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Moving towards principles-based accounting standards: The impact of the new revenue standard on the quality of accrual accounting

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MOVING TOWARDS PRINCIPLES-BASED ACCOUNTING STANDARDS: THE IMPACT OF THE NEW REVENUE STANDARD ON THE QUALITY OF ACCRUAL ACCOUNTING

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I hereby declare that this PhD dissertation is my original work
and it has been written by me in its entirety.
I have duly acknowledged all the sources of information
which have been used in this dissertation.

This PhD dissertation has also not been submitted for any degree
in any university previously.

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Moving towards Principles-Based Accounting Standards: The Impact of the New Revenue Standard on the Quality of Accrual Accounting

Huiyu HE[†]

Abstract

The new revenue standard (ASU 2014-09, codified in ASC 606 and ASC 340-40) establishes a comprehensive framework on accounting for contracts with customers and replaces most existing revenue recognition rules. The new guidance removes the inconsistencies and weaknesses of legacy guidance, while is more principles-based and requires more managerial judgements. Using as-reported data from structured filings to construct aggregate accruals that are potentially affected by the new revenue standard (i.e., sales-related accruals), I find that the new revenue standard increases the quality of sales-related accruals, as measured by future cash flow predictability. The increased cash flow predictability comes not only from the guidance on contract revenue (ASC 606) but also from the guidance on contract costs (ASC 340-40). The effects concentrate among firms conducting long-term sales contracts, especially over longer forecast horizons. Further analysis shows that the new revenue standard also increases the combined information content of financial statements and the capital market efficiency. However, the discretion under the new standard opens avenue for earnings management when firms face strong manipulation incentives.

Keywords: revenue recognition, sales commissions, accruals, principles-based standard, FASB, cash flow predictability, earnings management, relevance, accrual anomaly.

Data Availability: Data are available from public sources identified in the paper.

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1. Introduction

In 2014, the FASB published the new revenue standard (ASU 2014-09, codified in ASC 606 and ASC 340-40), which is one of the biggest change in accounting standards in recent years.[1] It establishes a comprehensive framework that supersedes most existing industry-specific and transaction-specific revenue accounting rules (ASC 606).[2] Due to the matching principle associated with revenue recognition, the update also introduces comprehensive guidance on accounting for contract costs (ASC 340-40). The main purpose of the new revenue standard is to provide a robust framework that removes inconsistencies and weaknesses of legacy revenue rules, aligns revenue recognition with underlying economics, and remains relevant as market and transactions evolve. However, the additional professional judgements required by the new revenue standard could expose companies to increased level of errors and frauds. In this paper, I investigate whether the new revenue standard increases the quality of accrual accounting, achieving its stated objective.

I conduct the empirical analysis using a sample of U.S. public firms that adopted the new revenue standard between 2017 and 2019. The new revenue standard has different impacts on different firms, depending on the sales contract terms and the legacy rules. I use the transition adjustment of retained earnings and 10% of net income as the materiality threshold to identify firms that are materially affected (i.e., treatment firms) versus those that are not (i.e., control firms). The revenue recognition guidance and the related matching principle affect most operating accruals, including but not limited to accounts receivable, deferred revenue, inventory, prepaid expenses, etc. I focus on accruals that are potentially affected by the new

[1] The new revenue standard, ASU 2014-09, introduces comprehensive guidance on revenue from contracts with customers, which is codified in ASC 606, and comprehensive guidance on costs incurred to obtain or fulfil contracts with customers, which is separately codified in ASC 340-40. Unless otherwise specified, I use "ASU 2014-09", "ASC 606," and "the new revenue standard" interchangeably in this paper, all of which stand for the new guidance introduced by the new revenue recognition project.

[2] The standard excludes from its scope the accounting for insurance contracts, leases, financial instruments, and certain other agreements that are within the scope other GAAP guidance.

revenue standard, which exclude non-operating accruals, other unaffected operating accruals, and income tax-related accruals. I label the aggregate of this type of accruals as "sales-related accruals". Isolating sales-related accruals rules out the confounding effects from tax reforms and changes of other accounting standards. The transition adjustment of retained earnings and accruals details are collected from as-reported financial statements in eXtensible Business Reporting Language (XBRL) format. To measure the quality of accruals, I use cash flow predictability for two reasons. First, predicting future cash flow is the stated objective in the conceptual framework of the Financial Accounting Standards Board (FASB, 2010) and the new revenue standard (ASC 606-10-10-1).[3] Second, cash flow predictability has high construct validity. Higher cash flow predictability unambiguously indicates higher accruals quality regardless of the types of errors in accruals, a property called convergent validity in Nezlobin et al. (2022).

I find that the new revenue standard increases the ability of sales-related accruals to predict future operating cash flow at least up to three years ahead for materially affected firms. Specifically, while the cash flow predictability of sales-related accruals of treatment firms is lower by 60% to 80% than that of control firms before the adoption of the new revenue standard, the difference in the cash flow predictability is no longer significant after the adoption of the new revenue standard. Parallel trend shows the gap closes exactly upon the adoption of the new revenue standard. Thus, the new revenue standard addresses the deficiency of legacy guidance

[3] FASB 2010, p.1: "The objective of general purpose financial reporting is to provide financial information about the reporting entity that is useful to existing and potential investors, lenders, and other creditors in making decisions about providing resources to the entity. […] Investors', lenders', and other creditors' expectations about returns depend on their assessment of the amount, timing, and uncertainty of (the prospects for) future net cash inflows to the entity. Consequently, existing and potential investors, lenders, and other creditors need information to help them assess the prospects for future net cash inflows to an entity."
ASC 606-10-10-1: "The objective of the guidance in this Topic is to establish the principles that an entity shall apply to report useful information to users of financial statements about the nature, amount, timing, and uncertainty of revenue and cash flows arising from a contract with a customer."

and results in a "catch-up" improvement for treatment firms. Further disaggregation of accruals shows that the increased cash flow predictability not only comes from the revenue guidance, which is codified in ASC 606, but also comes from the guidance on costs incurred to obtain or fulfil customer contracts, which is separately codified in ASC 340-40. In addition, by separating the treatment firms into firms that mainly conduct long-term versus short-term sales contracts, I find that the effect concentrates among firms conducting long-term sales contracts, especially for cash flow predictability beyond one year.

I conduct three sets of additional tests. First, certain information deferred to be recognized in earnings can be captured by the balance sheet items, such as deferred revenue (Srivastava, 2014). Therefore, in parallel to the net income decompositions, I decompose the net assets into net operating assets related to sales, other net operating assets and net financial assets, and examine the combined explanatory power of net income decompositions and net assets decompositions for future operating cash flows (Barth et al, 2012; Nezlobin et al., 2022). The results show that part of the cash flow predictability captured by the balance sheet items under legacy guidance is more timely incorporated in earnings under the new revenue standard. Furthermore, since accruals under the new revenue standard contain information that had never been recognized before, such as unbilled receivables and capitalized sales commissions, the overall explanatory power of financial statements for future operating cash flows increases.

Second, even though the results show that managers communicate firm performance more timely and accurately on average, following the new revenue standard, they might use the discretion under the new guidance to manipulate accruals when they face strong incentives. I specifically focus on cases where firms gain additional judgements from the new guidance and just meet or beat earnings targets and find that these firms have higher residual sales-related accruals after the adoption of the new revenue standard. This result indicates that more managerial judgements and estimations under the new revenue standard also open the avenue

of earnings management, which underlines the importance of recent regulator's effort on monitoring earnings management, such as the "EPS initiative".[4]

Lastly, I conduct the value relevance and accrual anomaly tests to provide insights into the capital market consequence of the new revenue standard. The results show that the value relevance of sales-related accruals increases while the accrual anomaly associated with sales-related accruals disappears after the adoption of the new revenue standard. This indicates that investors could, to a certain extent but not fully, understand the low quality of sales-related accruals under the legacy guidance, and this inefficiency is removed when the quality of sales-related accruals increases after the adoption of the new revenue standard.

I conduct a series of robustness tests. First, I separate materially affected firms into software and non-software firms, given that software firms compose a major affected group. The quality of sales-related accruals increases for both groups of firms. The findings also show that the accruals quality was lower for software firms under legacy guidance, and the new revenue standard has a larger catch-up effect for software firms than for non-software firms. Second, the results are robust to using multiple matching methods that balance the composition of treatment and control groups. Third, the results are robust if I decrease the materiality threshold that identifies treatment firms from 10% to 5% or 1%.

My paper has three contributions. First, it is the first study that examines the impact of the new revenue standard on the quality of accrual accounting comprehensively. Existing studies on the new revenue standard either focus on the indirect consequences such as liquidity and analyst forecasts (Ferreira, 2020; Ahn et al., 2021; Hao and Pham, 2022), or study the disclosure or presentation change rather than the measurement change (Hinson et al., 2022; Du

[4] The EPS Initiative is a risk-based data analytics program that flags companies suspected of earnings management and is used by SEC in several recent regulatory actions. See details in https://sfmagazine.com/post-entry/may-2022-the-secs-eps-initiative/

et al., 2022), or examine a specific rule change on selling-price estimates in the software industry (Choi et al., 2022). Because the measurement and recognition change is one of the most important changes of the new revenue standard, direct evidence of its effects on accrual accounting quality is a key input for the standard setter to conduct post-implementation review.[5]

Second, because of the principles-based feature of the new revenue standard, this study contributes to the debate over principles-based versus rules-based accounting system. Existing empirical studies on this topic rely on text-based measures to quantify the rules-based orientation of accounting standards on different transactions (Donelson et al., 2012; Folsom et al., 2017). However, the text-based measures cannot disentangle the properties of accounting standards and the characteristics of the underlying transactions. My study holds underlying transactions with customers consistent and study the effect of accounting treatment becoming more principles-based, which is not subject to the above concern.

Lastly, the paper identifies a measurement issue with operating accruals and provides a solution of using as-reported data to fix the error. Specifically, for previous studies that use Compustat approach, *– (recch + invch + apalch + txach + aoloch)*, to calculate operating accruals, they systematically ignore some categories of operating accruals aggregated in *fopo* and *dpc* (Dechow and Dichev, 2002; Ball and Nikolaev, 2021). The ignored accruals include bad debt provision, amortization of contract acquisition costs, amortization of deferred revenue, etc. This measurement error can significantly affect the empirical results of studies using operating accruals.

[5] The FASB is currently conducting post-implementation review for ASU 2014-09. https://fasb.org/Page/PageContent?PageId=/pir/pir-projects.html&bcpath=ff#2014-09

2. Institutional background

Revenue recognition for contracts with customers was rules-based under previous US GAAP, which was a legacy of voluminous guidance and interpretations published by multiple standard-setting bodies in the history. Separate rules were scattered in dozens of documents.[6] In 2009, Financial Accounting Standards Board (FASB hereafter) released the FASB Accounting Standard Codification, which compiles all authoritative accounting literature and groups them into topics and subtopics in one single repository. Despite the easier reference under the FASB codification, each industry still has its own guidance to tackle industry-specific issues about revenue recognition. For example, ASC 985-605 specifies accounting guidance for software contracts.[7]

There are several problems with the legacy rules-based revenue standards. First, rules-based guidance has many restrictions based on bright lines or concrete evidence that may prevent firms from communicating relevant information and facilitate transaction structuring. Second, voluminous rules created over many years by different standard-setting bodies

[6] The followings are some examples: The guidance with prefix "SFAS" includes Statements of Financial Accounting Standards issued by FASB, such as No.13 Accounting for Leases, No.45 Accounting for Franchise Fee Revenue, No.48 Revenue Recognition When Right of Return Exists, and No.49, No.50, No.51, No.66 etc.
The guidance with prefix "SOP" includes Statements of Position issued by AICPA, such as No.81-1 Accounting for Performance of Construction-Type and Certain Production-Type Contracts, No.91-1 and No.97-2 Software Revenue Recognition.
The guidance with prefix "EITF" is issued by Emerging Issues Task Force, including No.00-21 and No.08-1 Revenue Arrangements with Multiple Deliverables, No.00-22 Accounting for "Points" and Certain Other Time-Based or Volume-Based Sales Incentive Offers, and Offers for Free Products or Services to Be Delivered in the Future, No.01-9 Accounting for Consideration Given by a Vendor to a Customer, and No.08-9, No.95-1, No.95-4, No.99-19, etc.
The guidance with prefix "FTB" includes FASB Technical Bulletin, such as No.90-1 Accounting for Separately Priced Extended Warranty and Product Maintenance Contracts.
The guidance with prefix "SAB" includes SEC Staff Accounting Bulletin, such as Topic 13 Revenue Recognition, which combines the content of SAB 101 and SAB 104.
The guidance with prefix "ASU" includes Accounting Standard Updates issued by FASB, such as No.2009-13 Multiple Deliverables Revenue Arrangements, No.2009-14, Certain Revenue Arrangements That Include Software Elements.

[7] The FASB codification uses an index system to codify and organize the U.S. GAAP for ease of reference. For example, ASC 605 refers to the general guidance for revenue recognition under legacy U.S. GAAP. ASC 605-15, ASC 605-25 etc. are subtopics that deal with different types of sale transactions. ASC 985 refers to industry-specific guidance for software contracts. ASC 985-605 refers to industry-specific guidance on revenue recognition for software contracts. The accounting standard updates (i.e., ASUs) communicate changes to the FASB Codification and will be codified in the codification. In the case of the new revenue standard, ASU 2014-09 is codified in ASC 606 and ASC 340-40.

inevitably contain inconsistencies. Third, the speed of new rule establishment cannot catch up with the speed of transaction evolvement. Given these challenges, FASB planned to develop a comprehensive revenue recognition guidance. The revenue recognition project was added to its agenda as early as 2002. After a decade-long discussion and revision, the final standard was released in 2014 (ASU 2014-09) and was codified in ASC 606 and ASC 340-40.

The new revenue standard establishes a comprehensive framework that can be applied to accounting for contracts with customers in a broad range of industries and transactions. It replaces the legacy ASC 605 and various industry-specific revenue guidance. The core principle of ASC 606 is that the entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To support the core principle, the ASC 606 establishes a five-step model to account for contracts with customers and provides guidance for each step.

Step 1 is to identify the contract with the customer. The main purpose of this step is to ensure the contract has commercial substance. Step 2 is to identify the performance obligations in the contract, which influences how firms identify the distinct goods or services promised in the contract. Step 3 is to determine the transaction price. The most significant change introduced by Step 3 is about variable consideration. The legacy guidance delays revenue recognition until price is "fixed or determinable" (SAB Topic 13).[8] ASC 606 provides a single model for estimating all types of variable consideration, such as price concessions, incentives, performance bonuses, etc. It allows variable consideration to be included in the transaction price and recognized in revenue to the extent that significant future downward adjustments will probably not occur (commonly referred to as "constraint"). Step 4 is to allocate the transaction

[8] The legacy industry- and transaction-specific guidance only covers some forms of variable or contingent consideration. For example, ASC 605-15-25 (formerly FAS 48) provides guidance on determining the amount of revenue to recognize on sales of products when a right of return exists, and ASC 605-35 (formerly SOP 81-1) provides measurement guidance on construction- and production-type contracts.

price to the performance obligations in the contract. The most significant changes in this step are the removal of "objective price constraint", which requires observable stand-alone prices to be used in allocating the total transaction price and delays the revenue recognition otherwise, and the removal "contingent revenue cap", which caps the price allocated to the delivered items at the amount not contingent on the delivery of additional items. Under the new revenue standard, firms are allowed to use their own subjective estimate of stand-alone selling price in the absence of external market price. They are also allowed to recognize contingent revenue and record the contingent part in an account called "contract assets". Step 5 is to recognize revenue when (or as) the entity satisfies a performance obligation. In this step, the new revenue standard shifts from a risks-and-rewards approach to a control-based approach for determining when a good or service has been transferred to a customer. It provides guidance to determine whether a performance obligation is satisfied over time or at a point in time, which was absent under legacy standards and can cause some firms to change their revenue recognition from at a point in time to over time or vice versa.

Finally, although the initial intent of the FASB was to create a standard on revenue, due to the matching principle that is closely associated with revenue recognition, the FASB also introduces guidance on accounting for costs of obtaining a contract within the scope of ASC 606 and costs of fulfilling a contract that are not within the scope of another standard (i.e., ASC 340-40). The most important change of this guidance is accounting for costs of obtaining a contract, which are usually in the form of sales commissions.[9] Expensing such costs was mostly used under legacy guidance. The new standard requires firms to capitalize the incremental costs of obtaining a contract if they are expected to be recovered. The amortization period of the contract acquisition costs can be longer than the initial contract period and include the expected

[9] In this paper, I use contract acquisition costs, costs of obtaining customer contracts or sales commissions interchangeably.

contract renewals if the costs incurred upon renewal are not commensurate with those incurred at contract initiation (Deloitte., 2020). I provide detailed examples of measurement changes brought by the new revenue standard in Online Appendix D.

3. Related literature and hypothesis development

3.1 Related literature

My paper relates to two streams of accounting literature. The first stream of literature studies the impact of historical and new revenue recognition standards. Studies on historical revenue recognition standards generally find that stricter rules of revenue recognition restrict earnings management but also decrease earnings informativeness (e.g., Altamuro et al. 2005; Zhang 2005; and Srivastava 2014). Myers et al. (2022) study ASU 2009-13/14 (codified in ASC 605-25) that removes objective price constraint for non-software contracts and find that earnings informativeness increases when managers have more discretion in estimating the stand-alone prices of deliverables. However, they only find weak evidence of more earnings management for opaque firms in the post-adoption period.

Unlike the past changes on specific rules, the new revenue standard establishes a single comprehensive framework and shifts the mind-set of revenue recognition from using a single list of criteria to following the five-step model. Besides removing bright lines, the new revenue standard also fills voids and removes inconsistencies in legacy guidance. The implementation and enforcement environment can also change for the new revenue standard. Therefore, it is unclear whether the previous results can be simply extrapolated to the current situation. As for studies on the new revenue standard, earlier evidence usually focuses on indirect consequences, such as liquidity (Ferreira, 2020), comment letters (Ahn et al., 2021), analyst forecasts (Hao and Pham, 2022). The results are mixed for these studies, possibly due to imperfect identification strategies and the confounding effects from concurrent tax reforms and accounting standard changes.

The second stream of literature is related to the debate over rules-based versus principles-based accounting standards. Early evidence on the influence of principles-based standards on firms' financial reporting choices comes from experimental (Nelson, 2003; Jamal and Tan, 2010; Agoglia et al., 2011) and theoretical studies (Dye and Sridhar, 2008). Generally, those studies conclude that there is a trade-off between relevance and reliability on the choice between principles-based and rules-based accounting system, and the trade-off is mediated by the internal and external monitoring. Empirical studies on this debate begin after Donelson et al. (2012) develop a text-based measure to quantify the rules-based orientation of accounting standards of different transactions. Using this text-based measure, Folsom et al. (2017) find that on average firms' earnings are more informative when their standards are more principles-based while managers use the discretion provided by principles-based standards to manage earnings when they have heightened incentives to report strategically. Hribar et al. (2021) and Cheng et al. (2022) find that restricting managers' discretion through GAAP decreases the usefulness of accounting information, and makes firms adjust GAAP earnings more in voluntary disclosures and debt contracts. One problem of the text-based measures used by these papers is that the cross-transaction measures cannot disentangle the properties of standards and the characteristics of transactions. Recent studies suggest that the inherent accruals heterogeneity caused by different transactions affects accruals quality inference (Dechow et al, 2021; Ball and Nikolaev, 2021).

3.2 Hypothesis development

It is hard to predict whether the new revenue standard improves the quality of accrual accounting ex ante. First, as stated by the FASB in ASU 2014-09, the principles-based guidance can be applied to all contracts with customers regardless of industry-specific or transaction-specific fact patterns, addresses accounting for transactions uncovered by previous standards (e.g., contract modification), remains more relevant and less complex as markets and

transactions evolve. On the other hand, it can be hard to find a one-size-fit-all solution. The industry-specific rules under legacy guidance can take characteristics of different industries into consideration and reflect firms' performance better. Second, the new revenue standard is more principles-based and requires more professional judgements.[10] On the one hand, the additional professional judgment required by the new revenue recognition standard could expose companies to an increased level of fraud given the inherent opportunity for bias created by a principles-based framework (Deloitte., 2018). On the other hand, managers can use professional judgements to communicate their private information about firm performance. As claimed by SEC (2003), it is feasible for the principles-based standards to communicate relevant information without compromising the reliability, as long as the principle and implementation guidance are established clear enough for investor monitoring and regulator enforcement. Third, the effect of the new revenue standard is a joint result of accounting standard specification and its implementation and enforcement (Ball et al., 2003; Christensen et al., 2013). Firms face challenges to collect data and educate accountants in the transition to the new revenue standard (Shumsky, 2017). Auditors and regulators also need to adapt human capital and infrastructure to the new revenue standard. Although FASB already deferred the effective date of the new revenue standard for public firms from Dec. 2016 to Dec. 2017, it is unclear whether preparers, auditors and regulators are well-prepared for the adoption of ASC 606. Given the above considerations, I state H1 in a null format:

H1: The new revenue standard does not improve the quality of accounting accruals.

The relevance-reliability trade-off is more salient for long-term sales contract than for short-term sales contracts. For long-term sales contracts, accruals are important to eliminate

[10] For example, in the risk factors of 2018 10-K, Splunk Inc. disclosed "Under Topic 606, more estimates, judgments and assumptions are required within the revenue recognition process than were previously required. Our reported financial position and financial results may be adversely affected if our estimates or judgments prove to be wrong, assumptions change or actual circumstances differ from those in our assumptions."

the timing and mismatching problem in cash flows and communicate about firm performance timely (Dechow, 1994). However, the managerial estimation over longer horizon involves lots of uncertainty, which are susceptible to errors and bias. For example, firms have to make more judgements and assumptions when estimating the bad debt provision for contracts with extended payment period and the working progress for long-term production contracts. For short-term contracts, in contrast, the uncertainty and economic mismatch related to cash flows are relatively quickly resolved. Thus, accruals play a less important role. Since I do not make directional predication in H1, I also do not predict the direction of the effect of the new revenue standard in H2:

H2: The effect of the new revenue standard on the quality of accounting accruals is different for firms conducting long-term versus short-term sales contracts.

4. Sample, variables and research design

4.1 Sample selection and treatment firm identification

ASC 606 went into effect for U.S. publicly listed firms for fiscal years beginning after Dec. 15th, 2017, with one-year-early adoption allowed. To identify the firm-specific adoption dates, I begin with the Compustat item *acctchg* that identifies the adoption dates of accounting changes. If *acctchg* equals "ASU14-09" for a firm-year, it means that the firm adopts ASC 606 in that year. Since *acctchg* does not identify the adoption dates of ASC 606 for all firms, I supplement the data with a report issued by the Conner Group that identifies early adopters.[11] For the rest of firms whose ASC 606 adoption dates are not identified by the above two sources, they are supposed to adopt ASC 606 on the official effective date, except for emerging growth

[11] See https://www.connorgp.com/wp-content/uploads/2018/05/ASC-606-IFRS-15-SEC-Comment-Letter Disclosure-and-Early-Adopter-Study-4.30.18.pdf. The report collects the information of early adopters as of March 31, 2018, when all firms have to adopt ASC 606 in their quarterly reports.

companies (EGCs).[12] I delete firms with EGC status on the official effective date of ASC 606 because they can defer the adoption until the effective date for private firms, which can be as late as fiscal year 2020.[13] I also delete financial (SIC 6000-6999) because they have different financial statement structure and are unlikely to be affected.[14] I first keep 4 years before and after the adoption of ASC 606 for each firm. Since variables are scaled by the beginning balance of total assets, only three-year data before the adoption of ASC 606 are in the final sample.

