

Global Standards, Local Impact: Pre-Convergence Effects of IFRS 16 in Japan

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Abstract:

When do accounting standards influence corporate policies under international convergence regime? This study examines whether international standards affect local GAAP firms even before formal convergence, focusing on Japan, where standard setters have declared a substantive convergence to IFRS. Inspired by Ma and Thomas (2023), I analyze IFRS 16's impact on leasing decisions among Japanese local GAAP firms. Surprisingly, similar effects emerge: highly exposed firms reduced operating leases and shifted lease-to-buy decisions post IFRS 16 issuance. These findings show that the issuance of IFRS can preemptively influence local GAAP firms, highlighting the global impact of international standards before formal convergence.

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1. Introduction

When do accounting standards begin to influence corporate behavior? Traditional studies on the effects of accounting regulations often analyze changes in corporate policies before and after the issuance or implementation of regional accounting standards (e.g., Barthelme et al., 2019; Canil, 2017; Cheng et al., 2018; Dou et al., 2019; Leuz and Wysocki, 2016; Li and Sloan, 2017). Although this approach is useful for testing the effects of financial reporting regulations, it may overlook the potential for pre-convergence effects, where the impact of new international standards on local GAAP firms emerges even before the local GAAP converges to them. This issue is particularly relevant in countries pursuing a substantive convergence with IFRS, as local GAAP is periodically updated to align with international standards with a delay of several years. In these countries, stakeholders may reasonably anticipate that the local GAAP will be revised to align with new IFRS when it is issued. If so, the issuance of new IFRS may affect corporate policies even before the formal issuance of corresponding local standards. In this scenario, the analyses on changes in corporate policies right before and after the issuance of new (local) standards may lead to inappropriate conclusions on the effect of the standard revisions.

Japan provides a compelling case for this inquiry because the country adopts a substantive convergence approach to IFRS. Japanese accounting standards (J GAAP, hereafter) had long been revised to align with IFRS to address the criticisms as not compatible to international standards. As a symbolic event, the Accounting Standards Board of Japan (ASBJ) and the International Accounting Standards Board (IASB) announced so called “Tokyo Agreement” in 2007, which declares the acceleration of the convergence of Japanese accounting standards to IFRS. Since the Agreement, the ASBJ has implemented a policy of periodically aligning Japanese standards with the content of newly issued IFRS.

In the current study, I focus on accounting standards mandating the capitalization of operating leases. IFRS 16, issued in 2016, requires firms to recognize not only finance leases but also operating leases on their balance sheets. In U.S., Accounting Standards Update No. 2016-02 (ASU 2016-02 hereafter) defines the similar treatments regarding operating leases. Given these trends, the ASBJ has decided to revise the local accounting standards in Japan to align more closely with international standards. Although the process of standard making takes a long time because of the intense debate about the appropriateness of the revision, the ASBJ finally published the new standard that requires firms to capitalize the operating leases as well as IFRS 16 in 2023.

Existing studies report that the accounting treatment of lease causes significant economic consequences for stakeholders. Evidence suggests that managers strategically utilize the off balance sheet treatment of operating leases for reporting incentives (e.g., Dechow et al., 2011), which provides the rational for capitalization. Regarding the effect of standard revisions for operating lease capitalization, Ma and Thomas (2023) find that the issuance of Accounting Standards Update 2016-02 decreases the utilization of operating leases and promotes the use of

capital expenditure instead. Their empirical strategy involves conducting a difference in differences analysis, with firms whose operating lease usage exceeds the median identified as the treatment group. Their findings suggest that new accounting standards requiring lease capitalization effectively curb firms' strategic use of operating leases.

The central idea of this study is to examine whether DID approach of Ma and Thomas (2023) yields the similar results when applied to the *local GAAP firms* in Japan. If the revisions of IFRS only affect firms adopting IFRS, non IFRS firms would not respond to such events regardless of the potential impact of the new standard. However, in countries like Japan, where policymakers have committed to converging local GAAP with IFRS, corporate behavior may shift before local standards are officially revised. Firms significantly affected by potential rule changes might adjust their practices in anticipation of local GAAP revisions that align with prior IFRS stipulations.

Using DID regressions for Japanese listed firms, I find that the treatment firms (i.e., firms with significant presence of operating lease) decrease the utilization of operating leases after the issuance of IFRS 16. The results suggest that the local GAAP firms with significant use of operating leases would have changed the leasing decisions in response to IFRS 16 issuance (i.e., the indication of "future convergence"). The decrease in the use of operating leases aligns with insights from prior research on the effect of lease capitalization. Also, I find that the ratio of lease transactions to capital expenditures, which measures lease or buy decisions, decreased in treatment firms, while investment itself decreased. Additional analyses reveal that the effect of new standard issuance on operating lease usage is more pronounced in treated firms with high sales growth and over investment, who seem to benefit from off balance sheet treatment of operating leases. These results suggest that the effect is mainly driven by the change in managers' reporting incentives.

Also, I found that the impact of new lease accounting manifests as early as the IFRS 16 issuance itself in 2016, rather than from ASB's announcement of new standard development in 2019. These findings are robust to alternative definitions of treated firms, placebo tests using capital intensive firms as treated firms, and estimates using firms without foreign subsidiaries, where concerns about confounding effects from subsidiaries applying IFRS or US GAAP are absent.

