in year t; *NEG* is an indicator variable for negative revenue growth; *Lag_Invest* is lagged investment; *AssetGrowth* is logarithm of total assets in year t divided by total assets in year t-1, following McNichols and Stubben (2008) and Chen et al. (2011).

Variable	Constrained Group *Investment*		Unconstrained Group *Investment*	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Intercept	0.151	<0.0001	0.122	<0.0001
POST	-0.156	0.351	-0.067	<0.0001
FIN46	-0.017	0.450	-0.024	0.174
OCF	-0.138	<0.0001	-0.277	<0.0001
FIN46_OCF	-0.375	<0.0001	-0.126	0.117
POST_OCF	0.122	<0.0001	0.053	0.011
*POST*FIN46_OCF*	0.767	<0.0001	0.305	0.066
SIZE	0.003	0.469	0.005	0.130
MB	0.026	<0.0001	0.048	<0.0001
Adj. R^2	20.03%		34.10%	
N	2063		2125	

Table 24 provides the regression results of the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46 * OCF_{i,t} + \eta_3 POST * OCF_{i,t}$$
$$+ \eta_3 POST * FIN46 * OCF_{i,t} + b_2 MB_{i,t} + b_3 Size_{i,t} + \varepsilon_{i,t,} \quad (11)$$

The test sample includes firms having VIEs affected by FIN 46 (group 1 and 2). The control sample includes firms reporting no (material) impact from FIN 46 (group 3). The whole sample is partitioned into two groups: constrained group and unconstrained group. I construct an index following Kaplan and Zingales (1997) and Lamont et al. (2001) by using the following model:

$$KZindex = -1.002 * CashFlow + 0.283 * Q + 3.139 * Leverage - 39.368 * Dividends - 1.315 * CashHoldings$$

I assign the top (bottom) two quartiles as the financial constrained (unconstrained) group.

The dependent variable is *Investment* measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q.

Variable	Constrained Group *Investment*		Unconstrained Group *Investment*	
	Coefficient	**p-value**	**Coefficient**	**p-value**
Intercept	0.206	<0.0001	0.221	<0.0001
POST	-0.050	0.014	-0.018	0.249
FIN46	0.008	0.706	-0.027	0.079
OCF	-0.410	<0.0001	-0.399	<0.0001
FIN46_OCF	-0.093	0.252	0.042	0.508
POST_OCF	0.428	<0.0001	0.135	0.157
*POST*FIN46_OCF*	0.515	0.001	0.139	0.319
SIZE	-0.010	0.050	-0.013	0.001
MB	0.045	<0.0001	0.046	<0.0001
Adj. R^2	28.25%		28.87%	
N	705		751	

Table 25 provides the regression results of the following model:

$$Investment_{i,t} = b + \eta_1 POST + \eta_2 FIN46 + b_1 OCF_{i,t} + \eta_3 FIN46 * OCF_{i,t} + \eta_3 POST * OCF_{i,t}$$
$$+ \eta_3 POST*FIN46 * OCF_{i,t} + b_2 MB_{i,t} + b_3 Size_{i,t} + \varepsilon_{i,t,} \tag{11}$$

The test sample includes firms having VIEs affected by FIN 46 (group 1 and 2). The control sample includes the matched pairs of FIN 46 firms.The whole sample is partitioned into two groups: constrained group and unconstrained group. I construct an index following Kaplan and Zingales (1997) and Lamont et al. (2001) by using the following model:

$$KZindex = -1.002*CashFlow + 0.283*Q + 3.139*Leverage - 39.368*Dividends - 1.315*CashHoldings$$

I assign the top (bottom) two quartiles as the financial constrained (unconstrained) group.

The dependent variable is *Investment* measured as the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by lagged total assets. *OCF* is operating cash flow scaled by lagged total assets. *MB* is market value of equity divided by total assets, which is a proxy for Tobin's Q.

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APPENDIX

Variable Definitions

Investment: the sum of research and development expenditure, capital expenditure, and acquisition expenditure less cash receipts from sale of property, plant, and equipment scaled by beginning total assets

SIZE: the log of total assets

MB: market value of equity divided by total assets

Tangibility: property, plant and equipment divided by total assets

K-structure: long-term debt divided by the sum of long-term debt and the market value of equity

CFOsale: operating cash flow divided by sales

Slack: cash divided by property, plant and equipment

Dividend: indicator variable, 1 if the firm paid a dividend, 0 otherwise

OPCycle: operating cycle, the sum of 365 divided by inventory turnover and 365 divided by receivable turnover

Loss: indicator variable, 1 if net income before extraordinary items is negative, 0 otherwise

ROA: income before extraordinary items divided by average total assets

Leverage: total debts divided by total assets

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