For high-tech firms in the stage before commercialization, their operating cash flows and valuation are driven by investments instead of sales. As a result, they are usually studied separately in the literature (Francis and Schipper, 1999; Joos and Zhadanov, 2008; Barth et al, 2022). Therefore, I delete high-tech firms that had not been out of the introduction stage at the beginning of the sample period. Following Loughran and Ritter (2004) and Ritter (2022), I use the SIC industry classification to identify high-tech firms.[15] To identify the introduction stage for each firm, I use a modified definition of business operating cycle in Dickinson (2011). I describe the classification process with three examples in Online Appendix A. I require firm-years to have total assets and sales above 10 million US dollars and stock price above 1 US dollar (Ball and Nikolaev, 2021). The final sample size is 11,628 firm-years. Panel A of Table 1 shows the whole sample selection process.

[12] EGCs is a category of issuers called 'emerging growth companies' created by Jumpstart Our Business Startups (JOBS) Act. They can elect to take advantage of the extended transition provisions provided to private companies when adopting new or revised accounting standards.

[13] The original effective date of ASC 606 for private firms is the fiscal year beginning after Dec. 15th, 2018. ASU 2020-05 provides a one-year deferral for private firms to adopt ASC 606.

[14] ASC 606 does not apply to most contracts in bank and insurance industry, including insurance contracts (ASC 944) and various financial instrument arrangements, like derivatives, loans, and security investments (ASC 310, ASC 320, ASC 321, ASC 323, ASC 325, ASC 405, ASC 470, ASC 815, ASC 825, and ASC 860).

[15] High-tech firms include technology firms and biotechnology firms.
SIC of technology firms: 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3677, 3678, 3679, 3812, 3823, 3825, 3826, 3827, 3829, 3841, 3845, 4812, 4813, 4899, 7371, 7372, 7373, 7374, 7375, 7378, 7379, 3559, 3576, 7389.
SIC of biotechnology firms: 2830, 2833, 2834, 2835, 2836,8731.
The results are robust if we define high-tech firms using R&D expense following Demers and Joos (2006).

The first challenge of studying the effect of ASC 606 is to identify which firms are materially affected. The effect of ASC 606 is likely to be firm-specific. Even for firms within the same industry, they can be differently affected depending on their transactions. For example, only software firms that sell on-premise software that bundles an upfront license with post-contract support are affected by the removal of the objective price constraint in ASC 985-605. For software firms that provide subscription services, the revenue continues to be recognized over time.[16] Following prior literature, I use the transition adjustments of retained earnings to measure the materiality of the effects (Altamuro, et al., 2005; Zhang, 2005; Myers et al., 2022). Transition adjustments of retained earnings stand for the catch-up adjustments of retained earnings under the new revenue standard compared to what they would be under legacy guidance. For firms that use the full retrospective method to adopt ASC 606, they need to restate all presented periods in the adoption years' 10-K. The transition adjustment of retained earnings is defined as the restated beginning balance of retained earnings of the adoption year minus the ending balance of retained earnings of the year before adoption in the 10-K filed previously. For firms that use the modified retrospective method to adopt ASC 606, only a cumulative adjustment to the beginning balance of retained earnings of the adoption year needs to be made, while prior period amounts are not adjusted and continue to be reported under legacy guidance. The adjustment made is the transition adjustment of retained earnings for firms using the modified retrospective approach. I manually collect the transition adjustments of retained earnings from the SEC-mandated structured filings in eXtensible Business Reporting Language (XBRL) format through the XBRL US API, and clean the adjustments due to reasons other than the adoption of ASC 606, such as restatements or other accounting

[16] Another example is the sell-in versus sell-through method used in accounting for sales made through distributors. Firms with more strict return policy already adopted the sell-in method before the adoption of ASC 606 while firms using the sell-through method have to shift to the sell-in method upon the adoption of ASC 606. For details, see Online Appendix D.

changes.[17] The detailed collection process is described in Online Appendix B.1.[18] Since the transition adjustment of retained earnings is an after-tax concept, I scale it by the absolute value of the three-year-average net income (*ib*) before ASC 606 adoption. According to Eilifsen and Messier (2015), when net income is used as the benchmark, the materiality thresholds used by auditors range from 5% to 10%. I use 10% in the main tests of the paper. In the robustness tests, I also try 5% and 1%.[19] Firms materially affected by ASC 606 are treatment firms and other firms are control firms. There are 372 treatment firms and 1,554 control firms.[20]

Panel B of Table 1 shows the sample composition by industry, following the industry classification scheme updated on Ashbaugh et al. (2003).[21] I distinguish two sub-industries within the software industry following Srivastava (2014) because they are affected by the new revenue standard on different aspects. Firms in "Software-Pre-packaged Software" (SIC 7372, 7373) mainly sell on-premise software which bundles an upfront license with post-contract support, such as Windows provided by Microsoft. They are affected by the removal of the objective price constraint for multiple-deliverable contracts in ASC 985-605. Firms within

[17] XBRL is a language for electronic communication of business data that allows companies to report financial information in a structured, machine readable format. From 2009, SEC requires domestic and foreign filers using US GAAP to submit their financial reports in XBRL to the SEC's EDGAR database. XBRL US is a non-profit advocacy group to promote and support the use of XBRL in U.S. market. It provides an API to access to all XBRL filings made by U.S. publicly listed firms on EDGAR.

[18] The new revenue standard not only affects the measurement and recognition, but also affects some aspects of presentation and disclosure, as illustrated in Online Appendix D. Since the calculation of accruals and transition adjustments of retained earnings cancels out the effects of presentation change (e.g., gross v.s. net presentation), the effect of presentation change is out of the scope of this paper. For studies on the effects of presentation change and disclosure change of the new revenue standard, see Hinson et al. (2022) and Du et al. (2022).

[19] Materiality is benchmarked using the absolute value. I use average earnings to avoid temporary fluctuation of earnings. Results are robust if the net income of the year before the adoption is used as deflator.

[20] Using this firm-specific measure allows me to identify treatment firms and control firms more accurately than prior studies. For example, Ferreira (2020) uses the staggered adoption caused by different yearend dates. Ahn et al. (2021) rely on the firms' own disclosure in accordance with SAB 74 that requires firms to disclose expected impacts of pending standards. Hao and Pham (2022) study all firms in the main test and distinguish the degree of influence in cross-sectional tests based on industry classification.

[21] Specifically, I distinguish between computer and software industry. I classify SIC 3570-3579, 3670-3679 to "Computers", and SIC 7370-7374 to "Software". Within software industry, I further divide firms into two sub-industries. I classify SIC 7372 and SIC 7373 as "Software-Prepackaged Software" and SIC 7370, SIC 7371 and SIC 7374 as "Software-Programming and Data. I also correct some misclassifications in Ashbaugh et al. (2003). I reclassify SIC 3650-3669, which relates to audio and communication equipment, and SIC 3680-3699, which relates to computer and electronic peripherals like batteries from "durable manufacturers" to "computers". I reclassify SIC 4800-4899, which relates to telecommunication service, from "transportation" to "service".

"Software-Programming and Data" mainly provide service-oriented software on subscription basis, such as software as a service (SaaS) or data service. Morningstar is an example firm. For firms in this sub-industry, accounting for revenue is not materially affected by ASC 606, but sales commissions begin to be capitalized as required by ASC 340-40.[22] One third of the materially affected firms are in the software industry. Many firms in service, manufacturing and computer industries are also materially affected. Some firms in other industries are affected because of certain transactions they conduct. For example, for retailers like restaurants, they can be affected if they have franchise operations. Panel C shows the sample composition by year relative to the adoption. The sample is balanced across years except the latest year in which there are fewer observations due to data availability.

Panel D of Table 1 shows the summary statistics of the transition adjustments of retained earnings scaled by net income. The new revenue standard uses a single model to replace most legacy rules on revenue recognition. Therefore, it can either accelerate or delay the revenue (expense) recognition. On average, since the principles-based guidance contains fewer restrictions, there is a positive adjustment to retained earnings.

4.2 Constructing sales-related accruals

I focus on accruals that are potentially affected by the new revenue standard, which I call "sales-related accruals". Including other unrelated accruals would result in an error-in-variables problem that influence both coefficient estimates and level of significance (Fuller, 1987). The new revenue standard not only affects accounts receivable and deferred revenue, but also affects inventory and capitalized costs because of the matching principle. It also affects accounts like accounts payable, other assets and other liabilities because accounts aggregation

[22] SIC industry classification is based on the main business. Many software firms have a mixed operation of the two types of business. Therefore, some firms in "Software-Pre-packaged Software" also have capitalized contract acquisition costs after the adoption of the new revenue standard, as shown in Panel B of Table1.

makes them contain part of accruals affected by ASC 606.[23] To identify accounts that are affected by ASC 606, I make use of the pro forma disclosure made by some firms that compares the affected accounts under the new and legacy standards.[24] According to the FASB Taxonomy, the XBRL tags for the pro forma adjustments have the dimension name and member name of "*AdjustmentsForNewAccountingPronouncementsAxis*" and "*AccountingStandardsUpdate201409Member*" respectively, or "*InitialApplicationPeriodCumulativeEffectTransitionAxis*" and "*DifferenceBetweenRevenueGuidanceInEffectBeforeAndAfterTopic606Member*" respectively. I therefore obtain any fact with the above dimension and member names from the adoption years' 10-K in XBRL format.[25] Table 2 shows the tag (concept name) of the 20 most frequently affected balance sheet accounts.[26]

To construct sales-related accruals, I use the cash flow statement approach suggested by Hribar and Collins (2002) because it allows me to calculate accruals from operating and exclude accruals from business acquisitions and divestures. Instead of using standardized data from Compustat, I use the as-reported data from XBRL filings made by firms on EDGAR. There are two drawbacks of Compustat approach to calculate accruals. First, previous literature calculates operating accruals as $-(recch + invch + apalch + txach + aoloch)$ (Dechow and Dichev, 2002; Ball and Nikolaev, 2021).[27] However, according to Compustat Financial Statement Balancing Model (FSBM), this aggregate amount equals to *changes in operating*

[23] For example, accounts payable to suppliers is not affected by the change of accounting for contracts with customers. However, accounts payable can be an aggregate account of accounts payable to suppliers and some operating liabilities affected by ASC 606. For instance, Griffon Corp incorporates "billings in excess of costs" in its accounts payable (https://www.sec.gov/Archives/edgar/data/50725/000005072519000077/gff-20190930x10k.htm).

[24] See the example for pro forma disclosure of the adoption the new revenue standard in Figure B2.1 Online Appendix.

[25] See FASB Taxonomy viewer at http://xbrlview.fasb.org/yeti/resources/yeti-gwt/Yeti.jsp

[26] Other tags of affected accounts are often synonyms of the tags in Table 2 because firms can use customized tags with similar meaning.

[27] For a more complete list of studies that use this approach, see Table 1 of Larson et al. (2018). Even in Du et al. (2023) that use XBRL filings to construct accruals, they seem to make a comparative calculation with the Compustat approach and ignore the accruals presented above the line of *changes in operating assets and liabilities*.

assets and liabilities presented on the cash flow statement (Casey et al., 2016). This method ignores the operating accruals that are presented above the line of *changes in operating assets and liabilities*. Firms usually present provision for bad debts and inventory obsolescence reserve in this section. Sometimes, they also present amortization of contract acquisition costs and deferred revenue in this section.[28] These accruals are particularly relevant in the context of the new revenue standard. Ignoring them when calculating accruals can influence the result inference.[29] Second, Compustat data are highly aggregated. Using granular items from as-reported data allows me to calculate sales-related accruals as accurate as possible. This is important in the context of the new revenue standard, as it is likely to be confounded by other changes in tax law and standards, including Tax Cuts and Jobs Act (TCJA) and the adoption of ASC 842 on lease accounting etc. For example, during the fiscal year 2018, Microsoft recorded a provisional income tax charge of $13.7 billion related to TCJA, which is as large as the net income, 16.6 billion, of that period.[30] In Appendix 1, I describe the detailed procedure of constructing sales-related accruals by excluding non-operating accruals, operating accruals that are unlikely to be affected by ASC 606, and income tax accruals.[31]

To obtain the granular items in cash flow statements from XBRL filings, I utilize the calculation links provided in each 10-K filing. Each cash flow statement has a corresponding calculation link that describes the tree structure of it. Specifically, the net change in cash and

[28] In Compustat, provision for bad debts, inventory obsolescence reserve, and deferred revenue amortization are aggregated with other non-cash items in *fopo*, and amortization of contract acquisition costs is aggregated with depreciation of fixed assets in *dpc*, if they are presented above the line of *changes in operating assets and liabilities* in the cash flow statements. For specific examples, see Figure B2.2 in Appendix B.2.

[29] Ex ante, it is hard to predict whether the measurement errors create bias for or against my results. The ASC 606 can change the presentation of cash flow statements, and thus affect how Compustat aggregates and standardizes items. Therefore, the measurement errors can possibly correlate with the adoption of ASC 606, rather than being a random noise. For example, Figure B2.2 in Appendix B.2 shows that Compustat aggregated the unearned revenue of Microsoft in *fopo* before the adoption of ASC 606 while includes it in *aoloch* afterwards. This correction would bias for finding results. While the ignorance and aggregation of amortization of contract acquisition costs in *dpc* after the adoption of ASC 606 could work against for me to find results.

[30] For a list on concurrent changes of tax laws and accounting standards, see Online Appendix C.

[31] Although as shown in Table 2, ASC 606 affects deferred tax accounts, this is just a by-product because of the temporary tax-accounting difference introduced by ASC 606. Given the confounding effects from tax reforms and tax accounting standards, I exclude tax accruals when I construct sales-related accruals.

cash equivalents is disaggregated into net cash from operating, investing and financing activities, and the effects of foreign currency exchange rate. The net cash from operating, investing and financing activities are further disaggregated into granular components respectively. For each level of disaggregation, the calculation link also provides the mathematic relation between upper-level items and lower-level items. Therefore, I firstly disaggregate the cash flow statement into the most granular items, then obtain the value of accruals that are potentially affected by ASC 606, and lastly aggregate them according to the mathematic relationship to calculate sales-related accruals. The detailed process of disaggregating cash flow statements is in Online Appendix B.2.

4.3 Research design

I use the following model for H1:

$$CFO_{i,t+\tau} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_2 Sales\_Accruals_{i,t} \times Treat_i + \beta_3 Sales\_Accruals_{i,t} \times Post_{i,t} + \beta_4 Sales\_Accruals_{i,t} + \beta_5 CFO_{i,t} \times Treat_i \times Post_{i,t} + \beta_6 CFO_{i,t} \times Treat_i + \beta_7 CFO_{i,t} \times Post_{i,t} + \beta_8 CFO_{i,t} + \beta_9 Other\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_{10} Other\_Accruals_{i,t} \times Treat_i + \beta_{11} Other\_Accruals_{i,t} \times Post_{i,t} + \beta_{12} Other\_Accruals_{i,t} + \beta_{13} Treat_i \times Post_{i,t} + \beta_{14} Treat_i + \beta_{15} Post_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (1)$$

CFO is operating cash flows excluding discontinued operation and cash income taxes paid. For firm-years before the adoption of ASU 2016-09, excess tax benefits from stock based compensation that were included in financing cash flows should firstly be added back to calculate the operating cash flow after tax. Then I add back cash income taxes paid to calculate operating cash flows excluding income taxes (*oancf-xidoc+txbcof+txpd*).[32] *Sales_Accruals* is sales-related accruals, the main variable of interest as defined in Appendix 1. *Other_Accruals* is the total accruals excluding sales-related accruals and tax accruals *(ibc-oancf+xidoc-txcof-*

[32] Unless otherwise specified, for all phrases containing "cash flow" in this paper, such as cash flows, cash flow predictability, operating cash flows and operating cash flow predictability, the "cash flow" in them all refers to this definition.

Sales_Accruals-Tax_Accruals). *Treat* is 1 for materially affected firms. *Post* is 1 for periods after the adoption of ASC 606. *i* stands for firms and *t* stands for fiscal years. τ ranges from 1 to 3 as the forecast horizon varies from one-year to three-year ahead. I cannot investigate forecast horizons longer than three years due to data availability. All cash flows and accruals are scaled by the beginning balance of total assets in year *t* (AT_{t-1}) and winsorized at 1% and 99%.

I use cash flow predictability to measure accruals quality because it is the asserted objective of the FASB conceptual framework (FASB, 2010) and the new revenue standard (ASC 606-10-10-1). Furthermore, cash flow predictability as an accruals quality measure has high convergent validity, which makes it superior to other accruals quality measure, such as the standard deviation of accruals residuals and earnings persistence (Dechow and Dichev, 2002). High convergent validity means the measure has consistent relationships with all types of errors in accruals (Nezlobin et al., 2022). This is particularly important in the context of ASC 606, as we do not know what the accruals error is before and after the adoption of ASC 606. However, cash flow predictability has deficiency in discriminant validity because it cannot distinguish the variation in economic fundamentals and the variation in accruals errors. Difference-in-Difference design of Model (1) helps alleviate this concern. Furthermore, I control for *CFO* in the Model (1). The coefficients on *CFO* and its interactions help me to determine whether there is economic change and whether the change is different for treatment and control firms.

Ball and Nikolaev (2021) suggest researchers to consider cross-sectional heterogeneity in how earnings and cash flows relate to future cash flows. Since the sample period is short, it is unrealistic to conduct firm-level regressions or include firm fixed effects. Specifically, using lagged dependent variable as a regressor in panel data is subject to Nickell bias (i.e., Dynameic panel problem, Nickell, 1981). The bias is severe if within-fixed-effect dimension is relatively

small.[33] To make a trade-off between controlling for cross-sectional heterogeneity and limiting the Nickell bias, I include industry fixed effects at the 3-digit SIC level. To adjust for the correlation of standard errors within industry, I cluster the standard errors at 3-digit SIC level.

Panel A of Figure 1 shows how the cash flow predictability of sales-related accruals can be estimated using the coefficients in Model (1), for treatment and control firms before and after the adoption of the new revenue standard. Specifically, β_1 captures the change from pre-ASC 606 to post-ASC 606 in the cash flow predictability of sales-related accruals for treatment firms relative to that of control firms. β_2 captures the difference of cash flow predictability of sales-related accruals for treatment firms and control before the adoption of the new revenue standard. Therefore, $\beta_1+\beta_2$ captures the difference after the adoption of the new revenue standard.

As an extension to H1, I disaggregate sales-related accruals into accruals affected by ASC 606 and accruals affected by ASC 340-40. Specifically, the latter refers to the accruals from capitalization and amortization of contract acquisition costs. Contract acquisition costs, also known as sales commissions, are capitalized under the new revenue standard but were expensed under legacy guidance. [34,35] The former refers to other sales-related accruals exclude accruals from contract acquisition costs. The model is show as below:

[33] For reasonably large values of T, the asymptotic value of bias approximates $-(1+\rho)/(T-1)$ in the simplest case where the regressors only include lagged dependent variable and fixed effects. ρ stands for the correlation coefficient and T stands for the within-fixed-effect dimension. When one-year-lead operating cash flow is used as the dependent variable and firm fixed effect is included, the within-firm dimension has only 6 years (i.e., T=6). If the persistence of *CFO*, ρ, is 0.5. The asymptotic value of bias is -0.3. If other regressors are correlated with the lagged dependent variable, their coefficients are also seriously biased.

[34] ASC 340-40 also affects accounting for costs of fulfilling customer contracts that are not within the scope of other standards. However, compared to the effect on costs of obtaining customer contracts, the effect is limited and hard to be identified.

[35] In limited cases (21 firms in my sample), firms capitalized the direct contract acquisition costs and amortized them over the contract period under legacy guidance. For these cases, the new revenue standard expands the scope of the costs to be capitalized, and extends the amortization period, which also results in large increase in the capitalized sales commissions (4% of assets before v.s. 9% of assets after). Specifically, the new standard requires capitalized costs to be incremental rather than both direct and incremental under legacy guidance. The amortization period can be extended to the whole "period of benefit", including expected contract renewals. See Salesforce in Online Appendix D for example. In regression, I treat these firms have zero accruals from contract acquisition costs before the adoption of ASC 606. Our results are robust if we delete these firms.

$$CFO_{i,t+\tau} = \beta_0 + \beta_1 Sales\_Accruals\_ASC340_{i,t} + \beta_2 Sales\_Accruals\_ASC606_{i,t} \times Treat_i \times Post_{i,t} + \beta_3 Sales\_Accruals\_ASC606_{i,t} \times Treat_i + \beta_4 Sales\_Accruals\_ASC606_{i,t} \times Post_{i,t} + \beta_5 Sales\_Accruals\_ASC606_{i,t} + \beta_6 CFO_{i,t} \times Treat_i \times Post_{i,t} + \beta_7 CFO_{i,t} \times Treat_i + \beta_8 CFO_{i,t} \times Post_{i,t} + \beta_9 CFO_{i,t} + \beta_{10} Other\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_{11} Other\_Accruals_{i,t} \times Treat_i + \beta_{12} Other\_Accruals_{i,t} \times Post_{i,t} + \beta_{13} Other\_Accruals_{i,t} + \beta_{14} Treat_i \times Post_{i,t} + \beta_{15} Treat_i + \beta_{16} Post_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (2)$$

Sales_Accruals_ASC340 is the accruals from capitalization and amortization of contract acquisition costs. Since only treatment firms have material amount of this type of accruals in post-adoption period, I do not interact *Sales_Accruals_ASC340* with *Treat* and *Post*. *Sales_Accruals_ASC340* is the change of net capitalized contract acquisition costs, which I manually collect from firms' 10-K filings.[36] See Appendix 1 for the detailed process of calculation. *Sales_Accruals_ASC606* is sales-related accruals exclude *Sales_Accruals_ASC340*. Panel B of Table 1 shows the industry distribution of treatment firms that have material capitalized contract acquisition costs (i.e. capitalized contract acquisition costs in the adoption year divided by three-year-average income is greater than 10%). Nearly half of the treatment firms are materially affected by ASC 340-40. The affected firms are mainly in the software and service industry.

To test H2, I firstly need to distinguish firms conducting long-term versus short-term sales contracts. For this purpose, I utilize the practical expedients provided by the new revenue standard to short-term sales contracts, supplemented by the current and noncurrent classification of contract assets and liabilities. Specifically, the new revenue standard allows firms to not disclose the remaining performance obligation if the contract duration is shorter than one year. It also allows firms to expense the contract acquisition costs directly if the original amortization schedule is shorter than one year. Firms usually utilize these expedients.

[36] I do not use cash flow statements to construct *Sales_Accruals_ASC340* because it is not always separately presented on the cash flow statements.

Furthermore, Table 2 shows that the new revenue standard influence noncurrent contract assets (liabilities) of long-term sales contracts. Therefore, firms with large amount of disclosed remaining performance obligation, capitalized contract acquisition costs and noncurrent contract assets (liabilities) tend to conduct more long-term sales contracts. For the detailed process to classify two types of firms, see Appendix 1.[37]

With regard to the empirical model for H2, I use a similar model to Model (1). The only difference is that there are two treatment groups in the model. One is treatment firms conducting long-term sales contracts and the other is treatment firms conducting short-term sales contracts. For brevity, I do not write the complete model for H2.