This study contributes to the literature on the effects of accounting standards mandating lease capitalization. Ma and Thomas (2023) found that the issuance of ASU 2016-02 decrease firms' usage of long term operating leases which become no longer off balance sheet transactions after the standard revision. I find that, interestingly, their empirical specification (i.e., difference in differences analysis) derives the similar results when applied to *local GAAP* firms in Japan. These results suggest that changes in international lease accounting standards have a ripple effect on the leasing behavior of Japanese local GAAP firms. Given Japan's substantive convergence approach to IFRS, it is plausible that firms adjusted their leasing decisions in anticipation of future J GAAP revisions. Notably, firms with high sales growth and overinvestment were more likely to reduce operating lease utilization, suggesting that changes in reporting incentives are the primary driver of these ripple effects. Similar heterogeneities are observed in Ma and Thomas (2023). Chen et al. (2023) also examined the effects of new lease accounting and found that it encouraged managers to collect more investment-related information, thereby mitigating overinvestment issues. I do not observe strong evidence that overinvesting treatment firms tend to cut down capital expenditures after the issuance of IFRS 16, which is not consistent with their *learning* hypothesis. Overall, the results suggest that the new international lease accounting standards influenced Japanese firms

under J GAAP primarily through the reporting incentive channel, even before formal convergence of local GAAP.

More broadly, this study contributes to the research strand which tackles on the economic consequences of IFRS issuances / revisions. Previous research typically estimates the impact of standards by comparing corporate behavior around the timing of standard issuances or revisions (e.g. Cheng et al., 2018; Li and Sloan, 2017; Ma and Thomas, 2023). These studies typically assume that firms do not alter their behavior prior to these events. However, under the convergence regime of international accounting standards, rational stakeholders may anticipate the impact of future revisions of local GAAP and adjust their actions accordingly. This is particularly relevant in countries with a substantive convergence approach to IFRS, where local GAAP is periodically updated to align with international ones. The findings of this study highlight the possibility of “pre convergence effects,” where IFRS revisions influence local GAAP firms even before formal convergence. Future research in such contexts should account for the possibility of these effects. Ignoring them could lead to inaccurate conclusions when using DID analyses focused solely on the period before and after official changes to local GAAP.

2. Institutional background

2.1. Convergence of Accounting Standards in Japan

The degree of IFRS adoption differs among countries. Song and Trimble (2022) broadly categorized a country’s IFRS adoption status into five types: *required* (IFRS is required for all or certain firms), *modified* (modified IFRS is required), *convergence* (local GAAP is converged to IFRS), *permitted* (IFRS is permitted for listed firms), and *prohibited* (IFRS is not allowed). In their

framework, Japan is categorized as *permitted*, which means that the country permits IFRS as GAAP for listed firms. Actually, Japan permits listed firms to use four accounting standards: Japanese accounting standards (J GAAP), IFRS, US GAAP, and JMIS (modified IFRS). The J GAAP refers to a series of accounting standards developed by Business Accounting Council and ASBJ. Traditionally, Business Accounting Council served as the primary entity responsible for setting accounting standards until the privatization of the standard setting processes. After 2001, the responsibility for setting accounting standards shifted to the private sector organization ASBJ.

However, Japan could also be characterized as “*convergence*” in their framework. Tsunogaya and Chand (2012) summarize that the J GAAP has experienced the drastic reforms since late 1990’s toward IFRS and Anglo American model to address the criticism for Japanese traditional reporting system that could contribute to the economic stagnation in the 1990’s. As a result of the reforms, the Committee of European Securities Regulators (CESR) conclude that the J GAAP is mostly equivalent to IFRS (CESR, 2005). Given the results of the evaluation, ASBJ and IASB announced the “Tokyo Agreement” in 2007 that declares the acceleration of the convergence process. The agreement stipulated the resolution of major differences between J GAAP and IFRS by 2008, with the remaining differences to be addressed by June 2011. Additionally, for IFRS, which would be applicable after 2011, both parties agreed to collaborate to ensure the development of standards in Japan aligns with international standards. The Tokyo Agreement clarified that Japan’s accounting standards would undergo a continuous process of convergence to IFRS.

The convergence approach of J GAAP could be expressed as “*substantive*” because the review by CESR (2005) and the Tokyo Agreement have forced the standard setters to continuously commit to modification of local GAAP toward IFRS. The J GAAP as a whole has become similar to IFRS

due to the efforts of standard setters so far. For example, accounting standards such as those for share based payment (ASBJ Statement No.8), construction contracts (Statement No.15), business combination (Statement No.21), retirement benefits (Statement No.26) have been published or revised to address the concerns raised by CESR (2005). Regarding the recent revisions, accounting standard for revenue recognition (Statement No.29) published in 2018 is based on IFRS 15, fair value measurement (No.30) in 2019 is based on IFRS 13, disclosure of accounting estimate (No.31) issued in 2020 is based on IAS 1. In addition, accounting standard for lease (No.34) that I focus in the current study is rooted in the stipulations in IFRS 16 and ASC Topic 842. Overall, it could be said that J GAAP has been unilaterally converging toward IFRS, rather than a mutual convergence between IFRS and J GAAP. Yet, note that J GAAP is not intended to be completely identical to IFRS. For example, differences remain between Japanese standards and IFRS regarding the accounting treatment of goodwill. IFRS does not require the regular amortization of goodwill; instead, it requires impairment only when goodwill has lost value. On the contrary, the J GAAP requires regular amortizations within 20 years, and impairment when goodwill has lost value (ASBJ Statement No.21). Also, J GAAP do not allow reversal of impairment losses of fixed assets, unlike IAS 36. These differences can be said to have been retained to assert what should not be altered in J GAAP. In summary, it is highly likely that the differences between J GAAP and IFRS will be resolved in the future as Japanese standards converge toward IFRS, though complete convergence (essentially synonymous with adoption) cannot be guaranteed. In this sense, the publication of IFRS can be seen as an event that anticipates future changes in Japanese standards.