4.4 Descriptive statistics

Panel A of Table 3 shows the mean of CFO_t (0.112) is slightly larger than the value of *CF* (0.078) in Ball and Nikolaev (2022), partly due to the exclusion of cash income taxes paid and the exclusion of firms at introduction stage with large cash outflow. $Sales\_Accruals_t$ has large variation across firm-years. The mean of sales-related accruals is around 0.5% of total assets but the largest value can be as large as 18.2% of total assets. $Other\_Accruals_t$ is usually negative because its major component is depreciation. For $Sales\_Accruals\_ASC340_t$ in Table 3, I only summarize it for firm-years with non-zero capitalized contract acquisition costs for more meaningful presentation. The accruals from capitalization and amortization of contract acquisition costs are quite large, with mean around 0.5% of total assets. Panel B of Table 3 shows the firm characteristics of treatment and control firms before the adoption of ASC 606. The treatment firms and control firms have similar firm size and operating cash flow. However, treatment firms have slightly lower accruals. Lower

[37] I do not use the operating cycle defined in Dechow (1994) because I focus on the contract duration that is specific to the new revenue standard, instead of the whole operating cycle. The inventory and accounts payable turnover are not related to the new revenue standard. The sales turnover cannot perfectly capture the contract duration. It measures firms' credit policy that is related to but not equal to the contract duration, and it ignores the deferred revenue in the long-term contracts.

sales-related accruals of treatment firms can be partly due to the restrictions of legacy rules-based standards.

5. Empirical Results

5.1 Results for the main hypothesis H1

Panel A of Table 4 shows the results for H1. The coefficients on $Sales\_Accruals_t \times Treat \times Post_t$, the variable of interest, are positive and significant in all three columns. This result indicates that the new revenue standard increases the ability of sales-related accruals to predict future operating cash flows at least up to three years ahead for materially affected firms. More importantly, in terms of the economic magnitude, the cash flow predictability of sales-related accruals of treatment firms is lower by 60% to 80% than that of control firms before the adoption of ASC 606, as shown by the significantly negative coefficients on $Sales\_Accruals_t \times Treat$.[38] However, the new revenue standard results in a "catch up" effect. The sum of the coefficients on $Sales\_Accruals_t \times Treat \times Post_t$ and $Sales\_Accruals_t \times Treat$ is not significant, indicating that the cash flow predictability of sales-related accruals of treatment firms and that of control firms are of no difference after the adoption of ASC 606. Panel B of Figure 1 illustrates this change for one-year-ahead cash flow predictability of sales-related accruals visually. In Panel C of Figure 1, I disaggregate *Post* into different years relative to the adoption of the new revenue standard. It shows that the significant difference of cash flow predictability of sales-related accruals disappears upon the adoption of the new revenue standards and afterwards. This eliminates the concern that the results are driven by the trend existing before the adoption of the new revenue standard.

There is no significant change on the cash flow predictability of cash flow itself, for both treatment and control firms, alleviating the concern that the increase in the cash flow

[38] -0.453/0.719=-0.63; -0.543/0.652=-0.88; -0.534/0.730=-0.73

predictability of accruals is due to changes in the underlying economics. Other accruals unaffected by ASC 606 usually contain non-operating accruals that have low cash flow predictability. Therefore, the coefficients on $Other\_Accruals_t$ are quite small and even negative, consistent with Ball and Nikolaev (2022). There is also an increase of cash flow predictability for other accruals but it is not significantly different for treatment and control firms. This can be due to other concurrent accounting standard changes, such as ASC 842 on lease, ASU 2018-15 on cloud computing implementation costs, and ASU 2019-02 on television content production costs. Investigating the exact reason is out of the scope of this paper.

In Panel B of Table 4, the coefficients on $Sales\_Accruals\_ASC340_t$ are positive and significant, indicating that accruals generated from sales commission capitalization and amortization under ASC 340-40 convey relevant information about future cash flows. This result provides empirical support for the early call of Amir and Lev (1996) on sales commission capitalization for telecommunication firms. After excluding accruals on sales commissions, the coefficients on $Sales\_Accruals\_ASC606_t \times Treat \times Post_t$ are still significant and positive, indicating that sales-related accruals affected by ASC 606 itself are also a source of the increased cash flow predictability.

To investigate how the measurement errors from standardized and aggregate data of Compustat affect the inference of results, I calculate the most accurate counterpart of sales-related accruals using Compustat data and present the results in Table B2 of Online Appendix B. The results show that the coefficients on $Sales\_Accruals_t \times Treat \times Post_t$ are positive and marginally significant at 10%. However, the economic and statistical significances are much lower compared to those in Table 4, where more accurate accruals are constructed using as-reported data. Furthermore, as what is explained in Footnote 29, the results from Compustat data cannot be interpreted simply as improvements of accruals quality, because the

measurement error of using Compustat data can correlated with the adoption of ASC 606 and it is unknown ex ante whether the errors create bias for or against finding positive results.

5.2 Results for the hypothesis H2

Table 5 shows the results for H2 on the differential effects of the new revenue standard on firms conducting long-term versus short-term sales contracts. Panel A shows the sample distribution over the treatment status and contract horizon. Nearly half of the firms conducting long-term sales contracts are affected. The affected firms usually have more complicated contract terms, such as multiple performance obligations, or large amount of sales commissions. In contrast, less than 10% of firms conducting short-term sales contracts are affected because the revenue recognition for short term contracts is usually unambiguous under both legacy and new standards. However, the number of firms that conduct short-term sales contracts and are affected by ASC 606 is not small, at around 100. Some of these affected firms make sales through distributors and used the sell-through method for revenue recognition before the adoption of ASC 606, which defers revenue recognition until products are sold to the end customers. After the adoption of ASC 606, they have to change to the sell-in method under which they recognize revenue when products are delivered to distributors and record sales return reserve at the same time. Another affected group with short-term contracts consists of firms that change revenue recognition from point in time to over time because ASC 606 does not provide any practical expedient that allows contracts with a short duration to be simply defaulted to point-in-time revenue recognition.

Panel B of Table 5 shows the regression results after the treatment firms are divided into firms conducting long-term versus short-term sales contract. For firms conducting long-term sales contracts, the catch-up improvements on the cash flow predictability extends to at least three-year-ahead cash flows prediction. However, for firms conducting short-term sales contracts, the ambiguity and uncertainty around revenue recognition are limited and can be

quickly resolved. The legacy standard did not have much deficiency. The results confirm the predication. For one-year-ahead cash flow prediction in Column (1), the coefficient on $Sales\_Accruals_t \times TreatShort$ is significantly negative, and the coefficient on $Sales\_Accruals_t \times TreatShort \times Post_t$ is close to be significant at 10%, with the sum of two not significantly different from zero. The corresponding coefficients in Column (2) and Column (3) are not significant. This means that for firms conducting short-term contracts, the deficiency of legacy guidance and the improvements from the new guidance concentrate in short horizon within one year. The results are conceptually consistent with the conclusion in Dechow (1994), which states that accrual accounting is more superior to cash-basis accounting for firms with longer operating cycle when measuring performance.

6. Additional tests

6.1 The combined explanatory power of financial statements

The process of accrual accounting not only generate accruals that alleviate the timing and mismatching problem of cash flows in measuring firm performance, but also results in assets and liabilities recognized on the balance sheet. Some information not captured by earnings under legacy guidance can be reflected through balance sheet components. For example, when the legacy rule delays the revenue recognition for customer payments, the delayed revenue is reflected as deferred revenue (Srivastava, 2014). To investigate the change of the combined information content of the financial statements before and after the adoption of ASC 606, I decompose net assets into net operating assets related to sales, other net operating assets and net financial assets, in parallel to the net income decompositions made in Section 4. Then, I include both net income decompositions and net assets decompositions in the model of forecasting future cash flows, as shown in Model (3). *NOPA_Sales* is defined in parallel to *Sales_Accruals*. It includes the balance sheet accounts in Table 2 except those related to income tax. *NOPA_Other* denotes other net operating assets, which includes fixed asset investments,

equity-method investments, and other net operating assets that are unlikely to be affected by ASC 606, such as pension assets (liabilities). *NFA* is the net amount of financial assets (e.g., cash and short-term security investments) minus financial liabilities (e.g., bond and loan).[39, 40] The detailed definitions are in Appendix 1. The granular balance sheet data is obtained from XBRL filings following the similar procedure of collecting data from cash flow statements. The detailed process is in Online Appendix B.5. The model to evaluate the combined information content is shown as below:

$$CFO_{i,t+\tau} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} + \beta_2 CFO_{i,t} + \beta_3 Other\_Accruals_{i,t} + \beta_4 NOPA\_Sales_{i,t} + \beta_5 NOPA\_Others_{i,t} + \beta_6 NFA_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (3)$$

All variables in Model (3) are scaled by the beginning balance of total assets at year *t* and winsorized at 1% and 99%. Model (3) is estimated for treatment and control firms separately both in the pre-adoption period and the post-adoption period of ASC 606. I construct two measures of combined information content following prior literature. The first is the Incremental Adjusted R^2, which is the difference between the adjusted R^2 from Eq.(3) and the adjusted R^2 from the nested version of Eq.(3) that only includes $CFO_{i,t}$ and industry fixed effects, following Barth et al. (2012). Larger Incremental Adjusted R^2 means higher combined information content. The second is the Relative Information Content developed and validated in Nezlobin et al. (2022), which is (1-adjusted R^2) from Eq.(3) divided by (1-adjusted R^2) from the nested version of Eq.(3) that only includes $CFO_{i,t}$ and industry fixed effects. Smaller value of it means higher combined information content. The difference-in-difference estimators of

[39] The classification of net operating and financial assets is generally consistent with the classification of cash flow statements on operating, investing and financing activities. Specifically, except for fixed assets investment and equity-method investments that are classified as other net operating assets following Richardson et al. (2005), the assets and liabilities related to financing activities and investing activities in cash flow statements are classified as financial assets and liabilities.

[40] I separate net operating assets based on whether they are affected by ASC 606, instead of using the current and non-current concepts in Richardson et al. (2005) because ASC 606 can affect both current and non-current net operating assets as shown in Table 2.

the two measures reflect the effect of the new revenue standard on the combined information content of financial statements for treatment firms relative to that for control firms.

Table 6 presents the results. The OLS estimates of the coefficients on *Sales_Accruals* and *NOPA_Sales* for each subgroup are presented. To test the significance of the difference-in-difference Incremental Adjusted R^2 and Relative Information Content, I conduct a bootstrapping procedure following Barth et al. (2012).[41] The *NOPA_Sales* of treatment firms has significantly negative association with future cash flows before the adoption of ASC 606, and the association becomes insignificant after the adoption.[42] This indicates that certain information not recognized in earnings under legacy guidance was captured by the balance sheet components, such as deferred revenue. However, since the accruals after the adoption of ASC 606 contain the information that had never been recognized on neither income sheet nor balance sheet before, such as unbilled receivables and capitalized sales commissions, the combined explanatory power of financial statements on future cash flow still significantly increases. The insignificant results for three-year-ahead cash flow prediction can be due to low power, only one-year observations in the post-ASC 606 period when the prediction horizon is three years.

6.2 Earnings management when firms face pressure to meet or beat earnings targets

Although the main results show that sales-related accruals are of higher quality on average under the new revenue standard, firms might make use of the discretion provided by the principles-based standard to manage earnings when they face strong incentives. Firms have pressure to meet or beat salient earnings targets, such as analyst consensus, last-year earnings

[41] Specifically, I randomly assign treatment and control status to sample firms. The group size of hypothetical treatment firms and control firms is kept consistent with the actual group size of treatment firms (372) and control firms (1,554). Then I calculate the difference-in-difference Incremental Adjusted R^2 and Relative Information Content. I repeat the above procedure 1000 times and get the empirical distribution of the two estimators. Unlike the two-tailed test used for OLS results, I use one-tailed tests for the two estimators with directional prediction.
[42] Although the same pattern exists for control firms, the economic magnitude for control firms is smaller.

and the break-even point, to avoid disappointing the market (Burgstahler and Dichev 1997; Bartov et al, 2001). Therefore, I test this conjecture by investigating whether firms are more likely to manage sales-related accruals to just meet or beat earnings targets. First of all, it is important to distinguish between accruals caused by economic growth and accruals subject to earnings manipulation to avoid Type I error. For this purpose, I use the model developed by Larson et al. (2018) and apply it to sales-related accruals:

$$Sales\_Accruals_{i,t} = \alpha_0 + \alpha_1 Empgr_{i,t} + \alpha_2 Empgr_{i,t} \times NOPA\_Sales_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

There are two advantages of this model compared to Jones Model (1991). First, the growth rate is measured by the number of employee growth rate (*Empgr*) instead of sales growth rate that is endogenously changed by ASC 606. Second, it takes into account the articulation between the net operating assets related to sales (*NOPA_Sales*) and the sales-related accruals (*Sales_Accruals*). Specifically, sales-related accruals are the change of net operating assets related to sales.[43] Therefore, the growth rate in the number of employees multiplied by the beginning balance of net operating assets related to sales ($Empgr_{i,t} \times NOPA\_Sales_{i,t-1}$) captures the normal sales-related accruals caused by organic growth. This is particularly relevant within the context of the new revenue standard because it changes operating capital intensity and the normal level of accruals. For example, for firms with large deferred revenue under legacy guidance, sales growth results in increase of deferred revenue and negative accruals. After the new revenue standard accelerates revenue recognition deferred in unearned revenue before, their net operating assets related to sales turn to be positive and sales growth results in positive sales-related accruals.[44] The change of normal accruals due to revenue guidance is built into Equation (4) through the articulation between net operating assets and accruals.

[43] The empirical measures, *NOPA_Sales* and *Sales_Accruals,* can contain errors due to different classification schemes used by the balance sheet and the cash flow statement. Therefore, they can only roughly match the articulation relationship.
[44] Microsoft and Splunk are prominent examples.

Since the beginning balance of net operating assets and accruals should be accounted for under the same guidance, the adoption year of each firm is deleted in Model (4) and in the following test on meeting or beating earnings targets. *Sales_Accruals* and *NOPA_Sales* are scaled by the beginning balance of total assets, and all variables are winsorized at 1% and 99%. I estimate the Model (4) separately for treatment and control firms before and after the adoption of ASC 606. Panel B of Table 7 shows the estimation results of Model (4). Consistent with the articulation between net operating assets and accruals, the coefficients on $Empgr_{i,t} \times NOPA\_Sales_{i,t-1}$ are significantly positive. The coefficient on $Empgr_{i,t}$ is significantly negative for treatment firms before the adoption of ASC 606. This is consistent with the conclusion from H1 that the sales-related accruals under legacy guidance have poor quality of capturing economic growth. The residual sales-related accruals (*Resid_Sales_Accruals*) derived from the above model will be used in the following Model (5).[45]

I use the following OLS regression to investigate whether treatment firms are more likely to manage sales-related accruals to just meet or beat earnings targets after the adoption of ASC 606: [46]

$$MBE_{i,t} = \beta_0 + \beta_1 Resid\_Sales\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_2 Resid\_Sales\_Accruals_{i,t} \times Treat_i + \beta_3 Resid\_Sales\_Accruals_{i,t} \times Post_{i,t} + \beta_4 Resid\_Sales\_Accruals_{i,t} + \beta_5 Fit\_Sales\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_6 Fit\_Sales\_Accruals_{i,t} \times Treat_i + \beta_7 Fit\_Sales\_Accruals_{i,t} \times Post_{i,t} + \beta_8 Fit\_Sales\_Accruals_{i,t} + \beta_9 CFO_{i,t} \times Treat_i \times Post_{i,t} + \beta_{10} CFO_{i,t} \times Treat_i + \beta_{11} CFO_{i,t} \times Post_{i,t} + \beta_{12} CFO_{i,t} + \beta_{13} Other\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_{14} Other\_Accruals_{i,t} \times Treat_i + \beta_{15} Other\_Accruals_{i,t} \times Post_{i,t} + \beta_{16} Other\_Accruals_{i,t} + \beta_{17} Treat_i \times Post_{i,t} + \beta_{18} Treat_i + \beta_{19} Post_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (5)$$

[45] *Resid_Sales_Accruals* separates out the normal accruals captured by Model (4), but they are far from clean to rule out all normal accruals, indicated by the low explanatory power of Model (4). For this reason, I avoid calling it "abnormal sales-related accruals".

[46] I do not use Probit Model because the coefficient on the interaction term is hard to interpret in Probit Model.

MBE is a dummy variable with the value of one if the actual EPS just meet or beat the earnings targets by one cent and zero otherwise. The earnings targets can be analyst EPS consensus, last-year EPS and the break-even point (i.e., 0) or the combination of three.[47] *Resid_Sales_Accruals* is the residual sales-related accruals and *Fit_Sales_Accruals* is the predicted sales-related accruals from Model (4). All other variables are defined previously. See Appendix 1 of variable definitions.

Panel A of Table 7 shows the frequency of just meeting or beating earnings targets by one cent. Just meeting or beating analyst EPS consensus by one cent has the largest frequency, followed by just meeting or beating last-year EPS and just meeting or beating zero EPS. Panel C of Table 7 shows the regression results. The coefficients on $Resid\_Sales\_Accruals_t \times Treat \times Post_t$ in the first three columns, where analyst consensus, last-year EPS and zero EPS are used as the earnings target respectively, are positive but not significant. Since the T statistic decreases with decreased frequency of just meeting or beating earnings targets, that statistical power can be a factor against finding results. Therefore, I combine all three earnings targets together in Column (4), where *MBE* is one if the actual EPS just meets or beats any of the targets by one cent. I find significantly positive coefficient on $Resid\_Sales\_Accruals_t \times Treat \times Post_t$ at 5% level, indicating that treatment firms are more likely to manage accruals to just meet or beat earnings targets after the adoption of the new revenue standard.

6.3 The effect of the new revenue standard on stock market efficiency

The last set of additional tests focuses on the capital market efficiency because the ultimate goal of high-quality accrual accounting is to provide useful information to investors and increase the capital market efficiency. I conduct two types of tests. First, I investigate the change of the value relevance of accounting information before and after the adoption of ASC

[47] The stock splits and stock dividends between the actual EPS and EPS targets have been adjusted.

606. The value relevance test reflects to what extent the accounting information is used by investors in their pricing decision (Francis and Schipper, 1999). Second, I investigate the accrual anomaly before and after the adoption of ASC 606. Accrual anomaly test relaxes the assumption of semi-strong efficient market. It reflects to what extent the accruals are mispriced by investors. The models for value-relevance test and accrual anomaly test are as follows:

$$MV_{i,t} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} + \beta_2 CFO_{i,t} + \beta_3 Other\_Accruals_{i,t} + \beta_4 NOPA\_Sales_{i,t} + \beta_5 NOPA\_Others_{i,t} + \beta_6 NFA_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (6)$$

$$BHAR\_Emar_{i,t+1}\ (BHAR\_Vmar_{i,t+1}) = \beta_0 + \beta_1 Sales\_Accruals_{i,t} + \beta_2 CFO_{i,t} + \beta_3 Other\_Accruals_{i,t} + \beta_4 NOPA\_Sales_{i,t} + \beta_5 NOPA\_Others_{i,t} + \beta_6 NFA_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t} \quad (7)$$

MV_t is the market capitalization at the end of the month when 10-K is reported. $BHAR\_Emar_{t+1}$ ($BHAR\_Vmar_{t+1}$) is the abnormal buy-and-hold return over the next 12 months after 10-K is reported, where the equal-weighted (value-weighted) market return is used as benchmark. The net income and net assets decompositions are defined in Section4 and Section 6.1. Except for the stock returns, all variables are scaled by the beginning balance of total assets and winsorized at 1% and 99%. The above models are estimated for treatment and control firms for both pre-ASC 606 period and post-ASC 606 period.

Table 8 presents the results. The OLS point estimates of the coefficients on *Sales_Accruals* and *NOPA_Sales* for each subgroup are presented. To test the significance of difference-in-difference coefficient estimates of *Sales_Accruals* and *NOPA_Sales*, I conduct a bootstrapping procedure.[48] In Panel A of Table 8, the coefficient on *Sales_Accruals* significantly increases after the adoption of ASC 606 for treatment firms compared to that for control firms.

[48] Specifically, I firstly random assign treatment and control status to sample firms. The group size of hypothetical treatment firms and control firms is kept consistent with the actual group size of treatment firms (372) and control firms (1,554). Then I calculate the difference-in-difference coefficient estimates of *Sales_Accruals* and *NOPA_Sales*. I repeat the above procedure 1000 times and get the empirical distribution of them. Unlike the two-tailed test used for OLS results, I use the one-tailed test for the difference-in-difference coefficient estimates.

Furthermore, the negative coefficient on *NOPA_Sales* becomes insignificant after the adoption of ASC 606 for treatment firms. The results indicate investors can distinguish the low-quality accruals under legacy guidance to some extent and discount the information accordingly. After the new revenue standard increases accruals quality, they use accounting information more in their pricing decision.

Panel B and C of Table 8 show that sales-related accruals and the corresponding net operating assets are negatively associated with one-year-ahead abnormal returns for treatment firms before the adoption of ASC 606 and the negative association becomes insignificant after the adoption of ASC 606. This result indicates that although investors can distinguish the low-quality accruals under legacy guidance to a certain extent as shown in Panel A of Table 8, they cannot fully decipher the deficiency of legacy guidance and adjust their pricing decision perfectly.[49] After the new revenue standard removes the deficiency of legacy standard and increases accruals quality, the market becomes more efficient.

7. Robustness Tests

I conduct three sets of robustness tests. First, since one third of the materially affected firms are in the software industry, I divide the treatment firms into software firms (SIC 7370-7374) and non-software firms. Table 9 shows that the new revenue standard increases accruals quality for both software and non-software firms. However, since legacy guidance had larger deficiency for software firms on accounting for contracts with customers, the new revenue standard has larger improvements for software firms. Second, since the sample compositions of treatment firms and control firms are different, I use multiple matching methods to balance the sample composition. In Table 10, I conduct one-to-three matching between treatment firms and control firms, with and without replacement, based on the industry and firm size in the

[49] For one-year-ahead abnormal return, the sample period covers 3 years before and 3 years after the adoption of ASC 606. Therefore, different power of tests is unlikely to be the explanation for the change of significance.

adoption year.[50] Table 10 shows that the results after matching are similar to those in Table 3.[51] In Table 11, I decrease the materiality threshold to identify treatment firms from 10% to 5% and further to 1%. The results are robust, although, expectedly, the economic and statistical significance decrease correspondingly.

8. Conclusion

This paper is the first study that investigates the effects of the new revenue standard on the quality of accrual accounting comprehensively. The paper finds that the quality of the operating accruals potentially affected by the new revenue standard (i.e., sales-related accruals) significantly increases for materially affected firms after the adoption of the new revenue standard, shown as the increased cash flow predictability over forecast horizons at least up to three years ahead. The improvements of cash flow predictability concentrate among firms conducting long-term sales contracts, especially for longer forecast horizons. Although my position is not to encourage more exceptions of the standards because too many exceptions would make the standards more rules-oriented, the heterogeneous results for different contract durations provide empirical evidence to standard setters when they consider providing further practical expedients for short-term contracts. Accrual accounting generates not only the periodic accruals but also the assets and liabilities recognized on the balance sheet. This paper finds that the new revenue standard also significantly increases the combined information content of financial statements. As the quality of accrual accounting increases, investors use

[50] Specifically, for each treatment firm, I start with control firms in the same four-digit SIC industry to search for three industry peers with closest size to the treatment firm. If there are no more than three industry peers within the four-digit SIC industry, I move up to the three-digit SIC industry group. If there are no more than three industry peers within the three-digit SIC industry group, I move up to two-digit SIC group. If there is not any matched control firm within the same two-digit SIC group, the treatment firm is dropped out of the sample. I keep only the matched pairs whose size difference is within 50% of the size of the treatment firm. For matching with replacement, I allow control firms to be matched for multiple times. For matching without replacement, control firms are first matched to the treatment firms with the same narrowest SIC industry and closest size, and are not allowed to be matched to other treatment firms later.

[51] The results are also robust if I conduct one-to-one or one-to-five matching.

accounting information more in their pricing decision and the associated accrual anomaly disappears, indicating an increase of market efficiency.

Although the new revenue standard increases the quality of accounting accruals on average, I find that the more professional judgements under the new revenue standard open the avenue for earnings management when firms face high incentive to meet or beat earnings targets. This indicates that high-quality enforcement and monitoring, such as the "EPS initiative" conducted by the SEC Division of Enforcement recently, should be in place to ensure the new revenue standard to function properly.

Finally, the new revenue standard is a joint project of FASB and IASB. ASC 606 and its IFRS counterpart, IFRS 15, share the same contents. Before the adoption of the new revenue standard, unlike rules-based legacy guidance of revenue recognition under U.S. GAAP, the guidance for recognizing revenue in IFRS was comparatively limited. In the absence of specific guidance, firms often used, or analogized, to U.S. GAAP (FASB, 2014). Given these facts, the results of this paper also have implication for non-US firms adopting IFRS 15.

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Appendix 1

Variable definitions

Variable Name	Definition	Source
$Sales\_Accruals_t$	The aggregate of accruals that are potentially affected by the new revenue standard ("sales-related accruals" called in this paper), scaled by the beginning balance of total assets (*at*) at year *t*. See below for construction details.	XBRL US API, Compustat
$Other\_Accruals_t$	The total accruals excluding sales-related accruals and tax accruals *(ibc-oancf+xidoc-txcof-Sales_Accruals-Tax_Accruals*), scaled by the beginning balance of total assets at year *t*. In other words, it is composed of the first two categories of exclusions from $Sales\_Accruals_t$.	XBRL US API, Compustat
$Sales\_Accruals\_ASC340_t$	Accruals from capitalization and amortization of sales commissions, scaled by the beginning balance of total assets at year *t*. See below for construction details.	XBRL US API
$Sales\_Accruals\_ASC606_t$	Sales-related accruals other than the accruals from sales commissions.	XBRL US API, Compustat
$CFO_{t+\tau}$	Operating cash flows exclude discontinued operation and cash income taxes paid in year $t+\tau$, scaled by the beginning balance of total assets at year *t*. (*oancf-xidoc+txbcof+txpd*).	Compustat
$NOPA\_Sales_t$	Net operating assets related to sales, defined in parallel with $Sales\_Accruals_t$, scaled by the beginning balance of total assets at year *t*. See below for construction details.	XBRL US API
$NOPA\_Other_t$	Other net operating assets after excluding $NOPA\_Sales_t$ and net income tax assets, scaled by the beginning balance of total assets at year *t*. In other words, it is composed of the first two categories of exclusions from $NOPA\_Sales_t$.	XBRL US API
NFA_t	The net amount of financial assets (e.g., cash and short- term security investments) subtract financial liabilities (e.g., bond and loan), scaled by the beginning balance of total assets.	XBRL US API
$Empgr_t$	The growth rate of the number of employees (*emp*)	Compustat
$Resid\_Sales\_Accruals_t$	The residual from the Model (4)	XBRL US API, Compustat
$Fit\_Sales\_Accruals_t$	The predicted value from the Model (4)	XBRL US API, Compustat
MBE_t	*MBE* is a dummy variable with the value of one if the actual EPS just meets or beats the earnings targets by one cent and zero otherwise. The earnings targets can be analyst EPS consensus, last-year EPS and the break-even point (i.e., 0) or the combination of three.	I/B/E/S, Compustat

	For analyst consensus, the actual EPS is from I/B/E/S. For the other two targets, the EPS is from Compustat. The stock splits and stock dividends have been adjusted.	
MV_t	Market capitalization at the end of the month when 10-K is reported, scaled by the beginning balance of total assets at year *t*.	CRSP, Compustat
$BHAR\_Emar_{t+1}$	Abnormal buy-and-hold return over the next 12 months after 10-K is reported, where the equal-weighted market return is used as benchmark.	CRSP
$BHAR\_Vmar_{t+1}$	Abnormal buy-and-hold return over the next 12 months after 10-K is reported, where the value-weighted market return is used as benchmark.	CRSP
Treat	A dummy variable equal to 1 for firms whose transition adjustment of retained earnings scaled by the absolute value of the three-year-average net income (*ibc*) before the adoption of ASC 606 is beyond -/+10%.	XBRL US API
Post	A dummy variable equal to 1 after the firm adopts the new revenue standard.	Compustat, the Conner Group report
TreatLong	A dummy variable equal to 1 if the treatment firm conducts mainly long-term sales contract. See below for construction details.	XBRL US API, Compustat
TreatShort	A dummy variable equal to 1 if the treatment firm conducts mainly short-term sales contract. See below for construction details.	XBRL US API, Compustat
AT	Total assets (*at*)	Compustat

The definition and construction of sales-related accruals (*Sales_Accruals*)

To keep the definition of sales-related accruals as consistent as possible across firms and across time, and reduce the discretion of judgement, I use an exclusionary way to define sales-related accruals. I exclude three main types of accruals. The first group is non-operating accruals, such as fixed asset depreciation and stock based compensation. Non-operating accruals do not have the same basis with operating cash flows, as the cash counterpart of them flows through financing cash flows or investing cash flows. As suggested by Ball and Nikolaev (2021), I exclude this type of accruals. The second group of accruals that I exclude contains several major operating accruals that are unlikely to be affected by ASC 606 and within the scope of other guidance. Specifically, I exclude accruals related to lease (ASC 840 and ASC 842), employment compensation and pension (ASC 710, ASC 712, ASC 715), asset retirement and environmental obligation (ASC 410), litigation contingency and self-insurance liability

(ASC 450), derivatives and hedging (ASC 815), software development costs (ASC 985-20, ASC 350-40), media content license and production costs (ASC 920, ASC 926), regulatory assets and liabilities (ASC 980-340, ASC 980-405) and other taxes (e.g., property taxes or payroll taxes).[52] The last group is income tax accruals. Although as shown in Table 2, ASC 606 affects deferred tax accounts, it is just a by-product because of the temporary tax-accounting difference introduced by ASC 606. Given the confounding effects from tax reforms and tax accounting standards, such as TCJA, I exclude tax accruals when I construct sales-related accruals.[53]

To calculate sales-related accruals, following Online Appendix B.2, I first disaggregate the cash flow statements to the most granular level, and keep the items in the reconciliation part between net income and operating cash flows. Then, following the definition above, I exclude the items that are within the first two categories of the exclusions. For the rest items, I aggregate them to the top level of cash flow statements using the calculation link. I do not exclude income tax accruals at this stage because not all of the income tax accruals are separately presented on the cash flow statements. Instead, I use cash paid for income taxes that firms disclose (*txpd* in Compustat) minus income tax expense from income statement (*txt* in Compustat) to calculate income tax accruals. Then I subtract the income tax accruals from the negative of the aggregate amount calculated before.[54,55] The final amount is the sales-related accruals. Another important issue is that before ASU 2016-09, the excess tax benefit from stock-based compensation was presented as a financing activity on the cash flow statement. It is included in the cash income taxes paid, but not in the operating activities. Therefore, it should be added to the aggregate amount before income tax accruals are subtracted. It is an item that Compustat has collected (*txcof*), thus I do not need to collect it from XBRL filings.

The definition and construction of accruals from net capitalized contract acquisition costs (*Sales_Accruals_ASC340*)

I construct *Sales_Accruals_ASC340* in two steps. First, I obtain the value of net capitalized contract acquisition costs from 10-K filings for post-ASC 606 period, which are either

[52] In limited cases, the new revenue standard has interaction with lease accounting and affects the judgement of whether a contract is a lease contract or a sales contract. I do not observe that lease-related accounts are frequently affected during the creation of Table 2. Based on the trade-off between relevance and noise from the confounding change of lease accounting, I exclude accruals related to lease.
[53] For details on these confounding changes, see Appendix C.
[54] Note that the value of accruals is the negative of the value presented on the cash flow statement. Since *txpd* and *txt* represents cash outflows and expense respectively. Tax accruals is calculated as *txpd – txt*.
[55] When *txpd* is missing (around 3% of the sample), *Tax_Accruals* are calculated from separately presented tax items on the cash flow statements and *txpd* is calculated as *txt + Tax_Accruals.*

disclosed on the balance sheets or in the footnotes, following Online Appendix B.3. Then, *Sales_Accruals_ASC340* is calculated as the net capitalized contract acquisition costs in year *t* minus the net capitalized contract acquisition costs in year *t-1*. For the adoption year, I collect the beginning balance of net capitalized contract acquisition costs under ASC 606. *Sales_Accruals_ASC340* in the adoption year is calculated as the ending balance minus the beginning balance of net capitalized contract acquisition costs. If the firm does not disclose the beginning balance of net capitalized contract acquisition cost but discloses the ending balance in the adoption year, the adoption year of this firm is deleted from the sample since *Sales_Accruals_ASC340* is not zero but the value cannot be determined. For all other firm-years, *Sales_Accruals_ASC340* is zero.

The method to classify firms conducting long-term versus short-term sales contracts (*TreatLong v.s. TreatShort*)

I utilize the practical expedients provided by the new revenue standard to short-term sales contracts, supplemented by the current and noncurrent classification of contract assets and liabilities. First, ASC 606 requires firms to disclose the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied (or partially unsatisfied) as of the end of the reporting period (i.e., remaining performance obligation). At the same time, ASC 606 provides the practical expedient that permits firms to not disclose the remaining performance obligation that is part of a contract that has an original expected duration of one year or less. Firms with short-term contracts usually make use of this expedient to reduce disclosure burden. Therefore, firms that disclose large amount of remaining performance obligation tend to engage in many contracts with duration longer than one year. Second, the new revenue standard requires firms to capitalize the costs of obtaining contracts and amortize them in accordance with the expected pattern of goods or services transfer. At the same time, it provides the practical expedient that permits firms to expense the costs of obtaining contracts if the original amortization period is one year or less. Therefore, firms that recognize large amount of capitalized costs of obtaining contracts tend to engage in many contracts with duration longer than one year. Lastly, Table 2 shows that part of the long-term contract is recorded in non-current contract assets or non-current contract liabilities. Firms with large amount of non-current contract assets or contract liabilities tend to engage in many long-term contracts.[56] In order to collect the above information and evaluate the materiality, I first obtain

[56] Firms can use other synonyms, such as non-current account receivables and non-current deferred revenue.

and clean the value of the above concepts from XBRL filings in the adoption year and the year before the adoption.[57] Since these concepts mainly relate to revenue or operating expense, I scale them using the three-year-average operating income before depreciation (*oibdp*) and use 10% as materiality threshold. If any amount of the remaining performance obligation, capitalized costs of obtaining contract and non-current contract asset and liabilities is greater than 10% of *oibdp*, the firm is classified as firms conducting long-term sales contracts. Otherwise, they are classified as firms conducting short-term sales contracts. The detailed process of collecting information from XBRL filings is in Online Appendix B.4.

The definition and construction of net operating assets related to sales (*NOPA_Sales*)

Net operating assets related to sales is defined in parallel with sales-related accruals. It includes the balance sheet accounts in Table 2 and excludes the net operating assets of three types. The first type contains fixed asset investments and equity-method investments. The second contains other net operating assets that are unlikely to be affected by ASC 606 and within the scope of other guidance. Specifically, I exclude net operating assets related to lease (ASC 840 and ASC 842), employment compensation and pension (ASC 710, ASC 712, ASC 715), asset retirement and environmental obligation (ASC 410), litigation contingency and self-insurance liability (ASC 450), derivatives and hedging (ASC 815), software development costs (ASC 985-20, ASC 350-40), media content license and production costs (ASC 920, ASC 926), regulatory assets and liabilities (ASC 980-340, ASC 980-405), other taxes (e.g. property taxes or payroll taxes) and discontinued operations. The third type contains deferred income tax assets (liabilities) and income tax receivable (payable). The detailed process of decomposing balance sheet accounts using XBRL filings is in Online Appendix B.5.

[57] I include the year before the adoption because some non-current deferred revenue before ASC 606 were recognized in revenue after the adoption of ASC 606.

Figure 1

Change of cash flow predictability of sales-related accruals

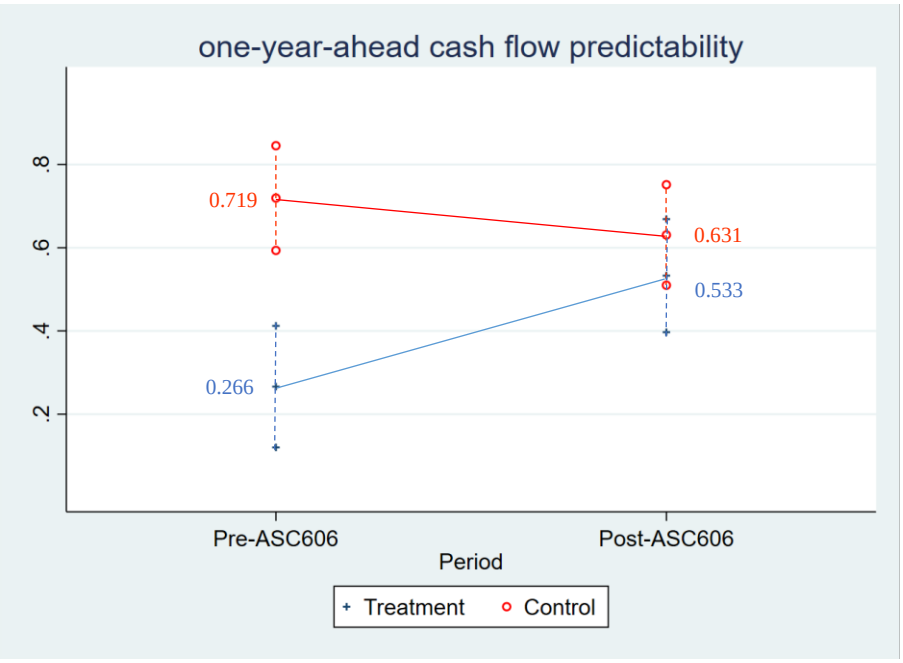
Panel A

CF Pred.	Pre-ASC 606	Post-ASC 606	Difference
Control	β_4	$\beta_4+\beta_3$	β_3
Treatment	$\beta_4 + \beta_2$	$\beta_4+\beta_3 + \beta_2 + \beta_1$	$\beta_3 + \beta_1$
Difference	β_2	$\beta_2 + \beta_1$	β_1

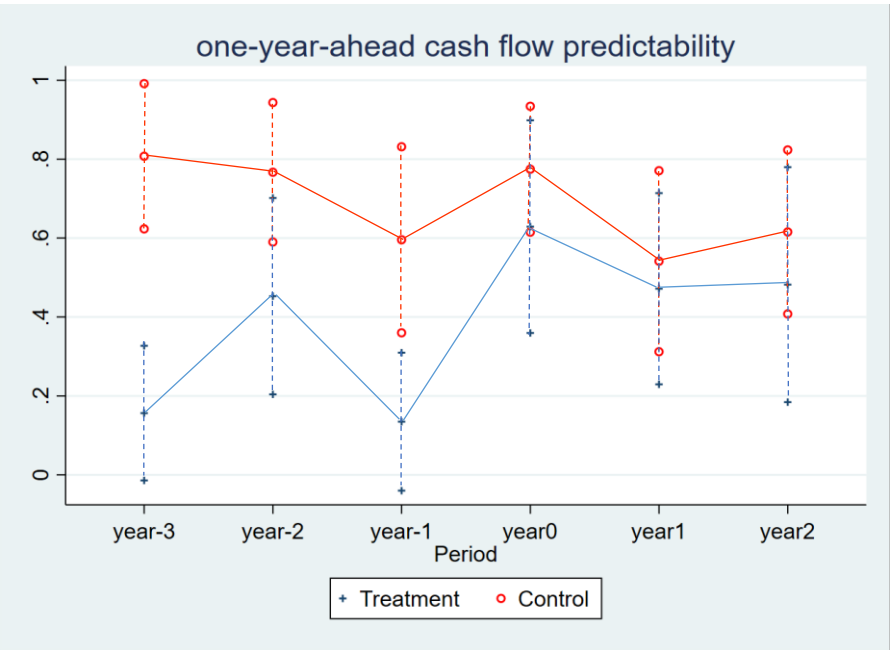
Panel A shows the method to estimate the cash flow predictability of sales-related accruals for treatment and control firms before and after the adoption of the new revenue standard using the coefficients in Model (1),

$$CFO_{i,t+\tau} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_2 Sales\_Accruals_{i,t} \times Treat_i + \beta_3 Sales\_Accruals_{i,t} \times Post_{i,t} + \beta_4 Sales\_Accruals_{i,t} + \sum_j \gamma_j Other\ control_j \quad (1)$$

Panel B



Panel C



Panel B presents the estimated one-year-ahead cash flow predictability of sales-related accruals and 95% confidence intervals for treatment and control firms before and after the adoption of the new revenue standard from Model (1): $CFO_{i,t+1} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} \times Treat_i \times Post_{i,t} + \beta_2 Sales\_Accruals_{i,t} \times Treat_i + \beta_3 Sales\_Accruals_{i,t} \times Post_{i,t} + \beta_4 Sales\_Accruals_{i,t} + \sum_j \gamma_j Other\ control_j$. Panel C presents the estimated one-year-ahead cash flow predictability of sales-related accruals and 95% confidence intervals for treatment and control firms for each year relative to the ASC 606 adoption year. Estimation is made by disaggregating *Post* in Model (1) to indicators representing each year relative to the ASC 606 adoption year (indicator for year-3 is omitted). To keep the model as concise as possible, I only disaggregate *Post* interacting with *sales_accruals* and *Post* itself, leaving *Post* interacted with operating cash flows and other accruals unchanged.

Table 1 Sample Selection

Panel A: Sample selection		
	N firm	N firm-year
Firms that file 10-K (i.e. not foreign issuers), have common stock listed on NYSE and NASDQ (i.e. not REIT, OTC firms etc.)	3,441	
Firms with positive total assets and sales in least 2 years immediately before and after ASC 606[58]	2,989	
Drop firms in financial industry	2,348	
Drop firms with EGC status at the adoption year	2,216	
Drop high-tech firms that had not been out of introduction stage at the beginning of the sample period, i.e. 3 years before ASC 606	1,968	
Sample size varies with the dependent variable used. Here I display the sample size when the independent variables are not missing.		
3 years before and 4 years after ASC 606	1,968	13,101
Drop firm-years without data from Compustat, CRSP	1,963	12,440
Drop firm-years without data from XBRL filings	1,955	12,155
Drop firm-years whose total assets are smaller than 10 million		
Drop firm-years whose sales are smaller than 10 million	1,926	11,628
Drop firm-years whose stock price is smaller than 1 dollar		

Panel B: Sample composition by industry, N firms			
Industry	Control	Treatment	Treatment-ASC340-40
Agriculture (SIC 0100-0999)	14	1(6.67%)	0
Mining and Construction (SIC 1000-1999, excluding 1300-1399)	54	8(12.90%)	0
Food (SIC 2000-2199)	57	3(5.00%)	0
Textiles and Printing/Publishing (SIC 2200-2799)	80	8(9.09%)	3
Chemicals (SIC 2800-2824, 2840-2899)	67	4(5.63%)	0
Pharmaceuticals (SIC 2830-2836)	51	11(17.74%)	1
Extractive (SIC 1300-1399, 2900-2999)	97	1(1.02%)	0
Durable manufacturers (SIC 3000-3999, excluding 3570-3579, 3650-3699)	371	53(12.50%)	6
Computers (SIC 3570-3579, 3650-3699)	99	51(34.00%)	9
Transportation (SIC 4000-4799)	50	9(15.25%)	0
Retail (SIC 5000-5999)	222	31(12.25%)	4
Services (SIC 4800-4899, SIC 7000-8999, excluding 7370-7374)	210	59(21.93%)	27
Software-Programming and Data (SIC 7370, 7371, 7374)	83	82(49.70%)	67
Software-Pre-packaged Software (SIC 7372, 7373)	17	46(73.02%)	29
Utilities (SIC 4900-4999)	79	4(4.82%)	0
Other (SIC 9000-)	3	1(25.00%)	0

[58] The variables in regression are scaled by the lagged assets. Therefore, we require at least two-year data both before and after ASC 606.

Total	1,554	372	146

Panel C: Sample composition by years relative to the adoption year, N firm-years

Year relative to adoption year	Treat	Control
-3	313	1,290
-2	324	1,346
-1	338	1,418
0	360	1,432
1	352	1,367
2	345	1,401
3	269	1,073
Total	2,301	9,327

Panel D: Relative transition adjustments of retained earnings

	Mean	Std	Min	P10	P25	Median	P75	P90	Max
Treatment	0.34	0.61	-0.53	-0.30	-0.10	0.21	0.53	1.12	1.94
Control	0.00	0.02	-0.10	-0.01	0.00	0.00	0.00	0.03	0.10

Note: Relative transition adjustments of retained earnings is the transition adjustments of retained earnings scaled by the absolute value of the three-year average income before the adoption of ASC 606.
The number of observations in the last year is smaller because of data availability. The sample ends on June 30, 2022.

Table 2 The XBRL Tag (concept name) of 20 Most Frequently Affected Balance Sheet Accounts by ASC 606

Freq. Rank	XBRL tag (concept name)
1	AccountsReceivableNetCurrent
2	ContractWithCustomerLiabilityCurrent
3	InventoryNet
4	OtherAssetsNoncurrent
5	PrepaidExpenseAndOtherAssetsCurrent
6	AccruedLiabilitiesCurrent
7	OtherLiabilitiesNoncurrent
8	OtherAssetsCurrent
9	ContractWithCustomerLiabilityNoncurrent
10	DeferredTaxLiabilitiesNoncurrent
11	DeferredIncomeTaxLiabilitiesNet
12	OtherLiabilitiesCurrent
13	ContractWithCustomerLiability
14	ContractWithCustomerAssetNetCurrent
15	DeferredIncomeTaxAssetsNet
16	DeferredRevenueCurrent
17	DeferredTaxAssetsNetNoncurrent
18	AccountsPayableCurrent
19	CapitalizedContractCostNet
20	DeferredRevenueNoncurrent

This table shows the tags (concept names) of the 20 most frequently affected balance sheet accounts by ASC 606. I obtain the affected accounts from XBRL filings in the adoption year. The XBRL tag of affected accounts in pro forma disclosure have dimension name and member name of "*AdjustmentsForNewAccountingPronouncementsAxis*" and "*AccountingStandardsUpdate201409Member*" respectively, or "*InitialApplicationPeriodCumulativeEffectTransitionAxis*" and "*DifferenceBetweenRevenueGuidanceInEffectBeforeAndAfterTopic606Member*" respectively.