2.2 International Trend of Lease Accounting and J GAAP

In Japan, the first official accounting regulations for leases is *Statement of Opinions on Accounting Standards for Lease Transactions* issued by Business Accounting Council, which requires firms to recognize finance leases on the lessees' balance sheet and not for operating leases. Among finance leases, finance leases that do not transfer ownership of the leased property to the lessees are allowed to treat as off balance sheet accounts as operating leases.

After 2001, the private sector organization ASBJ has become in charge of the standard development in Japan. At that time, off balance sheet treatment of finance leases was a matter of concern from the perspective of global convergence of accounting standards. After extensive deliberation, ASBJ announced Statement No.13 in March 2007, which incorporated on balance sheet treatment for all finance leases¹. With the release of Statement No.13, the convergence issues raised with IAS 17 and SFAS 13 in the U.S. appeared to be resolved. Note that Statement No.13 requires firms to disclose separately the amount equivalent to the future payment of non cancellable operating leases on the end date of the fiscal year, specifying the portion of lease terms within one year and the portion of lease terms exceeding one year after the end date of the fiscal year.

However, lease accounting continued to be the subject of international discussions and was exposed to further changes thereafter. The accounting treatments of leases have long been criticized that the classification of finance leases and operating leases provide opportunistic incentives of avoiding recognizing liabilities in the lessees' balance sheet. Given these issues, the International Accounting Standards Board (IASB) and Financial Accounting Standards Board (FASB) published an exposure draft entitled *Exposure Draft: Leases* in 2010. The exposure draft

¹ For detailed discussions or background on Japanese lease accounting standards before the publication of IFRS 16, see Kusano et al. (2016).

proposes that all kinds of lease transactions should be recognized on the balance sheet. Numerous comments were submitted in response to the publication of the exposure draft and most of these comments have negative tones for proposed lease treatments (e.g., Comiran and Graham, 2016).

Despite the oppositions by many companies and stakeholders, IASB and FASB reached agreement on the on balance sheet treatment of all kinds of leases. Finally, IASB published IFRS 16 in January 2016 and FASB issued ASU 2016-02 in February 2016. Both of these standards share a commonality in requiring the capitalization of operating leases, while there are differences in the detailed treatment of depreciation and interest expenses for finance leases and operating leases.

As mentioned before, the J GAAP has been converging to IFRS since early 2000's. Lease accounting is no exception to this trend of convergence. Anticipating future efforts of standard development, ASBJ promptly released a *Discussion Paper on Accounting for Leases* in response to the exposure draft published by FASB and IASB in 2010. Given the finalization of IFRS 16 and FASB Accounting Standards Codification Topic 842, ASBJ announced in 2019 that they start developing a new accounting standard to capitalize all kinds of leases on the lessees' balance sheet. In May 2023, ASBJ published the exposure draft of new lease accounting that requires firms to capitalize operating leases. After receiving the comment letters, the ASBJ published the final standard in September 2024. Figure 1 presents the key changes in accounting standards for lease transactions in Japan and those for IFRS or US GAAP.

3. Related Literature and Hypothesis

3.1. Related Literature on Accounting for Leases

Regarding lease accounting, there has been a research focus on the strategic utilization of leases by managers based on reporting incentives. As mentioned before, critics of off balance sheet treatment of operating leases argue that managers can opportunistically use operating leases to understate their liabilities or overstate their return on assets. Several studies have suggested that managers strategically use operating leases to realize the favorable reporting numbers. Dechow et al. (2011) argue that operating leases tend to have lower expenses than capitalized assets early in the assets' life and report that firms are more likely to use operating leases in the year of earnings manipulations. Also, some studies report that managers utilize more operating leases in response to the requirements in the debt contract (Cornaggia et al., 2013) or credit rating criteria (Lim et al., 2017).

Note that sophisticated users of financial information could see through the underlying motivation of the operating lease usage. Altamuro et al. (2014) report that operating leases are associated with loan spreads, suggesting that sophisticated creditors recognize the liability nature inherent in operating leases. Bratten et al. (2013) report that recognized and disclosed lease obligations are both associated with costs of debt and equity, suggesting that market participants assess off balance sheet lease obligations as the same as on balance sheet obligations. Dhaliwal et al. (2014) report that off balance sheet lease obligations are associated with ex ante risk measures as well as on balance sheet lease obligations. These findings support the argument that sophisticated market participants assess operating lease payments as off balance sheet liabilities. It can be said that the potential for strategic utilization of operating leases for reporting incentives depends on the extent to which stakeholders can be misled by the off balance sheet treatments.

Studies on the leasing in Japanese firms have also found evidence on lessees' strategic leasing behavior and its implication for stakeholders. Kusano et al. (2016) focus on the timing of the adoption of Statement No.13 for Japanese firms and reveal the economic consequences of the requirement to capitalize finance leases. They find that firms with debt contracting incentives tend to choose the exceptional treatment that recognizes only finance leases contracted after the new standard adoption. Also, they find firms with exceptional treatment are more likely to switch from finance leases to operating leases after the adoption. Kusano (2018) report that both operating leases and finance leases are associated with the lessees' credit ratings and the associations between the two methods of leases with the credit ratings are not significantly different. Koga and Saudagaran (2022) find that banks evaluate off balance sheet as a credit risk factor when there is a strong main bank relationship. According to the studies on Japanese firms, managers seem to strategically use off balance sheet operating lease treatment for reporting purpose, while bank lenders evaluate operating leases for debt contracts in some situations. These results are largely consistent with the international studies on the strategic use or economic consequences of accounting for leases.