Table 3 Summary statistics

Panel A: summary statistics								
Variable	N	Mean	SD	Min	p25	p50	p75	Max
CFO_{t+1}	9,828	0.123	0.126	-0.253	0.056	0.111	0.182	0.566
CFO_{t+2}	8,005	0.137	0.146	-0.270	0.057	0.119	0.200	0.670
CFO_{t+3}	6,252	0.152	0.169	-0.279	0.058	0.129	0.220	0.783
CFO_t	11,628	0.112	0.109	-0.240	0.057	0.105	0.165	0.459
$Sales\_Accruals_t$	11,628	0.005	0.046	-0.150	-0.013	0.003	0.022	0.182
$Other\_Accruals_t$	11,628	-0.071	0.065	-0.361	-0.090	-0.057	-0.036	0.096
$Sales\_Accruals\_ASC340_t$	870	0.005	0.011	-0.015	0.000	0.001	0.005	0.060
$Resid\_Sales\_Accruals_t$	9,666	0.000	0.043	-0.140	-0.017	-0.001	0.017	0.148
$Empgr_t$	9,666	0.047	0.201	-0.463	-0.038	0.019	0.096	1.017
$NOPA\_Sales_t$	11,628	0.08	0.207	-0.642	-0.022	0.07	0.189	0.679
$NOPA\_Other_t$	11,628	0.493	0.32	-0.097	0.259	0.479	0.694	1.744
NFA_t	11,628	-0.109	0.362	-1.162	-0.335	-0.128	0.101	0.867
MV_t	11,628	1.878	2.27	0.071	0.581	1.105	2.204	13.667
$BHAR\_Emar_{t+1}$	10,138	0.064	0.813	-1.766	-0.248	-0.013	0.242	52.238
$BHAR\_Vmar_{t+1}$	10,138	0.045	0.834	-1.39	-0.275	-0.047	0.203	52.614

Panel B: firm characteristics of treatment and control firms before the adoption of ASC 606				
	Treatment (N=975)		Control(N=4,054)	
	Mean	Median	Mean	Median
CFO_t	0.113*	0.106	0.119	0.109
$Sales\_Accruals_t$	-0.005***	-0.002***	0.006	0.004
$Other\_Accruals_t$	-0.082***	-0.067***	-0.069	-0.055
$NOPA\_Sales_t$	-0.022***	-0.012***	0.103	0.091
$NOPA\_Other_t$	0.459***	0.421***	0.497	0.481
NFA_t	-0.015***	-0.021***	-0.123	-0.134
AT_t	7,506.515	1174.399**	7,492.572	1,458.617

This table presents the summary statistics for the entire sample in Panel A and firm characteristics of treatment and control firms before the adoption of ASC 606. ***, **, and * indicate the difference of mean (median) between treatment and control firms is significant at 1%, 5%, 10%, respectively, using two-tailed test. All variables are defined in Appendix 1.

Table 4 Results for H1

Panel A: Results of H1			
	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals_t \times Treat \times Post_t$	0.355**	0.678***	0.648**
	(2.57)	(3.04)	(2.00)
$Sales\_Accruals_t \times Treat$	-0.453***	-0.572***	-0.534**
	(-4.95)	(-2.82)	(-2.23)
$Sales\_Accruals_t \times Post_t$	-0.089	-0.032	-0.318
	(-0.94)	(-0.21)	(-1.60)
$Sales\_Accruals_t$	0.719***	0.650***	0.730***
	(11.27)	(9.86)	(8.49)
$CFO_t \times Treat \times Post_t$	-0.015	-0.028	-0.039
	(-0.19)	(-0.28)	(-0.32)
$CFO_t \times Treat$	-0.029	-0.016	-0.099
	(-0.57)	(-0.32)	(-1.40)
$CFO_t \times Post_t$	-0.043*	0.004	0.052
	(-1.70)	(0.08)	(0.85)
CFO_t	0.909***	0.915***	0.953***
	(32.26)	(26.47)	(22.31)
$Other\_Accruals_t \times Treat \times Post_t$	0.098	-0.092	0.053
	(1.04)	(-0.54)	(0.24)
$Other\_Accruals_t \times Treat$	-0.155**	-0.110	-0.118
	(-2.25)	(-1.08)	(-0.95)
$Other\_Accruals_t \times Post_t$	0.121***	0.202**	0.145
	(2.91)	(2.37)	(1.18)
$Other\_Accruals_t$	-0.045	-0.097*	-0.161**
	(-1.53)	(-1.85)	(-2.25)
$Treat \times Post_t$	0.002	-0.009	0.015
	(0.23)	(-0.49)	(0.58)
$Treat$	-0.005	-0.003	0.006
	(-0.86)	(-0.25)	(0.36)
$Post_t$	0.017***	0.017**	-0.000
	(4.04)	(2.10)	(-0.04)
Intercept	0.013***	0.018***	0.025***
	(2.82)	(2.94)	(2.91)
Industry fixed effects	Y	Y	Y
N	9,828	8,005	6,252
Adj. R^2	0.587	0.483	0.410
$\beta[Sales\_Accruals_t \times Treat \times Post_t]$	-0.098	0.106	0.114
$+ \beta[Sales\_Accruals_t \times Treat]$	(-0.99)	(0.79)	(0.29)
Panel B: Disaggregate sales-related accruals			
	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals\_ASC340_t$	1.419***	1.892***	1.106

	(5.47)	(4.94)	(1.06)
$Sales\_Accruals\_ASC606_t \times Treat \times Post_t$	0.370***	0.729***	0.690*
	(2.60)	(3.03)	(1.73)
$Sales\_Accruals\_ ASC606_t \times Treat$	-0.451***	-0.558***	-0.527**
	(-4.93)	(-2.81)	(-2.22)
$Sales\_Accruals\_ ASC606_t \times Post_t$	-0.087	-0.040	-0.322
	(-0.92)	(-0.26)	(-1.57)
$Sales\_Accruals\_ ASC606_t$	0.719***	0.651***	0.731***
	(11.27)	(9.89)	(8.49)
$CFO_t \times Treat \times Post_t$	0.008	-0.002	-0.013
	(0.09)	(-0.02)	(-0.10)
$CFO_t \times Treat$	-0.028	-0.012	-0.098
	(-0.55)	(-0.23)	(-1.38)
$CFO_t \times Post_t$	-0.045*	-0.001	0.038
	(-1.75)	(-0.02)	(0.63)
CFO_t	0.909***	0.914***	0.954***
	(32.22)	(26.41)	(22.31)
Other controls	Y	Y	Y
Industry fixed effects	Y	Y	Y
N	9,713	7,894	6,168
Adj. R^2	0.590	0.485	0.408

This table presents the OLS regression results for the effect of the new revenue standard on the quality of sales-related accruals (H1). Panel A shows the results for aggregate sales-related accruals. Panel shows the results for accruals related to contract acquisition costs and other sales-related accruals separately. Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance total assets at year *t* and winsorized at 1% and 99%.

See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Table 5 Results for H2

Panel A: Sample distribution of firms conducting long-term contracts and short-term contracts		
	Long-term	Short-term
Treatment	279 (43.12%)	93 (7.27%)
Control	368 (56.88%)	1,186 (92.73%)

Panel B: Results of H2			
	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals_t \times TreatLong \times Post_t$	0.308**	0.788***	1.113***
	(2.28)	(3.50)	(3.08)
$Sales\_Accruals_t \times TreatLong$	-0.425***	-0.676***	-0.731***
	(-4.47)	(-3.00)	(-3.17)
$Sales\_Accruals_t \times TreatShort \times Post_t$	0.383	0.292	-0.861
	(1.56)	(0.84)	(-1.63)
$Sales\_Accruals_t \times TreatShort$	-0.409**	-0.118	0.262
	(-2.57)	(-0.54)	(0.88)
$Sales\_Accruals_t \times Post_t$	-0.089	-0.033	-0.319
	(-0.94)	(-0.22)	(-1.61)
$Sales\_Accruals_t$	0.719***	0.651***	0.733***
	(11.25)	(9.90)	(8.50)
$CFO_t \times TreatLong \times Post_t$	0.031	0.002	-0.069
	(0.57)	(0.03)	(-0.70)
$CFO_t \times TreatLong$	-0.024	0.031	-0.051
	(-0.52)	(0.72)	(-0.77)
$CFO_t \times TreatShort \times Post_t$	-0.175	-0.192	-0.121
	(-1.17)	(-0.79)	(-0.34)
$CFO_t \times TreatShort$	0.028	-0.034	-0.019
	(0.37)	(-0.27)	(-0.11)
$CFO_t \times Post_t$	-0.043*	0.003	0.052
	(-1.71)	(0.07)	(0.86)
CFO_t	0.909***	0.914***	0.951***
	(32.31)	(26.49)	(22.11)
Other controls	Y	Y	Y
Industry fixed effects	Y	Y	Y
N	9,828	8,005	6,252
Adj. R^2	0.588	0.486	0.414
$\beta[Sales\_Accruals_t \times TreatLong \times Post_t]$	-0.117	0.112	0.381
$+ \beta[Sales\_Accruals_t \times TreatLong]$	(-1.05)	(0.66)	(0.77)
$\beta[Sales\_Accruals_t \times TreatShort \times Post_t]$	-0.026	0.174	-0.600
$+ \beta[Sales\_Accruals_t \times TreatShort]$	(-0.19)	(0.57)	(-1.37)
$\beta[Sales\_Accruals_t \times TreatLong \times Post_t]$	-0.075	0.496	1.974***
$-\beta[Sales\_Accruals_t \times TreatShort \times Post_t]$	(0.10)	(1.48)	(9.63)

This table presents the effect of the new revenue standard on the quality of sales-related accruals for firms conducting long-term sales contracts and firms conducting short-term contracts (H2). Panel A shows the sample distribution. The column percentage values are in the parentheses. Panel B shows the regression results.

Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance total assets at year *t* and winsorized at 1% and 99%.
See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Table 6 The combined explanation power of financial statements

	N	*Sales_ Accruals$_t$*	*NOPA_ Sales$_t$*	Incre. Adj. R^2	Diff-in-Diff Incre. Adj. R^2(+)	Relative Info.	Diff-in-Diff Relative Info. (-)
Panel A: One-year-ahead cash flow predictability, *CFO$_{t+1}$*							
Treatment-pre	972	0.382*** (3.99)	-0.063* (-1.74)	0.029		0.924	
Treatment-post	959	0.587*** (8.18)	-0.039 (-1.40)	0.062	0.035*	0.879	-0.085**
Control-pre	4,050	0.752*** (12.69)	-0.021** (-2.29)	0.061	[-0.032, 0.031]	0.852	[-0.062, 0.071]
Control-post	3,836	0.634*** (10.24)	0.003 (0.23)	0.045		0.911	
Panel B: Two-year-ahead cash flow predictability, *CFO$_{t+2}$*							
Treatment-pre	971	0.108 (0.88)	-0.109*** (-4.23)	0.025		0.950	
Treatment-post	588	0.691*** (7.08)	-0.030 (-0.69)	0.051	0.035*	0.911	-0.061
Control-pre	4,049	0.696*** (10.89)	-0.023** (-1.92)	0.039	[-0.033, 0.035]	0.924	[-0.062, 0.063
Control-post	2,368	0.620*** (5.09)	-0.020 (-0.93)	0.022		0.960	
Panel C: Three-year-ahead cash flow predictability, *CFO$_{t+3}$*							
Treatment-pre	952	0.209** (1.85)	-0.109* (-1.80)	0.022		0.966	
Treatment-post	219	0.502 (1.36)	-0.048 (-0.78)	-0.025	0.012	1.037	-0.018
Control-pre	3,976	0.720*** (8.62)	-0.001 (-0.03)	0.035	[-0.038, 0.048]	0.942	[-0.073, 0.064]
Control-post	1,015	0.641*** (2.88)	-0.054 (-1.59)	0.022		0.959	

This table shows the combined explanatory power of income decompositions and net assets decompositions on future cash flows.

The model is $CFO_{i,t+\tau}=\beta_0+\beta_1 Sales\_Accruals_{i,t}+\beta_3 CFO_{i,t}+\beta_4 Other\_Accruals_{i,t}+\beta_5 NOPA\_Sales_{i,t}+\beta_6 NOPA\_Others_{i,t}+\beta_7 NFA_{i,t}+\sum_j \beta_j Ind_j+\varepsilon_{i,t}$ (3)

All variables are scaled by the beginning balance total assets at year *t* and winsorized at 1% and 99%. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. OLS regression coefficients of $Sales\_Accruals$ and $NOPA\_Sales$ are presented in the table. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed tests. T-statistics are in the parentheses. See Appendix 1 for variable definitions.

Incremental adjusted R^2 is the difference between the adjusted R^2 from Eq.(3) and the adjusted R^2 from the nested version of Eq.(3) that only includes $CFO_{i,t}$ and industry fixed effects, following Barth et al. (2012). Larger incremental adjusted R^2 means higher combined information content. Relative information content is a measure developed and validated in Nezlobin (2022). It is calculated as (1-adj. R^2) from Eq.(3) divided by (1-adj. R^2) from the nested version of Eq.(3) that only includes $CFO_{i,t}$ and industry fixed effects. Smaller value means higher combined information content. The significance of difference-in-difference incremental adjusted R^2 and relative information content are calculated using bootstrap following similar procedure of Barth et al. (2012). First, I random assign treatment and control status to sample firms, the group size of hypothetical treatment firms and control firms is kept consistent with the actual group size of treatment firms (372) and control firms (1,544). Then I calculate the difference-in-difference incremental adjusted R^2 and relative information content. I repeat the above procedure by 1000 times and get the empirical distribution of them. I

use one-tail tests for the two R^2 based measures. ***, **, * means the difference-in-difference incremental adjusted R^2 and relative information content are greater than the 99th, 95th, 90th percentile or lower than the 1st, 5th, 10th percentile respectively. The values in square brackets indicate the 10th percentile and 90th percentile, respectively.

Table 7 Earnings management when firms face pressure to meet or beat earnings target (MBE)

Panel A: The frequency of MBE by one cent

	Before ASC 606		After ASC 606	
	N firm-years	Freq. MBE_1 cent (analyst/EPS_{t-1}/0)	N firm-years	Freq. MBE_1 cent (analyst/EPS_{t-1}/0)
Treatment	953	46 / 15 / 9	960	38 / 6 / 3
Control	3,946	247 / 33 / 18	3,807	165 / 17 / 22

Panel B: Estimation of Model (4) to calculate residual sales-related accruals

	$Empgr_t$	$Empgr_t \times NOPA\_Sales_{t-1}$	Adj. R^2
Treatment-pre	-0.024***	0.353***	0.074
	(-3.19)	(3.86)	
Treatment-post	0.017*	0.406***	0.067
	(1.83)	(4.01)	
Control-pre	0.008	0.302***	0.059
	(1.33)	(4.89)	
Control-post	0.024***	0.274***	0.051
	(4.09)	(4.46)	

Panel C: Regression results of MBE by one cent on residual sales-related accruals

	(1)	(2)	(3)	(4)
	Analyst	EPS_{t-1}	*Zero*	*Analyst* EPS_{t-1} *Zero*
$Resid\_Sales\_Accruals_t \times Treat \times Post_t$	0.438	0.115	0.051	0.528**
	(1.58)	(0.82)	(0.92)	(2.24)
$Resid\_Sales\_Accruals_t \times Treat$	-0.107	-0.098	0.062	-0.138
	(-0.47)	(-0.82)	(1.47)	(-0.67)
$Resid\_Sales\_Accruals_t \times Post_t$	-0.165	0.016	0.044	-0.082
	(-0.99)	(0.43)	(1.24)	(-0.84)
$Resid\_Sales\_Accruals_t$	-0.009	-0.020	-0.039	-0.033
	(-0.06)	(-0.62)	(-1.27)	(-0.39)
$Fit\_Sales\_Accruals_t \times Treat \times Post_t$	-1.887	-0.300	0.210	-1.287
	(-1.35)	(-0.59)	(0.76)	(-1.30)
$Fit\_Sales\_Accruals_t \times Treat$	1.357	0.364	-0.031	1.136
	(1.19)	(0.75)	(-0.16)	(1.41)
$Fit\_Sales\_Accruals_t \times Post_t$	-0.026	-0.015	0.143	0.104
	(-0.04)	(-0.10)	(0.76)	(0.26)
$Fit\_Sales\_Accruals_t$	-0.252	-0.085	-0.112	-0.269
	(-0.60)	(-0.85)	(-1.23)	(-1.01)
$CFO_t \times Treat \times Post_t$	0.150	-0.071**	0.065***	0.094
	(0.88)	(-2.23)	(3.38)	(0.71)
$CFO_t \times Treat$	-0.123	0.020	-0.001	-0.073
	(-0.80)	(0.71)	(-0.07)	(-0.65)
$CFO_t \times Post_t$	-0.098	0.010	-0.021	-0.112**
	(-1.52)	(0.47)	(-1.64)	(-2.22)

CFO_t	0.032	0.014	-0.012	0.089**
	(0.56)	(0.80)	(-1.30)	(2.29)
$Other\_Accruals_t \times Treat \times Post_t$	0.138	0.007	-0.068	0.019
	(0.59)	(0.19)	(-1.59)	(0.11)
$Other\_Accruals_t \times Treat$	-0.033	-0.006	-0.007	-0.024
	(-0.17)	(-0.17)	(-0.21)	(-0.18)
$Other\_Accruals_t \times Post_t$	-0.087	-0.025	0.047*	-0.046
	(-0.64)	(-1.20)	(1.97)	(-0.51)
$Other\_Accruals_t$	0.098	0.038**	-0.026	0.066
	(0.82)	(2.19)	(-1.48)	(0.90)
$Treat \times Post_t$	0.001	0.001	-0.018***	-0.012
	(0.04)	(0.15)	(-2.90)	(-0.60)
$Treat$	-0.002	0.004	0.002	0.004
	(-0.08)	(0.63)	(0.38)	(0.22)
$Post_t$	-0.023	-0.007**	0.006	-0.013
	(-1.52)	(-2.03)	(1.63)	(-1.32)
Intercept	0.094***	0.010***	0.005**	0.071***
	(7.14)	(3.74)	(2.36)	(9.36)
Industry fixed effects	Y	Y	Y	Y
N	6,786	9,666	9,666	9,666
Adj. R^2	0.010	-0.006	-0.000	0.008

This table presents the results on the earnings management when firm face pressure to meet or beat earnings targets. The adoption year for each firm is deleted for the sample used this table. Panel A shows the frequency of MBE by one cent in different groups. Panel B shows the results of Model (4) used calculate residual sales-related accruals.

$Sales\_Accruals_{i,t} = \alpha_0 + \alpha_1 Empgr_{i,t} + \alpha_2 Empgr_{i,t} \times NOPA\_Sales_{i,t-1} + \varepsilon_{i,t}$ (4) Panel C shows the OLS regression results of the dummy variable indicating just meeting or beating earnings targets by one cent on residual sales-related accruals (Model 5). Column (1)-(4) represents the results when analysts' consensus, last-year EPS, zero EPS and all three together are used as earnings targets respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance total assets at year *t* and winsorized at 1% and 99%.

See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Table 8 The effect of the new revenue standard on stock market efficiency

	N	*Sales_Accruals$_t$*	*NOPA_Sales$_t$*	Diff-in-Diff Coef. *Sales_ Accruals$_t$*	Diff-in-Diff Coef. *NOPA_Sales$_t$*
Panel A: Value relevance to market capitalization at the end of 10-K reporting month					
Treatment -pre	972	2.994**	-1.842**		
		(2.11)	(-2.25)		
Treatment -post	1,323	7.167***	-0.471	4.559*	1.208
		(3.74)	(-0.35)		
Control-pre	4,054	8.397***	0.131	[-4.305,	[-1.064,
		(7.19)	(0.70)	3.232]	1.288]
Control-post	5,271	8.011***	0.293		
		(7.45)	(1.03)		
Panel B: Abnormal buy-and-hold return over equal weighted market return					
Treatment -pre	972	-0.917**	-0.136**		
		(-2.92)	(-2.05)		
Treatment -post	1,024	-1.003	-0.119	-0.636	0.249
		(-1.11)	(-0.77)		
Control-pre	4,054	-0.203	-0.020	[-2.019,	[-0.354,
		(-0.92)	(-0.48)	3.210]	0.340]
Control-post	4,077	0.346	-0.252*		
		(0.36)	(-1.90)		
Panel C: Abnormal buy-and-hold return over value weighted market return					
Treatment -pre	972	-0.931***	-0.129**		
		(-2.92)	(-1.99)		
Treatment -post	1,024	-0.726	-0.121	-0.761	0.243
		(-0.84)	(-0.77)		
Control-pre	4,054	-0.216	-0.020	[-2.043,	[-0.372,
		(-0.94)	(-0.46)	3.292]	0.416]
Control-post	4,077	0.750	-0.255*		
		(0.76)	(-1.88)		

This table shows the effect of the new revenue standard on the value relevance of accounting information and accrual anomaly.

The model for value-relevance test in Panel A is $MV_{i,t} = \beta_0 + \beta_1 Sales\_Accruals_{i,t} + \beta_3 CFO_{i,t} + \beta_4 Other\_Accruals_{i,t} + \beta_5 NOPA\_Sales_{i,t} + \beta_6 NOPA\_Others_{i,t} + \beta_7 NFA_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t}$ (6)

The model for accrual anomaly in Panel B and C is $BHAR\_Emar_{i,t+1}$ ($BHAR\_Vmar_{i,t+1}$)= $\beta_0 + \beta_1 Sales\_Accruals_{i,t} + \beta_3 CFO_{i,t} + \beta_4 Other\_Accruals_{i,t} + \beta_5 NOPA\_Sales_{i,t} + \beta_6 NOPA\_Others_{i,t} + \beta_7 NFA_{i,t} + \sum_j \beta_j Ind_j + \varepsilon_{i,t}$ (7)

Except for stock returns, all variables are scaled by the beginning balance total assets at year *t* and winsorized at 1% and 99%. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. OLS regression coefficients of $Sales\_Accruals$ and $NOPA\_Sales$ are presented in the table. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses. See Appendix 1 for variable definitions.

The significance of difference-in-difference coefficients of $Sales\_Accruals$ and $NOPA\_Sales$ are calculated using bootstrap following similar procedure of Barth et al. (2012). First, I random assign treatment and control status to sample firms, the group size of hypothetical treatment firms and control firms is kept consistent with the actual group size of treatment firms (372) and control firms (1,544). Then I calculate the difference-in-difference coefficients of $Sales\_Accruals$ and $NOPA\_Sales$. I repeat the above procedure by 1000 times and get the empirical distribution of them. I use one-tailed tests for the difference-in-difference coefficients. ***, **, * means the difference-in-difference coefficients are greater than the 99th, 95th, 90th percentile or lower than the 1st, 5th, 10th percentile respectively. The values in square brackets indicate the 10th percentile and 90th percentile, respectively.

Table 9 Robustness test – Divide the treatment firms into software and non-software firms

	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals_t \times TreatSF \times Post_t$	0.344***	0.949***	0.599***
	(3.63)	(6.37)	(3.03)
$Sales\_Accruals_t \times TreatSF$	-0.441***	-0.993***	-0.951***
	(-6.91)	(-15.05)	(-11.02)
$Sales\_Accruals_t \times TreatNSF \times Post_t$	0.266	0.495**	0.734
	(1.52)	(2.20)	(1.30)
$Sales\_Accruals_t \times TreatNSF$	-0.379***	-0.302*	-0.215
	(-2.95)	(-1.77)	(-1.02)
$Sales\_Accruals_t \times Post_t$	-0.089	-0.031	-0.318
	(-0.94)	(-0.21)	(-1.61)
$Sales\_Accruals_t$	0.719***	0.651***	0.731***
	(11.26)	(9.87)	(8.48)
$CFO_t \times TreatSF \times Post_t$	0.105***	0.017	-0.126**
	(4.22)	(0.36)	(-2.06)
$CFO_t \times TreatSF$	-0.065**	0.050	-0.054
	(-2.32)	(1.44)	(-1.26)
$CFO_t \times TreatNSF \times Post_t$	-0.138*	-0.128	0.002
	(-1.90)	(-1.02)	(0.01)
$CFO_t \times TreatNSF$	0.040	0.016	-0.035
	(0.92)	(0.22)	(-0.41)
$CFO_t \times Post_t$	-0.043*	0.004	0.051
	(-1.71)	(0.08)	(0.84)
CFO_t	0.909***	0.915***	0.953***
	(32.32)	(26.50)	(22.30)
Other Controls	Y	Y	Y
Industry fixed effects	Y	Y	Y
N	9,828	8,005	6,252
Adj. R^2	0.588	0.486	0.412
$\beta[Sales\_Accruals_t \times TreatSF \times Post_t]$	-0.097	-0.044	-0.352*
$+ \beta[Sales\_Accruals_t \times TreatSF]$	(-1.59)	(-0.36)	(-1.78)
$\beta[Sales\_Accruals_t \times TreatNSF \times Post_t]$	-0.112	0.192	0.519
$+ \beta[Sales\_Accruals_t \times TreatNSF]$	(-0.82)	(0.74)	(0.94)
$\beta[Sales\_Accruals_t \times TreatSF \times Post_t]$	0.078	0.454**	-0.135
$-\beta[Sales\_Accruals_t \times TreatNSF \times Post_t]$	(0.34)	(4.05)	(0.06)

This table presents the effect of the new revenue standard on the quality of sales-related accruals for software firms (SIC 7370-7374) and non-software firms. Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance of total assets at year *t* and winsorized at 1% and 99%.

See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Table 10 Robustness test – Matching treatment and control firms (one-to-three)

	With replacement			Without replacement		
	(1)	(2)	(3)	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals_t \times Treat \times Post_t$	0.560***	1.013**	1.234**	0.562***	0.815**	1.198*
	(4.31)	(2.45)	(2.07)	(3.78)	(2.10)	(1.76)
$Sales\_Accruals_t \times Treat$	-0.626***	-0.793***	-1.161***	-0.572***	-0.610**	-0.884***
	(-7.60)	(-2.71)	(-4.27)	(-5.28)	(-2.18)	(-3.31)
$Sales\_Accruals_t \times Post_t$	-0.249**	-0.354	-0.773	-0.266**	-0.292	-0.775
	(-2.42)	(-1.34)	(-1.32)	(-2.41)	(-0.86)	(-1.53)
$Sales\_Accruals_t$	0.894***	0.869***	1.268***	0.806***	0.789***	1.092***
	(13.22)	(6.94)	(8.60)	(12.03)	(5.45)	(6.00)
$CFO_t \times Treat \times Post_t$	0.006	-0.080	-0.316**	-0.057	-0.108	-0.201
	(0.05)	(-0.52)	(-2.43)	(-0.42)	(-0.54)	(-1.10)
$CFO_t \times Treat$	-0.135	-0.104*	-0.141	-0.023	-0.021	-0.039
	(-1.54)	(-1.80)	(-1.39)	(-0.30)	(-0.25)	(-0.29)
$CFO_t \times Post_t$	-0.087	-0.013	0.196**	-0.048	-0.016	0.192***
	(-1.61)	(-0.22)	(2.57)	(-0.89)	(-0.22)	(2.72)
CFO_t	1.020***	1.024***	1.029***	0.959***	0.927***	0.935***
	(19.94)	(22.85)	(16.09)	(19.26)	(16.69)	(13.23)
Other controls	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y
N	4,694	3,802	2,942	3,166	2,567	1,993
Adj. R^2	0.666	0.545	0.441	0.641	0.475	0.398
$\beta[Sales\_Accruals_t \times Treat \times Post_t]$	-0.066	0.220	0.073	-0.010	0.205	0.314
$+ \beta[Sales\_Accruals_t \times Treat]$	(-0.59)	(0.95)	(0.13)	(-0.08)	(0.76)	0.47

This table presents the OLS regression results after matching treatment and control firms. The matching is conducted based on industry and firm size of the ASC 606 adoption year. Specifically, for each treatment firm, I start with control firms in the same four-digit SIC industry to search for three industry peers with closest size to the treatment firm. If there are no more than three industry peers within the four-digit SIC industry, I move up to the three-digit SIC industry group. If there are no more than three industry peers within the three-digit SIC industry group, I move up to two-digit SIC group. If there is not any matched control firm within the same two-digit SIC

group, the treatment firm is dropped out of the sample. I keep only the matched pairs whose size difference is within 50% of the size of the treatment firm. For matching with replacement, I allow control firms to be matched for multiple times. For matching without replacement, control firms are first matched to the treatment firms with the same narrowest SIC industry and closest size, and are not allowed to be matched to other treatment firms later. Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance of total assets at year *t* and winsorized at 1% and 99%.
See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Table 11 Robustness test – Different Materiality thresholds to classify treatment firms

	Materiality threshold 5%			Materiality threshold 1%		
	(1)	(2)	(3)	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals_t \times Treat \times Post_t$	0.283*	0.469*	0.465	0.212	0.426	0.224
	(1.96)	(1.79)	(1.19)	(1.50)	(1.62)	(0.61)
$Sales\_Accruals_t \times Treat$	-0.332***	-0.330	-0.267	-0.278***	-0.294	-0.266
	(-3.40)	(-1.42)	(-0.90)	(-3.01)	(-1.64)	(-1.21)
$Sales\_Accruals_t \times Post_t$	-0.089	-0.006	-0.301	-0.091	-0.045	-0.242
	(-0.87)	(-0.04)	(-1.29)	(-0.81)	(-0.27)	(-0.99)
$Sales\_Accruals_t$	0.711***	0.613***	0.681***	0.727***	0.633***	0.716***
	(10.42)	(9.26)	(7.56)	(9.44)	(9.07)	(7.45)
$CFO_t \times Treat \times Post_t$	-0.028	0.012	0.041	-0.067	-0.041	0.028
	(-0.39)	(0.14)	(0.49)	(-0.87)	(-0.44)	(0.25)
$CFO_t \times Treat$	0.009	0.007	-0.039	0.045	0.055	-0.036
	(0.15)	(0.11)	(-0.56)	(0.86)	(1.06)	(-0.49)
$CFO_t \times Post_t$	-0.039	-0.006	0.036	-0.019	0.012	0.031
	(-1.44)	(-0.11)	(0.56)	(-0.56)	(0.21)	(0.39)
CFO_t	0.902***	0.912***	0.961***	0.886***	0.892***	0.953***
	(29.95)	(24.37)	(20.20)	(26.52)	(22.19)	(18.13)
Other controls	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y
N	9,828	8,005	6,252	9,828	8,005	6,252
Adj. R^2	0.586	0.481	0.408	0.586	0.481	0.408
$\beta[Sales\_Accruals_t \times Treat \times Post_t]$	-0.049	0.138	0.203	-0.066	0.132	-0.042
$+ \beta[Sales\_Accruals_t \times Treat]$	(-0.53)	(1.19)	(0.61)	(-0.76)	(0.81)	(-0.14)

This table presents the OLS regression results different materiality threshold to define treatment firms. The degree of being affected by the new revenue standard is defined as the transition adjustment of retained earnings scaled by the absolute value of 3-year average net income before the adoption of ASC 606. Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level.

Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by the beginning balance of total assets at year *t* and winsorized at 1% and 99%.
See Appendix 1 for variable definitions and Table 1 for sample construction. ***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

Online Appendix

Online Appendix

Moving towards Principles-Based Accounting Standards: The Impact of the New Revenue Standard on the Quality of Accrual Accounting

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Appendix A

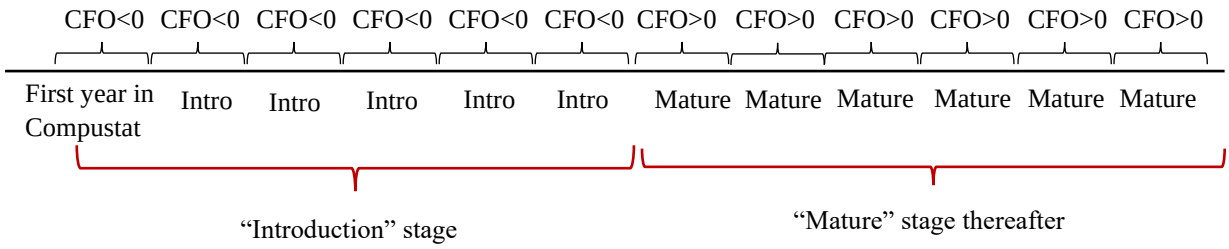
Define the introduction stage for high-tech firms

To identify the introduction stage for high-tech firms, I use a modified definition of business operating cycle in Dickinson (2011). For simplicity and relevance, I only distinguish the introduction stage, and treat all years after the first identified introduction stage as the mature stage. The detailed process is as below. First, for firm-years with negative operating cash flow, I code them as "introduction" regardless of the sign of investing and financing cash flow because they usually switch between positive and negative values in adjacent years and result in misclassification between "introduction" and "decline" stage. Second, some firms temporarily switch to earning positive operating cash flow and go back to incurring large negative operating cash. Therefore, for any firm-year, if any year in the two years before it is coded as "introduction" and any year in the two years after it is coded as "introduction", I label all years between that two as "introduction". For firm-years with history shorter than two years in Compustat, I only look at the two years following it. If there is a year coded as "introduction" within the following two years, I label all previous years as "introduction". Finally, for each firm, only the period that starts from its first year in Compustat and is labelled as "introduction" is seen as the introduction stage. For any year thereafter, I change the label to "mature". This procedure makes high-tech firms with large operating cash outflow in the initial years labelled as in "introduction" stage until they can earn stable cash inflow. [59] In my paper, I delete any high-tech firm that had not been out of the introduction stage at the beginning of sample period. If the high-tech firm has been mature at the beginning of the sample period, any year thereafter that is in the sample period is retained.

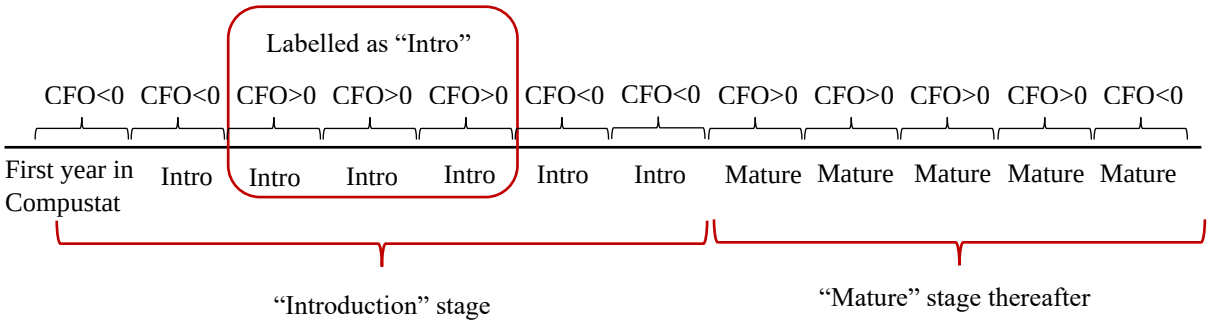
[59] If I use looser criteria, and only backfill the in-between period with "introduction" if the year immediate before and the year immediate after are coded as "introduction". The result of cash flow predictability is weaker but still significant. I get similar results if I use other ad hoc methods to distinguish between introduction stage and mature stage, for example, if I define firms stepping into mature stage after they earn positive profits in two (three, four) consecutive years.

Figure A1 Examples of defining the introduction stage for high-tech firms

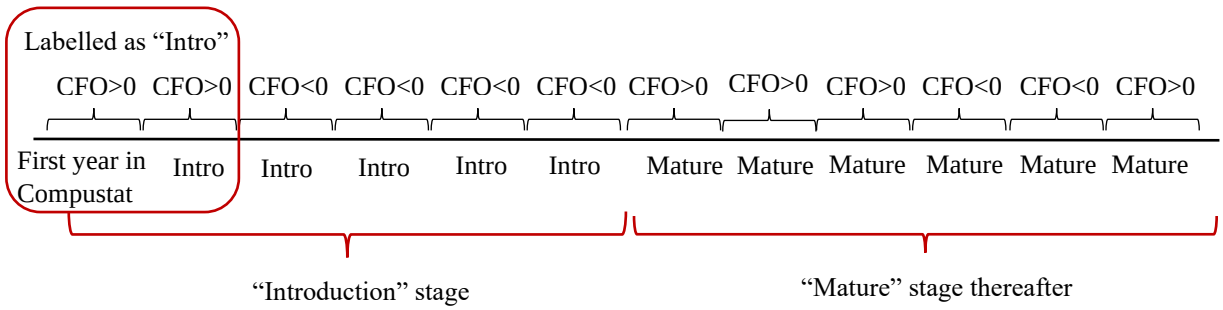
Example 1: The firm has negative operating cash flow in the first several years, and earns positive operating cash flow thereafter.[60]



Example 2: The firm has negative operating cash flow in the first several years, temporarily earns positive operating cash flow, goes back to deep loss then, and finally begins to earn stable positive operating cash flow.[61]



Example 3: The firm has positive operating cash flow in the first two years (i.e. no previous history), has negative operating cash flow in the following several years and begins to earn stable positive operating cash flow thereafter. [62]



[60] Example firms following this pattern is Vonage Holdings and Corcept Therapeutics.

[61] For the middle year in the rectangle, because the year before its last year has negative operating cash flow and the year following its next year has negative operating cash flow, all the three years between that two years are labelled as "introduction". For the last year in the figure, even though it has negative operating cash flow, the firm already went into mature stage and I still label it as "mature". An Example firm following this pattern is Vertex Pharmaceuticals.

[62] For the second year of this firm, because the history before it is shorter than two years, I only look at the two years following it. Since the following two years have negative operating cash flow, all previous years are labelled as "introduction". Any year after the firms became mature, no matter it has negative operating cash flow or not, are labelled as "mature". An example firm following this pattern is Faro Technologies.

Appendix B

Data collection using XBRL

B.1 Collection of transition adjustments of retained earnings

For firms that use the full retrospective method to adopt ASC 606, they need to restate all presented periods in the adoption year's 10-K. The transition adjustments of retained earnings are defined as the restated beginning balance of retained earnings of the adoption year minus the ending balance of retained earnings of the year before adoption in the 10-K filed previously. Figure B1 provides an example of the full retrospective to adopt ASC 606. Compustat has an item named "*rea*" which records this amount. I start with firms whose *rea* is not zero in the ASC 606 adoption year because they are possibly the firms that are affected by ASC 606 and use the full retrospective method to adopt it. However, the adjustments can also be due to other reasons such as misstatements. I manually check the amount and correct the retained earnings adjustments due to other reasons. For the rest of firms whose *rea* is equal to zero, they either are unaffected or use modified retrospective method.

For firms that use the modified retrospective method to adopt ASC 606, only a cumulative adjustment to the beginning balance of retained earnings of the adoption year needs to be made, while prior period amounts are not adjusted and continue to be reported under prior guidance. This amount is the transition adjustment of retained earnings for firms using the modified retrospective adoption. Figure B1 provides an example of the modified retrospective method to adopt ASC 606. I collect the cumulative adjustments made by firms from XBRL filings through the XBRL US API. In most cases, for the item that represents the cumulative adjustments to the beginning balance of retained earnings in the statement of shareholders' equity, it usually has a dimension name of "*StatementEquityComponentsAxis*" and a member name of "*RetainedEarningsMember*". Its concept name usually contains "*cumulative*", "*accounting*", "*revenue*", "*retainedearnings*", "*ASU*", "*ASC*". Since it is the adjustments made in current year to last year's ending balance of retained earnings, the year of the time tag can either be last year or this year.[63] I obtain the facts satisfying the above conditions. I manually check whether the cumulative adjustments are due to ASC 606.

[63] I use the fact field named "period.fiscal-year" as the time tag of the concepts. Normally, "period.fiscal-year" is the calendar year in which the fiscal yearend date is at. However, some entities may have a yearend date that floats around that end of calendar year. So for some entities, the yearend can be a little before December 31st and for some other entities, it can be in the beginning of January. For these cases, XBRL US adjusts the fiscal year to the year before the calendar year of the fiscal yearend date if the yearend falls in the first 10 days of the calendar year

In some cases, firms do not use "*StatementEquityComponentsAxis*" and "*RetainedEarningsMember*" as the dimension and member name for the item that represents the cumulative adjustments of retained earnings in the statement of shareholders' equity. They follow the FASB taxonomy for ASC 606 transition disclosure and use "*InitialApplicationPeriodCumulativeEffectTransitionAxis*" or "*AdjustmentsForNewAccountingPronouncementsAxis*" as dimension name and "*DifferenceBetweenRevenueGuidanceInEffectBeforeAndAfterTopic606Member*" or "*AccountingStandardsUpdate201409Member*" as member name. The concept name usually contains "*retainedearnings*, "*cumulative*" and "*accounting*". I also obtain and manually check these cases.

In very limited cases, some firms do not use any of the dimension or member names above. Instead, they just use the concept name like "*CumulativeEffectOfNewAccountingPrincipleInPeriodOfAdoption*" for the item that represents the cumulative adjustments of retained earnings in the statement of shareholders' equity. For these cases, I use the most frequently appeared concept names of the transition adjustments of retained earnings I already collect from the above process (Freq.>=3) to find whether there are remaining cases and check their accuracy.

For the remaining firms for which I could not collect the transition adjustments of retained earnings, I randomly select 50 observations and find none of them have any transition adjustments of retained earnings due to the adoption of ASC 606. Therefore, it is reasonable to assume that I have collected the transition adjustments of retained earnings for all firms affected by ASC 606.

Figure B1

An example of firm using the full retrospective method to adopt ASC 606

Microsoft 2017 10-K (the year before the adoption)

Retained earnings	
Balance, beginning of period	**2,282**
Net income	**21,204**
Common stock cash dividends	**(12,040)**
Common stock repurchased	**(8,798)**
Balance, end of period	**2,648**

(Jan 1st to Jan 10th). For Compustat, it also adjusts the yearend date to the last month end if the yearend date is within the first 14 days of a month. Therefore, the "period.fiscal-year" equal to the calendar year in Compustat.

Microsoft 2018 10-K (the adoption year)

Retained earnings	
Balance, beginning of period	**17,769**
Net income	**16,571**
Common stock cash dividends	**(12,917)**
Common stock repurchased	**(7,699)**
Cumulative effect of accounting change	**(42)**
Balance, end of period	**13,682**

Transition adjustments of retained earnings: 17,769-2,648=15,121

An example of firm using the modified retrospective method to adopt ASC 606

Verint 2018 10-K

	Verint Systems Inc. Stockholders' Equity				
	Common Stock				
(in thousands)	Shares	Par Value	Additional Paid-in Capital	Treasury Stock	Accumulated Deficit
Balances as of January 31, 2018	**63,836**	**65**	**1,519,724**	**(57,425)**	**(238,312)**
Net income	—	—	—	—	65,991
Other comprehensive loss	—	—	—	—	—
Stock-based compensation - equity-classified awards	—	—	57,659	—	—
Common stock issued for stock awards and stock bonuses	1,501	2	8,883	—	—
Treasury stock acquired	(4)	—	—	(173)	—
Capital contributions by noncontrolling interest	—	—	—	—	—
Dividends to noncontrolling interest	—	—	—	—	—
Cumulative effect of adoption of ASU No. 2014-09	—	—	—	—	38,047
Balances as of January 31, 2019	**65,333**	**$ 67**	**$ 1,586,266**	**$ (57,598)**	**$ (134,274)**

Transition adjustments of retained earnings: 17,769-2,648=38,047

An example of XBRL tag for cumulative adjustments of retained earnings

	Cumulative Effect on Retained Earnings, Net of Tax
Tag	us-gaap:CumulativeEffectOnRetainedEarningsNetOfTax1
Fact	38,047,000
Period	12 months ending 01/31/2019
Axis	**US-GAAP** Adjustments For New Accounting Pronouncements Axis **US-GAAP** Statement Equity Components Axis
Member	**US-GAAP** Accounting Standards Update201409 Member **US-GAAP** Retained Earnings Member
Explicit Member	us-gaap:AccountingStandardsUpdate201409Member, us-gaap:RetainedEarningsMember
Measure	USD
Scale	Thousands
Decimals	Thousands
Balance	Credit

B.2 Collection of cash flow statement items

I first get the accession of all 10-K filings from SEC Analytics Suite, and then obtain all calculation links for each firm-year's 10-K in the XBRL format using the XBRL US API. To find the calculation link for the cash flow statement, I require the fact field named "network.role-description" of the calculation link contains key words "- Statement -" and "cash flow". For the duplicates after this step, I retain the calculation link that have the largest number of relationships because the calculation link for the cash flow statement is usually the most complicated one. Other simple calculation links do not represent cash flow statements. The calculation link describes the tree-structure of the cash flow statement. Specifically, the net change in cash and cash equivalents is disaggregated into net cash from operating, investing and financing activities, and the effect of foreign exchange rate. The net cash from operating, investing and financing activities are further disaggregated into granular components respectively. For each level of disaggregation, the calculation link also provides the mathematic relation between upper-level items and lower-level items. The relationship is indicated by "*relationship.weight*", which has value 1 if the child concept is added to the parent concept, and -1 if the child concept is subtracted from the parent concept. I first disaggregate the cash flow statement to the most granular level. Then I keep only the reconciliation items between net income and operating cash flows because they reflect the accruals decompositions. I look at the parent concepts to distinguish whether the items belong to the reconciliation between net income and operating cash flow, because for these items, either their parents' or grandparents' concept names must contain "*operating*" or "*workingcapital*" etc. Within the group of reconciliation items, following the definition of sales-related accruals, I exclude the items related to non-operating activities and other operating activities within the scope of other guidance. In this step, I drop duplicates to ensure one concept only appears once for each cash flow statement. Next, I use the report id (*dts.id*), concept id (*concept.id*), and the time tag (*period.fiscal-year*) to obtain the corresponding value of the collected items. If I obtain multiple values for one concept id in one report, I manually check the reason. In most cases, this is because a rounded number for the same concept is disclosed elsewhere. For these cases, I keep the most accurate one. In some other cases, this is because the concept has disaggregate values along different segments. For these cases, I sum up the values. For the rest small number of cases, they are likely to be the results of inaccurate tagging. For them, I manually search and read the corresponding cash flow statement, and keep the correct records. Then I use the mathematical relationships embedded in the calculation link to aggregate the value of the items to the top level. To check whether the calculation links always have the correct sign, I first

aggregate the "*relationship.weight*" to the highest level (i.e. net change of cash and cash equivalent) by multiplying its value at each level. Then I check whether the multiplied relationship has correct sign for the most common items (i.e., "*IncreaseDecreaseInAccountsReceivable*", "*IncreaseDecreaseInInventories*", "*IncreaseDecreaseInAccountsPayable*"). To illustrate, theoretically, "*IncreaseDecreaseInAccountsReceivable*" should have a multiplied relationship of -1. I check cases where the multiplied relationship equals 1. I find only 16 10-K where the relationship is wrong and correct the relationship accordingly, including the calculation links of other items on the same cash flow statement. [64] I find 6 wrong cases when checking "*IncreaseDecreaseInInventories*", "*IncreaseDecreaseInAccountsPayable*". After I correct these cash flow statements, I do not find errors when I check several other items, such as "*IncreaseDecreaseInPrepaidDeferredExpenseAndOtherAssets*". The negative of the aggregate value is the sales-related accruals before the adjustments of tax accruals. I manually check the collection accuracy for 50 random cases, and I find the results are 100% accurate. Then I follow the process in Appendix 1 to adjust tax accruals.