3.2. Hypothesis Development

Existing studies found that managers prefer to utilize off balance sheet treatment of leases for reporting purpose, while sophisticated capital providers can partly see through the reporting incentives. The capitalization of operating leases stipulated in IFRS 16 and ASC Topic 842 aims to diminish the room for discretionary treatment of lease transactions.

The current study related to the economic consequences of standard issuance requiring operating lease capitalization. Ma and Thomas (2023) analyze the effects of the issuance of ASU 2016-02, which stipulates that almost all operating leases except short term ones are capitalized on the lessees' balance sheet. They find that firms with significant exposure to operating lease accounting decrease the use of long term operating leases and increase the capital expenditure. The results are consistent with the argument that firms strategically use the off balance treatment of operating leases and the new standard eliminate the chance of opportunistic utilization of operating leases. Li and Venkatachalam (2022) also find that public airlines reduce operating leases more than private airlines in post Topic 842 periods. In Japan, the new standard on accounting for leases has only just been finalized, so there is little evidence on the effects of the new standard issuance for operating leases on Japanese firms.

Existing studies on the consequences of new accounting standards assume that managers change their decisions when the new standards are issued or implemented. Yet, there are nuances among studies on when managers / stakeholders change their decisions. For example, studies like Ma and Thomas (2023) assume that the effects of new standards manifest soon after the issuance of standard (for ASC Topic 842, the ASU 2016-02 publication in February 2016). Studies like Christensen et al. (2022) assume that preparation for new standard and the change in investment efficiency occurs in the transition period (for ASC Topic 842, from December 2018 to December 2019, the final year of the transition period). Both studies treat the period of issuance of exposure draft as a control period, where firms do not respond, and their pre trend tests support the view that their assumptions of treatment periods are valid.

In the current study, I propose different logic to determine the treatment period for *J GAAP firms*. ASBJ issued the exposure draft on accounting for leases in 2023 and published the final version in 2024, so Japanese accounting standards before 2023 was still in the *control period* according to the prior studies' definitions. However, in countries like Japan, where standard setters declare a substantive convergence approach to IFRS, the *treatment periods for IFRS 16 issuance* could be also the treatment periods of future lease accounting standard for J GAAP. Therefore, I use January 2016, when IASB release the updated standards requiring operating lease capitalization, as the treatment period of lease capitalization for Japanese accounting standards (see Figure 1).

There are several reasons why new (potential) standard for lease capitalization would affect the leasing decisions in local GAAP firms in Japan. The first scenario is the proactive reaction by managers to future convergence of accounting standards. As mentioned before, ASBJ declares the basic policy of convergence that they keep developing standards to make J GAAP compatible with IFRS. Therefore, managers in firms adopting J GAAP could anticipate that revisions in IFRS lead to the introduction of the similar or same stipulations as IFRS for J GAAP in future. If the change is expected to affect the firms' decisions significantly, the managers could have incentives to move proactively.

The second scenario is the change in the perception of outside stakeholders. Accounting standards act as a basic framework for stakeholders when interpreting the economic reality. For lease accounting, the issuance of IFRS 16 and ASC Topic 842 in the U.S. may affect the stakeholders' perception about the nature of operating leases. For instance, capital providers may have reinforced the perception of operating leases as having characteristics like liabilities after the

issuance of these standards. If so, it may no longer be cost effective for managers to utilize off balance sheet treatment of operating leases. While operating leases offer the advantage of off balancing of liabilities, the lease payments are relatively expensive. Dhaliwal et al. (2014) report that the implications of operating lease transactions for *ex ante* cost of capital has changed in response to regulators' efforts to clarify the controversial issues on lease accounting. Their findings suggest that clarifications in lease accounting regulations shape how stakeholders evaluate the economic reality of lease transactions. Given that J GAAP is highly likely to be converged to IFRS as previously mentioned, stakeholders may apply IFRS based methods when evaluating lease transactions of J GAAP firms, even before the actual convergence is achieved.

Based on either scenario, managers in firms adopting J GAAP would be motivated to cut the use of operating leases in response to the international movement of operating lease capitalization (i.e., the issuance of IFRS 16 and ASC Topic 842). Therefore, this study introduces the hypothesis below:

H1: Managers in J GAAP firms with significant use of operating leases decrease the use of operating leases after the issuance of IFRS 16 in 2016.

There is an argument that firms differentiate between leasing and purchasing based on cost benefit considerations (e.g., Beatty et al., 2010). With the reduction in reporting benefits due to the changes in standards, operating leases may become more costly for managers, potentially encouraging a switch to asset purchases. Ma and Thomas (2023) report that firms increase capital

expenditures after the issuance of ASC Topic 842. Their results are consistent with the argument that operating lease capitalization leads to switch from lease to asset acquisition.

Note that leasing has two aspects: investment decisions or financing decision. From the survey evidence on Fortune 500 U.S. corporations, Mukherjee (1991) report that most managers recognize leasing as financing decisions that should be made separately from the investment worth. If this is the case, the impact of the new lease accounting standards, which are expected to reduce the reporting benefits of operating leases, on investment decisions becomes complex. For instance, in the case of an investment with a positive NPV, a reduction in the net advantage of leasing could lead to an increase in asset acquisitions. On the other hand, in cases where an investment has been rejected due to a negative NPV but is accepted as a result of adding back the net advantage of leasing, a reduction in the net advantage of leasing would not lead to an increase in asset acquisitions but merely to the cessation of leasing. Therefore, even if we assume the reasoning of Ma and Thomas (2023), which suggests that the new lease accounting standards reduce the advantages of leasing, it does not necessarily follow that this logically leads to an immediate increase in investment.

Regarding the effect on investment policy, Chen et al. (2023) report that lease capitalization leads to a decrease in corporate investment through two channels: *learning channel* and *contracting channel*. They define learning channel as that new accounting rules promote managers to collect additional information on off balance sheet assets portfolios and identify the areas of overinvestment (Shroff, 2017), which leads to downsizing of their balance sheet. Contracting channel is that new standard negatively affects contracts based on financial numbers such as debt covenants or compensation based on GAAP numbers such as return on assets, which leads to less

leveraging and investment. If these changes manifest before actual issuance of new lease standard, the issuance of IFRS could lead to a decrease in investment in J GAAP firms.

Taken together, *ex ante* prediction for the effect of new lease accounting standard on capital expenditures could be either positive or negative. Also, firms' relative dependence of leases to asset purchases could be empirical issues. Therefore, I introduced following hypothesis 2a and 2b as null forms:

H2a: Managers in J GAAP firms with significant use of operating leases do not change their capital expenditures after the issuance of IFRS 16 in 2016.

H2b: Managers in J GAAP firms with significant use of operating leases do not change their relative dependence on operating leases compared to asset purchase after the issuance of IFRS 16 in 2016.

4. Research Design

4.1. Regression Model

Following Ma and Thomas (2023), I conduct difference in differences (DID) analyses to tackle the effect of standard revision. This study uses the regression model (1) to test the hypothesis 1:

$$Oplease_{i,t} = \beta_0 + \beta_1 Post + \beta_2 Treat_{i,t} * Post_{i,t} + \sum_{k=1}^K Controls_{k,i,t} + FirmFE + \varepsilon_{i,t} \quad (1)$$

The dependent variable $Oplease$ is an amount equivalent to the future operating lease payment on the last day of the relevant business year. In Japan, we can only observe the total balance of future payment of non cancellable operating leases on the end date of the fiscal year. Note that the lease payments are disclosed separately for the portion due within the next year and the remaining portion. To measure the new lease contracts in the period, I also use $\Delta Oplease$, defined as a change in future operating lease payments plus “expected lease payments due within one year” as of last year². $Treat$ denotes an indicator variable that takes one if the firm’s operating leases divided by total assets are above sample median in 2014. The definition of the treatment firms follows the one provided by Ma and Thomas (2023). Firms with significant use of operating leases are expected to be more vulnerable to the change in accounting treatment for such leases. To ensure robustness, I use sample median or third quartile as the threshold. $Post$ is an indicator variable that takes one if the observation is from a period after the issuance of IFRS 16 and Topic 842 in 2016³. The variable of interest is the cross term of $Treat$ and $Post$. If local GAAP managers proactively reduce the use of operating leases in response to IFRS 16 issuance, the coefficient of $Treat * Post$ is expected to be negative. I control leverage, size, ROA, operating cash flow, cash holdings, sales growth, and interest rate change as in Ma and Thomas (2023). The detailed definition of each variable used in the analyses is presented in Appendix 1.

To test the hypothesis 2a and 2b, I estimate the model (2) and (3).

² The measurements regarding $\Delta Oplease$ and $\Delta Finlease$ are consistent with Kusano et al. (2016). The lease payments due within one year as of the last year can be considered as this year’s repayments. By adding back the repayment portion, we can calculate the “new contracts” portion for this year.

³ The year dummy is excluded in the regression because $Post$ is included, as in Ma and Thomas (2023). If I include year dummy and estimate DID, the results remain similar.

$$CAPEX_{i,t} = \beta_0 + \beta_1 Post + \beta_2 Treat_{i,t} * Post_{i,t} + \sum_{k=1}^K Controls_{k,i,t} + FirmFE + \varepsilon_{i,t} \quad (2)$$

$$\begin{aligned} \Delta OL/CPX_{i,t} \text{ or } \frac{OL}{PPE} \\ = \beta_0 + \beta_1 Post + \beta_2 Treat_{i,t} * Post_{i,t} + \sum_{k=1}^K Controls_{k,i,t} + FirmFE + \varepsilon_{i,t} \end{aligned} \quad (3)$$

CAPEX is the capital expenditures divided by lagged sales. $\Delta OL/CPX$ is the ratio of new operating leases to capital expenditures. OL/PPE is the ratio of operating lease balance to property, plant, and equipment. The former is flow based, the latter is stock based measurements of relative presence of operating leases to purchased assets. If operating lease capitalization make managers more likely to use capital expenditures rather than leases as in Ma and Thomas (2023), the coefficients of β_2 are expected to be positive (i.e., increased capital expenditures) in model (2) and negative (i.e., decreased presence of operating leases compared to capital expenditures) in model (3). If new standard promotes managers to cut investment as in Chen et al. (2023), the coefficients of β_2 are expected to be negative (decrease investment). Based on the discussion of Chen et al. (2023), the prediction for coefficient of β_2 in model (3) is ambiguous because new standard is expected to decrease the use of both operating leases and asset purchases. Other control variables or fixed effects included in these models are the same as the model (1).