Figure B2.1: The pro forma disclosure on the effect of ASC 606

Verint 2018 10-K

(in thousands)	Balance at January 31, 2018	Adjustments from Adopting ASU No. 2014-09	Balance at February 1, 2018
Assets:			
Accounts receivable, net	$ 296,324	$ 53,682	$ 350,006
Contract assets	—	69,217	69,217
Deferred cost of revenue	6,096	2,056	8,152
Prepaid expenses and other current assets	82,090	(829)	81,261
Long-term deferred cost of revenue	2,804	2,193	4,997
Deferred income taxes	30,878	(2,248)	28,630
Other assets	52,037	14,912	66,949
Liabilities:			
Accrued expenses and other current liabilities	220,265	(46,062)	174,203
Contract liabilities	196,107	139,517	335,624
Long-term contract liabilities	24,519	6,518	31,037
Deferred income taxes	35,305	963	36,268
Stockholders' Equity:			
Total stockholders' equity	1,132,336	38,047	1,170,383

[64] I find 116 cases where the multiplied relationship on "*IncreaseDecreaseInAccountsReceivable*" is 1. However, in most cases (100 out of 116), the sign of the value of "*IncreaseDecreaseInAccountsReceivable*" is also wrong. Therefore, the multiplier of the value "*IncreaseDecreaseInAccountsReceivable*" and its multiplied relationship has right sign.

Figure B2.2: Several examples of the comparison between as-reported data and Compustat data on the cash flow statements.

Microsoft 2014 10-K

(In millions)

Year Ended June 30,	Compustat items	2014
Operations		
Net income		$ 22,074
Adjustments to reconcile net income to net cash from operations:		
Goodwill impairment		0
Depreciation, amortization, and other	*dpc*	5,212
Stock-based compensation expense	*fopo*	2,446
Net recognized losses (gains) on investments and derivatives	*fopo*	(109)
Excess tax benefits from stock-based compensation	*fopo*	(271)
Deferred income taxes	*txdc*	(331)
Deferral of unearned revenue	*fopo*	44,325
Recognition of unearned revenue	*fopo*	(41,739)
Changes in operating assets and liabilities:		
Accounts receivable	*recch*	(1,120)
Inventories	*invch*	(161)
Other current assets	*aoloch*	(29)
Other long-term assets	*aoloch*	(628)
Accounts payable	*apalch*	473
Other current liabilities	*aoloch*	1,075
Other long-term liabilities	*aoloch*	1,014
Net cash from operations		32,231

Microsoft 2018 10-K

(In millions)

Year Ended June 30,	Compustat items	2018
Operations		
Net income		$ 16,571
Adjustments to reconcile net income to net cash from operations:		
Asset impairments		0
Depreciation, amortization, and other	*dpc*	10,261
Stock-based compensation expense	*fopo*	3,940
Net recognized gains on investments and derivatives	*fopo*	(2,212)
Deferred income taxes	*txdc*	(5,143)
Changes in operating assets and liabilities:		
Accounts receivable	*recch*	(3,862)
Inventories	*invch*	(465)
Other current assets	*aoloch*	(952)
Other long-term assets	*aoloch*	(285)
Accounts payable	*apalch*	1,148
Unearned revenue	*aoloch*	5,922
Income taxes	*txach*	18,183
Other current liabilities	*aoloch*	798
Other long-term liabilities	*aoloch*	(20)
Net cash from operations		43,884

For the 2014 10-K of Microsoft, the deferred revenue accumulation and amortization are presented above the *changes in operating assets and liabilities* in the statement of cash flows and are aggregated in *fopo* by Compustat. However, for the 2018 10-K of Microsoft, the unearned revenue is presented under the *changes in operating assets and liabilities* and is aggregated in *aoloch*.

Vonage 2018 10-K

(In thousands)		2018
Cash flows from operating activities:		
Net income (loss)	Compustat items	$ 35,728
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Depreciation and amortization	*dpc*	31,444
Amortization of intangibles	*dpc*	39,457
Deferred income taxes	*txdc*	(4,809)
Amortization of deferred customer acquisition costs	*dpc*	10,287
Change in contingent consideration		—
Allowance for doubtful accounts and obsolete inventory	*fopo*	2,010
Amortization of debt issuance costs	*dpc*	1,022
Loss on disposal of fixed assets	*sppiv*	79
Loss on extinguishment of debt	*fopo*	14
Share-based expense	*fopo*	33,799
Gain on sale of business		—
Change in derivatives	*fopo*	(198)
Changes in operating assets and liabilities, net of acquisitions:		
Accounts receivable	*recch*	(20,485)
Inventory	*invch*	1,233
Prepaid expenses and other current assets	*aoloch*	2,787
Deferred customer acquisition costs	*aoloch*	(25,439)
Accounts payable	*apalch*	20,099
Accrued expenses	*apalch*	(6,597)
Deferred revenue	*aoloch*	1,416
Other assets and liabilities	*aoloch*	1,358
Net cash provided by operating activities		123,205

For 2018 10-K of Vonage, in Compustat, the amortization of customer acquisition costs is aggregated with amortization of fixed assets and intangible in *dpc*. What's more, Compustat misclassifies amortization of debt issuance costs in *dpc*. Allowance for doubtful accounts and obsolete inventory is aggregated with other non-cash items in *fopo*. Compustat aggregates changes in operating assets and liabilities, other than changes in accounts receivable and inventory, in *aoloch*.

Table B2: Results for H1 using Compustat data

	(1)	(2)	(3)
	CFO_{t+1}	CFO_{t+2}	CFO_{t+3}
$Sales\_Accruals\_Comp_t \times Treat \times Post_t$	0.2719*	0.5135*	0.4869
	(1.90)	(1.93)	(1.32)
$Sales\_Accruals\_Comp_t \times Treat$	-0.3500***	-0.4114**	-0.3176
	(-4.13)	(-2.21)	(-1.54)
$Sales\_Accruals\_Comp_t \times Post_t$	-0.0367	0.0223	-0.2520
	(-0.45)	(0.17)	(-1.47)
$Sales\_Accruals\_Comp_t$	0.6485***	0.5862***	0.6265***
	(10.56)	(9.01)	(8.47)
$CFO\_Comp_t \times Treat \times Post_t$	-0.0282	-0.0354	-0.0615
	(-0.35)	(-0.32)	(-0.53)
$CFO\_Comp_t \times Treat$	-0.0206	-0.0048	-0.0782
	(-0.42)	(-0.10)	(-1.18)
$CFO\_Comp_t \times Post_t$	-0.0405	0.0010	0.0554
	(-1.58)	(0.02)	(0.88)
CFO_Comp_t	0.9228***	0.9295***	0.9686***
	(33.04)	(26.90)	(22.57)
$Other\_Accruals\_Comp_t \times Treat \times Post_t$	0.1752*	-0.0011	0.1580
	(1.90)	(-0.01)	(0.79)
$Other\_Accruals\_Comp_t \times Treat$	-0.2224***	-0.1817*	-0.2286*
	(-3.05)	(-1.86)	(-1.74)
$Other\_Accruals\_Comp_t \times Post_t$	0.0884**	0.1602*	0.0875
	(2.21)	(1.82)	(0.72)
$Other\_Accruals\_Comp_t$	-0.0170	-0.0742	-0.1164
	(-0.51)	(-1.40)	(-1.63)
$Treat \times Post_t$	0.0089	-0.0039	0.0231
	(1.00)	(-0.21)	(0.96)
Treat	-0.0112*	-0.0093	-0.0048
	(-1.79)	(-0.77)	(-0.30)
$Post_t$	0.0138***	0.0142*	-0.0043
	(3.27)	(1.67)	(-0.38)
Intercept	0.0110**	0.0161**	0.0237***
	(2.30)	(2.47)	(2.72)
Industry fixed effects	Y	Y	Y
N	9,831	8,008	6,259
adj. R-sq	0.588	0.484	0.409

This table presents the OLS regression results for H1 when Compustat data is used to construct accrual variables. *Sales_Accruals_Comp* is calculated by *(-aoloch-txach-apalch-invch-recch-txdc-txbco-txbcof)-(txpd-txt)*. *CFO_Comp* is calculated by (*oancf-xidoc+txbcof+txpd*). *Other_Accruals_Comp* is calculated by *ibc-oancf+xidoc-txbcof - Sales_Accruals_Comp - (txpd-txt)*. Column (1)-(3) represents one -year-ahead, two-year-ahead and three-year-ahead cash flow predictability respectively. The industry fixed effects are at 3-digit SIC industry level. Standard errors are clustered by 3-digit SIC industry. All variables on cash flows and accruals are scaled by lagged total assets and winsorized at 1% and 99%.

***, **, and * indicate statistical significance at 1%, 5%, and 10% levels respectively, based on two-tailed test. T-statistics are in the parentheses.

B.3 Collection of capitalized costs of obtaining contracts

For each firm-year, I first use the concept names of capitalized contract cost defined in the FASB taxonomy to obtain the firm's disclosure on the capitalized contract cost.[65] For the adoption year, I also try to obtain the beginning balance of the capitalized contract costs under the new revenue standard. When there are multiple values for the same concept, they are usually the disaggregate values across segments or current and noncurrent classifications. I either keep the sum if it is separately disclosed or sum up the disaggregate values if no aggregate value is disclosed. The concept names do not distinguish capitalized costs of obtaining contracts and capitalized costs of fulfilling contracts. In some cases, the dimension name can indicate whether the costs are costs of obtaining contracts or costs of fulfilling contracts. In other cases, I manually read the corresponding 10-K to find out whether the capitalized contract costs are costs of obtaining contracts or fulfilling contracts. I keep only the capitalized costs of obtaining contracts for my research question. Using this approach, I collect capitalized contract acquisition costs for 294 firms. Second, some firms do not use the concept names for capitalized contract cost defined in the FASB taxonomy. Instead, they use the concept names for contract assets, such as "*ContractWithCustomerAssetNet*". For these cases, I conduct key word search for treatment firms.[66] For 10-K that contain key words, I then manually check and collect capitalized contract acquisition costs, I obtain capitalized contract acquisition costs for 32 firms in this process. I only find 24 firms that capitalized contract acquisition costs before the adoption of the new revenue standard.

B.4 Collection of remaining performance obligation, non-current contract assets and liability

I use the concept names related to remaining performance obligation defined in the FASB taxonomy to obtain the firms' disclosure on the remaining performance obligation in the adoption year.[67, 68] I first look at firms with non-zero values on the concept name

[65] The list of concept names is as follows: "*CapitalizedContractCostNetCurrent*" "*CapitalizedContractCostNetNoncurrent*", "*CapitalizedContractCostNet*", "*CapitalizedContractCostGross*", "*CapitalizedContractCostAccumulatedAmortization*", "*CapitalizedContractCostAccumulatedImpairment*", "*DeferredSubscriberAcquisitionCostsCurrent*", "*DeferredSubscriberAcquisitionCostsNoncurrent*", "*DeferredSalesCommission*".

[66] Key word list is as follows: "*contract acquisition cost*", "*costs? of obtaining a? contracts*?", "*costs? of acquiring a? contracts*?", "*costs? (incurred)? to obtain a? (customer)? contracts*?", "*costs? (incurred)? to \s* acquire a? (customer)? contracts*?", "*Deferred incremental (direct)? selling cost*", "*Deferred commission*", "*capitalized commission*", "*340-40*", "*capitalized contract cost*"

[67] http://xbrlview.fasb.org/yeti/resources/yeti-gwt/Yeti.jsp

[68] The list of concept names is as follows: "*RevenueRemainingPerformanceObligation*", "*RevenueRemainingPerformanceObligationPercentage*", "*RevenueRemainingPerformanceObligationExpectedTimingOfSatisfactionYear1*",

"*RevenueRemainingPerformanceObligation*". The may either disclose a single aggregate amount or the disaggregate amount cross segments or years. For the latter, I keep the sum if it is separately disclosed or sum up the disaggregate values if no aggregate value is disclosed. Then, for firms for which I can collect concept names like "*RevenueRemainingPerformanceObligationPercentage*" and "*RevenueRemainingPerformanceObligationExpectedTimingOfSatisfactionYear1*" but cannot collect the concept name "*RevenueRemainingPerformanceObligation*", I manually collect the disclosed amount of remaining performance obligation from the corresponding 10-K.

For firms' disclosure on capitalized costs of obtaining contract in the adoption year, I already collect this information in B.3.

I use the concept names of noncurrent operating assets and liabilities related to sales defined in the FASB taxonomy to obtain the firms' disclosure on them in the adoption year or the year before the adoption.[69] When there are multiple values for the same concept, they are usually the disaggregate values across segments or current and noncurrent classifications. I either keep the sum if it is separately disclosed or sum up the disaggregate values if no aggregate value is disclosed.

B.5 Collection of Balance Sheet items

Similar to collecting cash flow statement items, I require the fact field named "network.role-description" of the calculation link to contain key words "- Statement -" and "Balance Sheet" or "Financial Position" to identify the calculation link for balance sheet. For the duplicates after this step, I retain the calculation link that have the largest number of relationships because the calculation link for the balance sheet is usually the most complicated one. I first disaggregate the balance sheet to the most granular level using the parent-child relationships provided in the calculation link. Then I keep only the assets decompositions and liabilities decompositions. I look at the source concept of the highest level to distinguish the

"*RevenueRemainingPerformanceObligationExpectedTimingOfSatisfactionPeriod1*", "*RevenueRemainingPerformanceObligationExpectedTimingOfSatisfactionExplanation*"

[69] The list of concept names is as follows: "*ContractWithCustomerAssetNetNoncurrent*", "*ContractWithCustomerAssetGrossNoncurrent*", "*ContractWithCustomerAssetNoncurrent*", "*ContractWithCustomerLiabilityNoncurrent*", "*AccountsReceivableNetNoncurrent*", "*AccountsReceivableGrossNoncurrent*", "*CostsInExcessOfBillingsOnUncompletedContractsOrProgramsExpectedToBeCollectedAfterOneYear*", "*CustomerLoyaltyProgramLiabilityNoncurrent*", "*DeferredRevenueNoncurrent*", "*BillingsInExcessOfCostNoncurrent*", "*AccruedLiabilitiesForUnredeeemedGiftCardsNoncurrent*", "*CustomerAdvancesNoncurrent*", "*CustomerAdvancesForConstruction*", "*CustomerDepositsNoncurrent*", "*CustomerAdvancesOrDepositsNoncurrent*", "*DeferredIncomeNoncurrent*", "*DueFromRelatedPartiesNoncurrent*", "*UnbilledReceivablesNoncurrent*", "*FrequentFlierLiabilityNoncurrent*".

items that belong to the total assets and total liabilities. I drop duplicated concepts to ensure each concept only appears once for each balance sheet. Next, I use report id (*dts.id*), concept id (*concept.id*), and the time tag (*period.fiscal-year*) to obtain the corresponding value of the granular assets and liabilities accounts. If I obtain multiple values for one concept in one report, I manually check the reason. In most cases, this is because a rounded number for the same concept is disclosed elsewhere. For these cases, I keep the most accurate one. In some other cases, this is because the concept has disaggregate values along different segments. For these cases, I keep the sum if it is separately disclosed or sum up the disaggregate values if no aggregate value is disclosed. For the rest small number of cases, they are likely to be the results of inaccurate tagging. For them, I manually search and read the corresponding balance sheet, and keep the correct records. For the collected granular balance sheet amounts, I then classify them into operating assets (liabilities) related to sales, other operating assets (liabilities) and financial assets (liabilities), income tax assets (liabilities) according the definition in Appendix 1. Next, I use the mathematical relationships in the calculation link to aggregate them to get the aggregate assets and liabilities. To check whether the relationships in calculation links always have the correct sign, I first aggregate the "*relationship.weight*" to the highest level (i.e., total assets or liabilities) by multiplying its value at each level. Then I check whether the multiplied relationship has correct sign for common items (i.e., "*AccountsReceivableNetCurrent*", "*DeferredRevenueCurrent*"). To illustrate, theoretically, "*AccountsReceivableNetCurrent*" should have a multiplied relationship of 1 to be aggregated to total assets. I check cases where the multiplied relationship equals -1. I find no errors in the sign of relationships. Last, I subtract the liabilities from corresponding assets to get the net operating assets related sales, other net operating assets and net financial assets. I manually check the collection accuracy for 50 random cases, and I find the results are 100% accurate.

Appendix C Other changes of accounting standards and tax law during sample period

Panel A: The change of tax law and standards		
Name	Brief description	Example
Tax Cuts and Jobs Act of 2017 (enacted into law on December 22, 2017)	The TCJA significantly changes existing U.S. tax law and includes numerous provisions that affect business, including reducing the U.S. federal statutory tax rate from 35% to 21%, disallowing deductions for any compensation over $1 million paid to top executives, a one-time transition tax on deemed repatriation of deferred foreign income, a provision to tax global intangible low-taxed income ("GILTI") of foreign subsidiaries and a base erosion anti-abuse tax ("BEAT") measure, etc. TCJA significantly affects the cash tax paid and tax accruals. For example, due to the change of statutory tax and tax deductibility of compensation, firms need to revaluate their deferred tax assets and liabilities.	Microsoft https://www.sec.gov/Archives/edgar/data/0000789019/000156459018019062/msft-10k_20180630.htm#STOCKHOLDERS_EQUITY_STATEMENTS *"During fiscal year 2018, we recorded an estimated net charge of $13.7 billion related to the TCJA, due to the impact of the one-time transition tax on the deemed repatriation of deferred foreign income of $17.9 billion, offset in part by the impact of changes in the tax rate of $4.2 billion, primarily on deferred tax assets and liabilities."*
ASU 2016-09, Improvements to Employee Share-Based Payment Accounting (effective for fiscal years beginning after Dec. 15, 2016)	When a share-based payment award is granted to an employee, the fair value of the award is generally recognized over the vesting period, and a corresponding deferred tax asset is recognized to the extent that the award is tax-deductible. The tax deduction is generally based on the intrinsic value at the time of exercise, and it can be either greater (excess tax benefit) or less (tax deficiency) than the compensation cost recognized in the financial statements. Under the legacy guidance, all excess tax benefits are recognized in additional paid-in capital (APIC), and tax deficiencies are recognized either in the income tax provision or in APIC to the extent that there is a sufficient "APIC pool" related to previously recognized excess tax benefits. Under the legacy guidance, excess tax benefits are viewed as a financing transaction and are presented as financing activities in the statement of cash flows. Under the ASU, an entity recognizes all excess tax benefits and tax deficiencies as income tax expense or benefit in the income statement. Excess tax benefits no longer represent financing activities since they are recognized in the income statement. Therefore, they are classified as operating activities in the same manner as other cash flows related to income taxes.	Chuk et al. (2022) shows that ASU 2016-09 reduces usefulness of earnings, which manifests as ERC decline and lower earnings persistence.
ASU 2016-16, Income Taxes – Intra-Entity Transfers of Assets other than inventory (effective for fiscal years beginning after Dec. 15, 2017)	This update amended the ASC to eliminate the exception to GAAP of comprehensive recognition of current and deferred income taxes that prohibited recognizing current and deferred income tax consequences for an intra-entity asset transfer (excluding the transfer of inventory) until the asset has been sold to an outside party. Now, when a company transfers intellectual property (e.g., patents, trademarks, trade names, designs), rights to use intellectual property, or equipment between entities it controls in different tax jurisdictions, the	Microsoft https://www.sec.gov/Archives/edgar/data/0000789019/000156459018019062/msft-10k_20180630.htm#STOCKHOLDERS_EQUITY_STATEMENTS *"We currently expect a net cumulative-effect adjustment of approximately $550 million, which will reverse the deferral of income tax consequences from past intra-entity transfers*

	income tax consequences of the inter-company transaction (involving assets other than inventory) must now be recognized.	*involving assets other than inventory and new deferred tax assets for amounts not recognized under current GAAP"*
Panel B: Other important and concurrent changes of accounting standards		
Name	Brief description	XBRL tag of line items in cash flow statement
ASU 2016-01, Recognition and measurement of financial assets and financial liabilities	The standard requires equity investments and other ownership interest in unconsolidated entities (other than those accounted for using the equity method of accounting) to be measured at fair value through earnings. It is effective for fiscal years beginning after Dec. 15, 2017.	*ChangeInFairValueOfFinancialInstruments, UnrealizedGainLossAndPremiums OnFinancialInstruments, ChangeInValueOfFinancialInstruments, etc.*
ASU 2016-02, Lease	The standard require lessees to record right-of-use assets and corresponding liabilities on balance sheet for operating lease. It is effective for fiscal years beginning after Dec. 15, 2018.	*IncreaseDecreaseInOperatingLeaseRightOfUseAsset, IncreaseDecreaseInLeaseLiabilities, OperatingLeaseRightOfUseAssetAmortization, etc.*
ASU 2017-12, Targeted Improvements to Accounting for Hedging Activities	The standard increases the scope of what can be hedged , provides certain relief for measuring hedge effectiveness and in the timing of documentation and Eliminated requirement to separately measure and record hedge ineffectiveness. It is effective for fiscal years beginning after Dec. 15, 2018.	*DerivativeInstrumentsNotDesignated AsHedgingInstrumentsGainLossNet, ChangeInUnrealizedGainLoss OnFairValueHedgingInstruments1, IncreaseDecreaseInDerivativeLiabilities*, etc.

Appendix D Examples of transactions for which the way of accounting is affected by the new revenue standard[70]

Transaction Type	Accounting Treatment Before and After the New Revenue Standard	Firm Example and the 10-K Disclosure upon Adoption
Transactions whose measurement and recognition are affected by the new revenue standard		
Multiple-deliverable arrangements, absent of objective price when determining the stand-alone selling price for each deliverable	For each deliverable that has stand-alone value (the unit of accounting), firms are required to determine the stand-alone selling price (SSP) for each unit of accounting, allocate the total consideration to it using relative SSP, and recognize revenue when the corresponding unit of accounting is delivered. The SOP 97-2 issued in 1997 and EITF 00-21 issued in 2003 restricted firms' discretion and required that firms could only use vendor-specific objective evidence (VSOE) and third-party evidence (TPE), i.e. the objective price in the sale of similar products to similar customers by the firm itself or peers, when determining SSP. This requirement is called "objective price constraint". If objective price cannot be determined for delivered items but exists for undelivered items, the firm can use residual method where the difference between total consideration and the SSP of undelivered items is allocated to the delivered items. In the case where even the objective price of undelivered items cannot be determined, the revenue is deferred until all items without objective price are delivered or recognized over the entire contract period if the undelivered item is service to be performed over the contract period. ASU 2009-13/14 issued in 2009 removes the objective price constraint for most types of contracts and allows firms to use the best estimate of price (ESP) as the SSP in the absence of VSOE and TPE. However, software contracts within the scope of ASC 985-605 still retain the objective price constraint. ASC 606 removes the constraint, making the accounting for software contracts to be consistent with other multiple-deliverable arrangements. It is important to note that ASC 606 does not affect all software contracts. The accounting changes come amid a huge change in the software industry that finds software companies shifting from one-time licensing fees to subscription-based, software-as-a-service business models (SaaS). Only software firms that sell on-premise software which bundles one-time upfront licensing with post-contract support and/or service are affected by this change. Revene from SaaS contracts are continued to be recognized over time. Companies that have had SaaS business models from the start, such as Salesforce.com are less impacted by this change. Adobe, Microsoft and Splunk are among software stocks that are transitioning to SaaS but still have considerable licensing revenue. The timing of revenue recognition for these firms are accelerated.[71]	Microsoft https://www.sec.gov/Archives/edgar/data/0000789019/000156459018019062/msft-10k_20180630.htm Page 64 *"The most significant impact of the standard relates to our accounting for software license revenue. […]"* Adobe https://www.sec.gov/Archives/edgar/data/0000796343/000079634320000013/adbe10kfy19.htm Page 63 *"Revenue for certain contracts that were previously deferred would have been recognized in periods prior to adoption under the new standard. […]"* Splunk https://www.sec.gov/Archives/edgar/data/0001353283/000135328319000005/a01311910k.htm Page 82 *"The most significant impacts of the standard relate to the timing of revenue recognition for arrangements involving term licenses. […]"*

[70] The appendix only provides an incomplete list of the types of transactions for which the way of accounting is affected by the new revenue standard. Since the new revenue standard provides a single comprehensive framework on accounting for contracts with customers and replaces most previous guidance on revenue recognition, the specific influence is far-reaching, and can be beyond the list here, depending on the contract contents.