4.2. Sample Selection

The initial sample of this study is all firms listed in the Tokyo Stock Exchange from 2011 to 2022. The sample for main analysis is limited to firms that adopt J GAAP because the interest of this study is the effect of global accounting standards on the leasing decisions of *local GAAP firms* in Japan. Although US GAAP and IFRS are also valid as GAAP for listed firms in Japan, I exclude observations using these standards. Observations with missing values are excluded from the analysis. Firms that do not use operating leases at all are also excluded. Following Ma and Thomas (2023), I exclude fiscal year ending in 2016 as they coincide with the timing of the standard change. Also, I use firms with data for at least two years before and after the standard change. Finally, I construct panel data with 14,241 firm year observations with 1969 unique firms. The “post” periods in this study include the timing of the issuance of the new lease standard in 2016, and the timing of the ASBJ’s announcement that they start developing the lease standard that aligns with the IFRS 16 in 2019. The sample period does not cover the timing of the issuance of new lease standard in Japan in 2023.

5. Empirical Results

5.1. Descriptive Statistics

Table 1 shows the descriptive statistics of the variables used in the analyses. The mean value of *Oplease* and $\Delta Oplease$ is 5.5% and 1.0%, respectively. Average firms with non zero operating leases annually pay operating lease expenses equivalent to 1.0% of their revenue. The observations of *Finlease* are limited to 10.162 firm years due to the existence of a certain number of companies that do not utilize finance leases.

Table 2 presents the trend of the new future operating lease payments to lagged sales for the treatment firms and the control firms. As treatment firms, I use *Treat_90p* (above the 90th percentile), *Treat_3Q* (above third quartile), and *Treat_Med* (above median) to ensure that the observed trends are not sensitive to the definition of the treatment groups. I use *Control_Med* (below median) as control firms for simplicity.

The table suggests that the treatment groups on average decrease the presence of operating leases, while the control groups rather seem to slightly increase the use of operating leases. These observations are largely consistent with those reported in Ma and Thomas (2023). Although these are simply univariate trends that do not rigorously rule out other possibilities behind the changes, the results do not contradict the hypothesis that international standards for lease accounting are associated with a decrease in operating lease transactions in local GAAP firms in Japan. Note that until 2016, the utilization of operating leases seems to be slightly increasing. Kusano et al. (2016) report that certain kinds of Japanese firms has switched from finance leases to operating leases in response to the adoption of Statement No.13 in 2007, which require firms to capitalize all finance leases. The observed trends are largely consistent with the notion that managers become more likely to use operating leases in the periods after implementation of Statement No.13.

5.2. Tests of Hypothesis 1

Table 3 presents the results of the difference in differences analysis based on model (1). When using *Treat_Med* (i.e., the balance of operating leases above the median in 2014) as the indicator variable of treatment firms, the coefficients of interest are significantly negative for both *Oplease* (-0.008) and *ΔOplease* (-0.003). These results suggest that firms with substantial balance of

operating leases are more likely to decrease the use of operating leases after 2016, when IFRS and US GAAP announced the capitalization of all lease transactions.

Column (3) and (4) report the results of estimations using *Treat_3Q* (i.e., the balance of operating leases above the third quartile in 2014) as the treatment indicator. Consistent with the results in column (1) and (2), the coefficients of *Treat_3Q * Post* are significant and negative for both *Oplease* (-0.015) and $\Delta Oplease$ (-0.007). The magnitude of the coefficients seems to be larger than that in column (1) and (2). It is intuitive given that the effect of lease capitalization is more significant for firms with extremely high presence of operating leases. Overall, the results support the hypothesis that managers in J GAAP firms with significant use of operating leases are more likely to decrease the use of operating leases in response to the issuance of IFRS 16 or ASC Topic 842 in 2016. These results suggest that the treatment periods for IFRS 16 also function as the treatment periods for (potential) new lease accounting regulation for J GAAP.

5.3. Tests of Hypothesis 2a and 2b

Table 4 report the estimation results of DID for capital expenditures or asset purchase. When using capital expenditures (*CAPEX*) and the balance of depreciable assets (*DepAssets*) as dependent variables, I find that the coefficients of *Treat_Med* and *Treat_3Q* are both significant and negative. These results are not similar to those reported in Ma and Thomas (2023), which find the significant increase in capital expenditures in treated firms after ASU 2016-02. Rather, the results seem to be consistent with the argument provided by Chen et al. (2023), who report that accounting standard for lease capitalization leads to a decrease in investment.

The results on the effect of accounting regulations in 2016 on capital expenditures in Japanese local GAAP firms do not necessarily capture the change in lease or buy decisions. Therefore, I estimate the difference in differences analysis using operating lease payments to capital expenditures ratio or the balance of future operating lease payments to depreciable assets ratio. The former is based on the flow information and the latter is based on the stock information.

Table 5 presents the results of the estimation. Using flow based lease to buy measure, the coefficients of interest are not statistically significant (columns 1 and 2). On the other hand, I find that the coefficients of *Treat * Post* are significantly negative using balance sheet measure of lease to buy decisions (columns 3 and 4). Although the measurement errors are of issues, I conclude that there is some evidence suggesting that the issuance of IFRS 16 or subsequent Topic 842 in U.S. is associated with the lease or buy decisions of local GAAP firms in Japan. Together with the results on the capital expenditures, new international standard for lease accounting is associated with a decrease in both usage of operating lease transactions and asset purchases, but the decreasing effect is more pronounced for operating leases.

6. Robustness Checks

6.1 Finance leases

Ma and Thomas (2023) argue that the new accounting regime is expected to make firms switch from operating leases to capital expenditures rather than finance leases because the costs and benefits of operating or finance leases becomes similar under the new standards. If so, firms would not change the use of finance leases before and after the rule change. Table 6 shows the results on the DID estimation using finance leases as the dependent variable. Regardless of the choice of the

treatment variables (*Treat_Med* or *Treat_3Q*), the coefficients of *Treat * Post* are largely not statistically significant (columns 1 to 4). These results, taken together with the main results on operating leases and capital expenditures, are largely consistent with the argument that finance leases are not a primary candidate which would be affected by new standard for lease accounting.

6.2 Pre existing trends

Overall, the findings of this study are largely consistent with the prediction that the revision of internationally influential accounting standards has an impact on the leasing decisions of local GAAP firms in Japan. However, one may argue that the main results of this study are biased due to some endogeneity issues. Typical criticism for difference in differences analysis is that the results are driven by pre existing time trends, rather than the treatment effects. For example, the treatment effects observed in Table 3 could be interpreted that the trend in operating lease transactions.

Thus, to address the concern about the trend effect, I add the cross terms of treatment variables and indicator variables for fiscal year 2014 and 2015, respectively (*Treat * FY2014*, *Treat * FY2015*). Table 7 presents the results of the estimation. The coefficients of *Treat * FY2014* and *Treat * FY2015* are not statistically significant, suggesting there are not strong differences in trend between treated and control firms in pre IFRS 16 periods. Even after adding the cross terms, the coefficients of main variables (*Treat_Med * Post*, *Treat_3Q * Post*) remains negative and statistically significant when we use $\Delta Oplease$ as dependent variables. These results suggest that the main results of this study are not sensitive to the pre existing trends related to operating lease transactions.

6.3 Alternative definitions of treated firms

In this study, firms are classified as treated firms if their proportion of operating leases to lagged total assets is above sample median in 2015. To mitigate the concern that the results would be sensitive to alternative definitions of treated firms, I estimate the main regression using redefined treatment group. First, I use *Treat_Sales*, a dummy variable that takes one if the ratio of operating leases to sales are above median. Second, I use *Treat_Liab*, a dummy that takes one if the ratio of operating leases to total liabilities are above median. A larger value of *Treat_Liab* means that the new lease standards have a larger effect on their debt balance.

Table 8 shows the results of the estimation. The coefficients of *Treat_Sales * Post* are significantly negative for both *Oplease* and $\Delta Oplease$ (columns [1] and [2]). Also, the coefficients of *Treat_Liab * Post* are consistently negative and statistically significant (columns [3] and [4]). These results suggest that the main results for the effect of IFRS issuance on operating lease usage in Japanese local GAAP firms are robust to alternative definitions of treated firms.

6.4 Placebo tests

The results in Table 3 and Table 4 suggest that both operating lease usage and capital expenditure in treated firms declined after the issuance of IFRS 16. One may concern that these results are driven by the trend of firms' investment cycle, not by the issuance of the new IFRS. To address this issue, I estimate the placebo tests using capital intensive firms as treated firms. If capital intensive firms overall decrease investment including lease transactions in the post IFRS16 periods, the coefficients of placebo DID variable (an indicator for capital intensive firms and an

indicator for post IFRS 16 periods) would be significantly negative as well as those in the main regression.

Table 9 presents the results of the placebo tests. I use *Treat_PPE/Assets*, a dummy variable that takes one if the firm's ratio of property, plant and equipment to total assets is above sample median. To check robustness of the results, I alternatively use *Treat_PPE/Sales*, which use sales as a deflator. We find that all the coefficients of the cross terms of *Post* and *Treat_PPE/Assets* or *Treat_PPE/Sales* are negative but insignificant for *Oplease* and $\Delta Oplease$. These results are consistent with the notion that our results are not driven simply by the investment cycle of capital intensive firms.

6.5 Robustness check: firms with no foreign subsidiaries

Unlike in IFRS, J GAAP allow companies to consolidate the financial statements of foreign subsidiaries as is, even when these subsidiaries adopt non J GAAP standards. Because of this practice, main results are concerned to be driven by the effect of new lease capitalization standards on the balance sheets of foreign subsidiaries which adopt IFRS or US GAAP.

To address this alternative explanation, I estimate the DID models using sample without foreign subsidiaries. In the financial statements under J GAAP, firms with foreign subsidiaries record "foreign currency translation adjustment" accounts, which are used to report gains or losses from the translation of foreign currency financial statements into the reporting currency. Then, I categorize firms that do not have foreign subsidiaries as those with foreign currency translation adjustments recorded as NA.

Table 10 shows the results of the estimation. The coefficients of interest remain largely similar to those of the main analysis for models using operating lease (columns 1, 2, 5, 6), capital expenditure (columns 3, 7), and depreciation assets (columns 4, 8) as dependent variables. These results suggest that the main results of the current study are not driven by the changes in the balance sheet of foreign subsidiaries which adopt new lease capitalization rules in IFRS or US GAAP.

6.6 J GAAP vs non J GAAP sample

In the main analyses, I find that the issuance of the standard for lease capitalization leads to a decline in operating lease usage of J GAAP firms. Note that, in Japan, IFRS and US GAAP is permitted for listed firms. Then, some may wonder whether the magnitude of such effects differs between Japanese companies applying IFRS or US GAAP (direct effects) and those applying J GAAP (ripple effects). To analyze this issue, I test whether the results are affected if I include IFRS or US GAAP observations, and whether the effects are different between J GAAP firms and non J GAAP firms. Table 11 presents the results of the DID estimations using all firms (those using J GAAP, US GAAP, IFRS) and add the cross term of DID estimator (*Treat * Post*) and accounting standard dummy (J GAAP or non J GAAP). If the treatment effects are similar between J GAAP firms (not required to recognize operating leases) and non J GAAP firms (required to recognize operating leases) as predicted in this study, the coefficients of the triple cross terms should not be different from zero. As shown in Table 11, the results remain similar when including IFRS and US GAAP observations, and the triple cross terms of interest are statistically insignificant among all specifications. These results align with the idea that the new lease standard has both direct and ripple effects on Japanese firms' leasing decisions.