[71] https://www.investors.com/news/technology/fasb-606-revenue-accounting-hits-software-telecom/

Multiple-deliverable arrangements, with deep discount on the firstly-delivered items	Although ASU 2009-13/14 eliminates the objective constraint when allocating total consideration to each unit of accounting for all contracts not within the scope of ASC 985-605. The multiple-deliverable arrangements are still subject to a restriction called "contingent revenue cap". ASC 605-25 specifies *"amount allocable to the delivered unit or units of accounting is limited to the amount that is not contingent upon the delivery of additional items"*. This restriction is particularly relevant for multiple-deliverable arrangements with deep discount on the firstly-delivered items. For example, in telecommunication industry, it is a common practice to bundle a free handset in the phone plan. Under the legacy guidance, although the handset has stand-alone value using SSP, no revenue is recognized upon the delivery of handset because cash receipt is contingent upon the provision of future services. ASC 606 removes this restriction, and creates a new account called contract assets to record the amount for which revenue has been recognized but customer payment is contingent on a future event.	AT&T https://www.sec.gov/Archives/edgar/data/0000732717/000119312519045608/d705958dex13.htm Page 75 *"Prior to 2018, revenue recognized from contracts that bundle services and equipment was limited to the lesser of the amount allocated based on the relative selling price of the equipment and service already delivered or the consideration received from the customer for the equipment and service already delivered."*
Multiple-deliverable arrangements, defining performance obligation	Under legacy U.S. GAAP, ASC 605-25 requires an entity to identify units of accounting by determining (1) whether the delivered item or items have stand-alone value to the customer and (2) whether, if there is a generic right of return relative to the delivered item or items, delivery or performance of the undelivered item or items is considered probable and substantially within the entity's control. In contrast, ASC 606 requires an entity to identify a performance obligation by the following criteria: (1) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer (that is, the good or service is capable of being distinct) and (2) The entity's promise to transfer the good or service to the customer is separately identifiable from other promises in the contract (that is, the promise to transfer the good or service is distinct within the context of the contract). If the promised good or service does not meet both of these requirements, it must be combined with other goods or services promised in the contract until there is a combination of goods or services that meets the requirements. The "capable of being distinct" criterion is similar to the criterion in legacy guidance that requires a deliverable to have "value to the customer on a standalone basis". However, in developing the new revenue standard, the FASB and IASB determined that it may be impractical and not decision-useful to separate every promised good or service that is capable of being distinct in some context. A simple example is a construction-type contract in which an entity transfers to a customer multiple goods or services — such as raw materials and construction labor services — that are capable of being distinct. Separating, measuring, and recognizing revenue for each of these goods or services would result in the recognition of revenue when the materials and services are provided instead of as the entity performs by using the materials to construct an item promised to the customer and for which the customer ultimately contracted. Accordingly, the FASB and IASB developed a second criterion that must also be met for a promised good or service to be distinct.	General Electric https://www.sec.gov/Archives/edgar/data/0000040545/000004054519000014/ge10-k2018.htm Page 109 *"The new revenue standard provides more prescriptive guidance on identifying the elements of long-term service type contracts that should be accounted for as separate performance obligations. Application of this guidance, […], has resulted in changes to the scope of elements included in our accounting model for long-term service agreements."* Fluor https://www.sec.gov/Archives/edgar/data/0001124198/000162828019001658/flr12-31x201810k.htm Page F-16 *"Under the previous guidance, the company typically segmented revenue and margin recognition between the engineering and construction phases of its contracts. Upon adoption of ASC Topic 606, engineering and construction contracts are generally accounted for as a single unit of account (a single performance obligation), resulting in a more constant recognition of revenue and margin over the term of the contract."*

	The change in criteria requires firms to either separate the unit of accounting under the legacy guidance or combine multiple units of accounting into one performance obligation. Except for common production or service contracts with multiple elements, a special type of transaction affected by the above criteria is franchise agreement. The franchise agreement bundles the license to brand name with related franchise services or exclusivity of development agreements. The license to brand name is a type of "symbolic IP" whose value is largely dependent on the entity's ongoing support or maintenance of that IP, and customers are provided with access to the IP through the license term (i.e., "right to access"). Under the new guidance, the license to brand name and related services or rights are interrelated and treated as a single performance obligation. The revenue are recognized over the franchise term. Under previous guidance (FAS 45), the initial license fee was recognized when the franchised store was opened, as all material services and conditions related to the franchise fee had been substantially performed upon the store opening.	SHAKE SHACK https://www.sec.gov/Archives/edgar/data/0001620533/000162053319000010/shak-20181226_10k.htm Page 93 *"The performance obligations are satisfied over time, starting when a Shack opens, through the end of the term of the license granted to the Shack. Because we are transferring licenses to access our intellectual property during a contractual term, revenue is recognized on a straight-line basis over the license term."*
Extended payment term	In arrangements with extended payment terms, the vendor may be more likely to provide refunds or other types of concessions to the customer, or the customer may be more likely to renegotiate payment terms (e.g., because the product's value has diminished as a result of technological obsolescence). In such arrangements, it may therefore be less likely that the vendor will collect the full payment stipulated in the payment terms. Thus, the arrangement fee may not be fixed or determinable (SAB Topic 13). ASC 985-605-25-34 specifies that an arrangement fee is presumed not to be fixed or determinable *"if payment of a significant portion of the software licensing fee is not due until after expiration of the license or more than 12 months after delivery."* If it cannot be concluded that a fee is fixed or determinable at the outset of an arrangement, revenue shall be recognized as payments from customers become due. Although ASC 985-605 only applies to software contracts, contracts not within the scope of ASC 985-605 usually use similar guidance by analogy due to lack of other guidance. ASC 606 removes the constraint on revenue recognition under extended payment term. The risk of future price concession is reflected in the measurement of contract's transaction price rather than affecting the timing of recognition. The significant financing component should be carve-out from the transaction price for the impact of the time value of money and be recognized as interest income. Implicit price concession is a types of variable consideration that should be estimated when determining the transaction price in the step 3 of the five-step model. ASC 606-10-32-8 specifies that *"an entity shall include in the transaction price some or all of an amount of variable consideration estimated only to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved."* At the end of each reporting period, an entity shall update the estimated transaction price and account for the change in accordance with paragraphs 606-10-32-42 through 32-45.	ACI Worldwide https://www.sec.gov/Archives/edgar/data/0000935036/000119312519058622/d675313d10k.htm Page 84 *"Under ASC 605, […] For software license arrangements in which a significant portion of the fee is due more than 12 months after delivery or when payment terms are significantly beyond the Company's standard business practice, the license fee is deemed not fixed or determinable. […] the license is recognized as revenue as payments become due and payable, provided all other conditions for revenue recognition have been met. […]Under ASC 606, license revenue from these software license arrangements with extended payment terms is accelerated (i.e. upfront recognition) and adjusted for the effects of the financing component, if significant. The significant financing component in these software license arrangements is recognized as interest income over the extended payment period. "*
Performance Obligations	There is no comprehensive model in legacy practice for determining when to recognize revenue. The guidance in ASC 605-35 (formerly SOP 81-1) is applied to contracts for which	TPI Composites https://www.sec.gov/Archives/edgar/data

Satisfied Over Time or at a Point in Time	specifications are provided by the customer for the construction of facilities or the production of goods or for the provision of related services. It specifies two generally accepted method of accounting for these types of long-term contract: the percentage-of-completion method and the completed-contract method. The percentage-of-completion method is preferable in circumstances in which reasonably dependable estimates can be made. ASC 606 applies a single model (based on control) to all revenue transactions to determine when revenue should be recognized. ASC 606-10-25-25 defines control of an asset as *"the ability to direct the use of, and obtain substantially all of the remaining benefits from, the asset."* Specifically, an entity must determine whether the performance obligation meets the criteria for revenue to be recognized over time. If the performance obligation does not meet those criteria, revenue must be recognized at a point in time. ASC 606-10-25-27 requires one of the following criteria to be met for revenue to be recognized over time: (1) the customer simultaneously receives and consumes the benefits provided by the entity's performance as the entity performs; (2) the entity's performance creates or enhances an asset (for example, work in process) that the customer controls as the asset is created or enhanced; (3) the entity's performance does not create an asset with an alternative use to the entity, and the entity has an enforceable right to payment for performance completed to date. The new revenue standard requires an entity to select the method that faithfully depicts its progress toward completion if the performance obligation is satisfied over time. Appropriate methods of measuring progress include output methods and input methods. Frequently, the third criterion of ASC 606-10-25-27 leads firms to change the previous practice of recognizing revenue upon product shipment or delivery to over time when the products are still in process. This requires firms to update their information system to collect data and estimate the progress of production. Even for contracts with a short duration (e.g., a one-year contract or a one-month contract), ASC 606 does not contain any practical expedient under which entities would not be required to assess whether revenue should be recognized over time or at a point in time but rather would simply default to point-in-time recognition. Only in limited cases, the firms' practice changes from recognizing revenue over time to at point-in-time when the above over-time criteria are not satisfied. Upon adoption, many firms also change their method of measuring progress toward complete satisfaction of a performance obligation. Firms may change from unit-of-delivery or straight-line to cost-to-cost method because they think the latter measures the transfer-of-control pattern better.	/0001455684/000156459019006097 /tpic-10k_20181231.htm Page F-41 *"The primary effects of the adoption of Topic 606 on our consolidated balance sheet include 1) amounts being recognized as revenue for work performed as production takes place over time as contract assets, which differs from the prior practice of including the balances in inventory; 2) no longer reporting inventory held for customer orders or deferred revenue since revenue is now being recognized over the course of the production process, and before the product is delivered to the customer."* Textron https://www.sec.gov/Archives/edgar/data /0000886128/000156459020001558 /fcel-10k_20191031.htm Page Page 32 *"This standard primarily impacted our contracts with the U.S. Government as we were required to convert certain contracts from the units-of-delivery method to the cost-to-cost method for revenue recognition."*
Material right	Customer options to acquire additional goods or services for free or at a discount come in many forms, including sales incentives, customer award credits or points (loyalty program), contract renewal options, or other discounts on future goods or services. Previous standards lack specific guidance on this issue. Only industry-specific rule, ASC 985-605-15-13, requires that in a software arrangement, an entity would account for an offer that provides a discount on future purchases of goods or services as a separate element if that discount was significant and	American Airlines https://www.sec.gov/Archives/edgar/data /0000004515/000000620119000009 /a10k123118.htm Page 75

	incremental to the range of discounts reflected in the contract and to the range of discounts typically given in comparable contracts. This previously resulted in diverse practice. For loyalty programs which are frequently used in airline and retail chain, there were two acceptable accounting treatments. One is incremental cost method which accrues future costs associated with the option when the current sale is made. The other is deferred revenue method which treats the loyalty points earned as separate contract elements and defers the allocated revenue until the redemption of points in the future. For example, American Airlines uses the former while Delta Airlines uses the latter. Under ASC 606, if an entity grants customer the option to acquire additional goods or services for free or at a discount in the future, that option gives rise to a performance obligation in the contract only if the option provides a material right to the customer that it would not receive without entering into that contract. If the option provides a material right to the customer, the customer in effect pays the entity in advance for future goods or services, and the entity recognizes revenue when those future goods or services are transferred or when the option expires. That is to say, only deferred revenue method is allowed under ASC 606.	*Prior to the adoption of the New Revenue Standard, we used the incremental cost method to account for the portion of our loyalty program liability related to mileage credits earned through travel, […] The New Revenue Standard required us to change our policy to the deferred revenue method and apply a relative selling price approach […].”* Estée Lauder https://www.sec.gov/Archives/edgar/data/0001001250/000110465919047085/a19-11548_110k.htm Page F-41 *“For products sold that qualify for customer loyalty program awards, the Company defers a portion of revenue related to the product sales. Previously, the Company recognized revenue in full for product sales and accrued for the expected amounts of loyalty awards to be provided under the incremental cost approach.”*
Sales incentive	Under previous guidance, EITF 01-9 (codifed in ASC 605-50), cash considerations or incentives provided to customers based on a single revenue transaction are recognized as a reduction of revenue at the later of the following: (1) the date at which the related revenue is recognized by the vendor; (2) the date at which the sales incentive is offered (which would be the case when the sales incentive offer is made after the vendor has recognized revenue; for example, when a manufacturer issues coupons offering discounts on a product that it already has sold to retailers). Under ASC 606, expected sales incentive, such as rebates and price protection, is considered as a type of variable consideration that should be estimated when determining the transaction price in the step 3 of the five-step model, and recognized as revenue when the control is transferred in the step 5. This usually leads to earlier recognition of the “cost” of sales incentive if it is announced after the sale is made.	ZAGG https://www.sec.gov/Archives/edgar/data/0001296205/000129620519000020/zagg-20181231.htm Page 14 *“The largest driver of changes for the adoption of Topic 606 was the change in estimate for price concessions offered to end customers. Under Topic 605, price concessions to end customers were recognized when such incentives were explicitly offered to the end customer, whereas under Topic 606 such incentives are estimated and recorded at the time of the sale of products to the Company’s customers.”*
Customers’ Unexercised Rights- Breakage	A customer’s nonrefundable prepayment to an entity gives the customer a right to receive a good or service in the future (e.g., stored-value cards). However, customers may not exercise all of their contractual rights. Those unexercised rights are often referred to as breakage. Previous standards lack specific guidance on how to account for the breakage income, resulting two acceptable methods . One is the remote method where the expected breakage amount is recognized as revenue when the likelihood of the customer exercising its remaining rights	Starbucks https://www.sec.gov/Archives/edgar/data/0000829224/000082922419000051/sbux-9292019x10xk.htm Page 59

	becomes remote.The other is the redemption pattern method where the expected breakage amount is recognized as revenue in proportion to the pattern of rights exercised by the customer. ASC 606 requires the firm to use the redemption pattern method when it expects to be entitled to a breakage amount.	*"Under this new guidance, expected breakage amounts must be recognized proportionately in earnings as redemptions occur. Previously, stored value card breakage was recorded to interest income and other, net utilizing the remote method."*
Pay for performance or outcome	Under old revenue standard, revenue is recognized when the seller's price to the buyer is fixed or determinable (SAB Topic 13). For contracts with payment conditional on performance or outcome, situation may exists where the performance obligation is satisfied while the outcome is not realized yet. Under the legacy guidance, since the price is not fixed or determinable until the outcome is realized, the revenue recognition is deferred until that time. Under ASC 606, revenue is always recognized when performance obligation is satisfied and control is transferred. The price that cannot be determined is considered as variable consideration. The firms is required to make estimate it based on historical data and includes it in the transaction price. The variable consideration estimate is subject to variable consideration constraint which requires that variable consideration is only included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty is resolved.	TrueCar https://www.sec.gov/Archives/edgar/data/0001327318/000132731819000009/truecar201810-k.htm Page 64 *"Pay-Per-Sale. Under the old revenue standard, in years prior to 2018, we recognized revenue for fee arrangements based on a per-vehicle basis when the vehicle sale had occurred between the Auto Buying Program user and the Dealer. Under the new revenue standard for fee arrangements based on a pay-per-sale billing model, revenue for the Auto Buying Program is recognized when introductions are delivered to the Dealer and for the amount that the Company estimates it will be able to earn."*
Sale made through distributors	For sales mad through distributors, distributors purchase products from manufacturers and resell the products to end-users. Under the legacy standard, two revenue recognition methods exist: the sell-in method and the sell-through method. Under the sell-in method, firms recognize revenue when the product is delivered to the distributor (i.e. product is sold into the distribution channel). Under the sell-through method, firms defer revenue recognition until the distributor resells the product to an end customer (i.e. product is sold through the distribution channel). The decision to use the sell-in or sell-through method generally depends upon the two SAB Topic 13 requirements: the selling price is fixed or determinable and collectability is reasonably assured. For sales that are subject to generous return rights and price protection guarantees, if product returns and pricing adjustments cannot be reasonably estimated, it is conservatively interpreted that the selling price is indeterminable and the sell-through method is used. ASC 606 requires revenue to be recognized when control is transferred and performance obligation is satisfied. Firms should consider the risks of price concessions and future returns when determining the transaction price in Step 3. This means the new revenue recognition guidance eliminates the sell-through method of revenue recognition and instead requires more judgment in determining the amount of revenue to recognize upon transferring control of products to a distributor.	Lattice Semiconductor https://www.sec.gov/Archives/edgar/data/0000855658/000085565819000022/lscc201810-k.htm Page 57 *"Under the guidance in effect prior to the adoption of ASC 606, we deferred the recognition of revenue and the cost of revenue from certain sales until the distributors of our products reported that they had sold the products to their customers, at which point the selling price of these products became fixed and determinable (known as "sell-through" revenue recognition). Under ASC 606, we recognize revenue on sales to all distributors when control of the products transfers to the distributors, and we estimate the transaction price to which we ultimately expect to be entitled."*
Contract modification	Under legacy U.S. GAAP, guidance on contract modifications is limited to industry-specific guidance, such as guidance on certain modifications to construction- and production-type	General Electric https://www.sec.gov/Archives/edgar/data

	contracts within the scope of ASC 605-35 (formerly SOP 81-1). Further, various terms are used under legacy guidance to describe different types of changes to contracts. ASC 606 provide a general framework that can be used across industries to reflect entities' rights and obligations in modified contracts. ASC 606 specifies three different treatments , depending on whether the goods and services of which the term is modified are distinct or sold at their stand-alone selling prices: 1) a separate contract, when additional goods or services are distinct and the price increase reflects their standalone selling prices; 2) a termination of the old contract and the creation of a new contract, when the remaining goods or services are distinct from the goods or services transferred on or before the date of the contract modification; 3) a cumulative catch-up adjustment to the original contract, when the remaining goods or services are not distinct and, therefore, form part of a single performance obligation that is partially satisfied at the date of the contract modification.	/0000040545/000040054519000014 /ge10-k2018.htmPage 109 Page 109 *"Under the new revenue standard, contract modifications are generally accounted for as if we entered into a new contract, resulting in prospective recognition of changes to our estimates of contract billings and costs. […] There was limited guidance for accounting for contract modifications under prior GAAP. As a result, our previous method of accounting for contract modifications was developed with the objective of accounting for the nature of the contract modifications. Generally, contract modifications were accounted for as cumulative effect adjustments, […]"*
Contract cost capitalization	Besides providing comprehensive guidance on accounting for revenue from contracts with customers in ASC 606, due to the highly integrated nature between revenue and costs, the new revenue accounting project also introduces comprehensive guidance on (1) accounting for costs of obtaining a contract within the scope of ASC 606, and (2) provides guidance on how to account for costs of fulfilling a contract with a customer that are not within the scope of another standard. An entity shall recognize as an asset the incremental costs of obtaining a contract with a customer if the entity expects to recover those costs. The incremental costs of obtaining a contract are those costs that an entity incurs to obtain a contract with a customer that it would not have incurred if the contract had not been obtained (for example, a sales commission). An entity shall recognize an asset from the costs incurred to fulfill a contract only if those costs meet all of the following criteria: (1) The costs relate directly to a contract or to an anticipated contract that the entity can specifically identify; (2) The costs generate or enhance resources of the entity that will be used in satisfying; (3) The costs are expected to be recovered. Under legacy U.S. GAAP, entities may not consistently capitalize direct and incremental costs associated with obtaining a contract. Although certain legacy guidance (FTB 90-1 or FAS 91) might be applied by analogy to allow such costs to be capitalized, entities often expense costs of obtaining a contract as incurred. The new guidance in ASC 340-40 will eliminate this diversity by requiring incremental costs of obtaining a contract to be capitalized when such costs are expected to be recovered.	Salesforce https://www.sec.gov/Archives/edgar/data /0001108524/000110852419000009 /crmq4fy1910-k.htm Page 68 *"The new guidance results in the capitalization of significantly more costs and longer amortization lives. […]Costs capitalized related to new revenue contracts are amortized on a straight-line basis over four years, which, although longer than the typical initial contract period, reflects the average period of benefit, including expected contract renewals. […]"* Fortinet https://www.sec.gov/Archives/edgar/data /0001262039/000126203919000006/ftnt- 201810xk.htm *"The primary impact of adopting Topic 606 relates to the deferral of our incremental contract costs, which are comprised of sales commissions. Prior to January 1, 2018, we expensed all sales commissions upfront. […]"*
Transaction whose presentation are affected by ASC 606, with no effects on net operating assets or net income		
Presentation of sales return	Under previous guidance, SFAS No.48 (codified in ASC 605-15), the estimated sales return is recorded in a net amount as reductions to accounts receivable.	Dell https://www.sec.gov/Archives/edgar/data /0001571996/000157199619000008

	Under ASC 606, the estimated sales return is presented outside of accounts receivable, in two separate balance sheet line items: a liability is accrued for the estimated value of the sales amounts to be returned by the customer and an asset accounts, separately from inventory, is recorded representing the recoverable cost of the inventory estimated to be returned.	/delltechnologiesfy1910k.htm Page 103 *"First, the return rights provision, which represents an estimate of expected customer returns, that was previously presented as a reduction of accounts receivable, net is now being presented outside of accounts receivable, net in two separate balance sheet line items […]"*
Presentation of implicit price concession of health care service	Under the legacy GAAP in ASC 954-605, the entity must separately present the provision for bad-debt expense as a deduction from patient service revenue in arriving at net patient service revenue. Under ASC 606, implicit price concession is considered as a type of variable consideration and should be estimated when determining the transaction price in the step 3 of the five-step model. Therefore, implicit price concession that was presented in a gross format as revenue and bad debt expense, is now present in a net format after ASC 606.	Tenet Healthcare https://www.sec.gov/Archives/edgar/data/0000070318/000007031819000017/thc-2018123110xk.htm Page 37 *"Prior to the adoption of ASU 2014-09, a significant portion of our provision for doubtful accounts related to self-pay patients, as well as co-pays, co-insurance amounts and deductibles owed to us by patients with insurance. Under ASU 2014-09, the estimated uncollectable amounts due from these patients are generally considered implicit price concessions that are a direct reduction to net operating revenues, with a corresponding material reduction in the amounts presented separately as provision for doubtful accounts."*
Gross v.s. net revenue	A principal of a performance obligation transfers goods or services to the customer itself and recognizes revenue at the gross amount it is entitled to from its customer. An agent arranges for goods or services to be provided by another party and presents revenue at the net amount retained. Legacy guidance relies on a risks-and-rewards model for determining how and when to recognize revenue, as it does for determining whether an entity is a principal or an agent in a transaction. In contrast, the new revenue standard is focused on recognizing revenue as an entity transfers control of a good or service to a customer. This change from a risks-and-rewards model to a control model will also affect how an entity evaluates its position in a transaction as either a principal or an agent.	Motorola Solutions https://www.sec.gov/Archives/edgar/data/0000068505/000006850519000006/msi201810-k.htm Page 57 *"Historically, the Company presented transactions that involved a third-party sales representative on a net basis. After considering the control concept and the remaining three indicators of gross presentation under the new standard, the Company has determined that it is the principal in contracts that involve a third-party sales representative. […]"*