7. Additional Analyses

7.1 Different sample periods

The main results suggest that firms with higher exposure to future convergence (i.e., the new lease accounting) are more likely to cut down their operating lease transactions after IFRS 16 issuance. Note that there is another candidate of the timing of the treatment in our setting. The ASBJ announced that they start the project to develop an accounting standard for on balance sheet treatment of all leases in March 2019, while it took until 2023 to finalize the standard. If firms first reacted to the ASBJ's announcement of the start of the standard setting project, the results of the DID would be driven by the treated firms' leasing decisions after 2019. Therefore, I separate the sample into two subperiods: 2014 to 2018, 2017 to 2022. The former focuses on 2016 IFRS issuance as a treatment, and the latter focuses on 2019 ASBJ announcement of the standard development.

Table 12 presents the results of the estimation with separated subperiods. The coefficients of interest (*Treat_Med * Post*, *Treat_3q * Post*) are significantly negative among all specifications when I use 2014 to 2018 as estimation periods (columns [1] to [4]). The estimation using 2017 to 2022 as sample periods gains similar results, but the statistical significance seems weaker than that in the earlier periods (columns [5] to [8]). These results suggest that the effect of "future convergence" are mainly driven by the IFRS 16 issuance rather than the ASBJ's official announcement to start the standard setting project.

7.2 Variations in treatment effect

The results in the main analyses suggest that J GAAP firms with significant exposure to operating leases are more likely to cut down the leasing transactions after IFRS 16 issuance. If the change in the leasing behavior is driven by the decreased opportunities for strategic use of lease accounting, the effect of IFRS 16 issuance would be more pronounced in firms with significant reporting incentives. Ma and Thomas (2023) report that treated firms with high sales growth, analyst cash flow forecasts, and long term lease intensity are more likely to decrease operating leases. Also, they report that the effect of the new standard is less pronounced for firms with financial constraints, suggesting that these firms were likely to use operating leases for non reporting purpose.

I conduct additional analyses focusing on two reporting incentives: high sales growth and financial constraints, following Ma and Thomas (2023). I use an indicator variable for above median sales growth to measure high growth firms, and an indicator variable for low operating cash flows, high leverage, and low current ratio to measure financially constrained firms. Since the treatments about short term lease transactions differs between ASC Topic 842 and IFRS 16, it was still uncertain whether the “future convergence” in J GAAP will require on balance sheet treatment for short term operating leases in my sample periods. Thus, I do not conduct tests on short term lease transactions.

Table 13 shows the results of the estimation. The variables of interests are triple cross terms to measure the variations in treatment effects. The coefficients of cross terms for high sales growth (*Treat_Med * Post * HighGrowth*, *Treat_3q * Post * HighGrowth*) tend to be negative and significant for *ΔOplease* (columns [2] and [6]), suggesting that high growth firms tend to strategically use operating leases before new standard, and more exposed to the standard change.

Regarding financial constraints, column (4) and (8) suggests positive coefficients for $\Delta Oplease$, which is not consistent with the view that financially constrained firms use operating leases for reporting purpose.

7.3 Over investment

One important question relevant to operating lease accounting is whether the new standard contributes to the investment efficiency. Ma and Thomas (2023) argue that high growth firms are more concerned to overinvest. Chen et al. (2023) argue that new lease accounting promotes managers to gather information about lease transactions and improve investment decisions.

Given these arguments, I conduct analyses regarding over investment. Similar to Chen et al. (2023), I measure over investment firms by an indicator variable that takes one if residual estimated in the following industry level regressions takes positive values and zero otherwise (*OverInv*).

$$Inv_{i,t+1} = \beta_0 + \beta_1 LnAssets_{i,t} + \beta_2 SalesGrowth_{i,t} + \beta_3 OCF/TA_{i,t} + \varepsilon_{i,t} \quad (4)$$

where *Inv* is the investment, calculated as the change in depreciable assets plus depreciation divided by lagged total assets. *LnAssets* is the natural logarithm of total assets. *SalesGrowth* is the one year sales growth, and *OCF/TA* is the operating cash flows divided by lagged total assets.

Table 14 presents the results of the estimation. The variables of interest are triple cross terms of treatment, post IFRS16 periods dummy, and over investment dummy. The coefficients tend to negative and significant for $\Delta Oplease$, suggesting that observed decrease in operating lease utilization is pronounced in firms with concern of over investment in pre IFRS16 period. These

results are consistent with the arguments in Ma and Thomas (2023) that firms with significant reporting incentives, especially firms with high sales growth and over investment concerns are more likely to decrease operating lease usage after new lease accounting.

8. Conclusion

Accounting for leases has historically undergone significant changes amidst intense debates. In 2016, the IASB issued IFRS 16, and the FASB announced ASU 2016-02, both requiring firms to recognize operating leases on the balance sheet. This study investigates the broader influence of these globally impactful standards on corporate behavior in Japan, a country adopting a substantive convergence approach to IFRS. Given Japan's practice of aligning local GAAP with IFRS after a time lag, the study explores whether corporate behavior in Japanese local GAAP firms shifted following the issuance of IFRS 16, even before corresponding revisions to local standards.

Using a difference-in-differences (DID) analysis inspired by Ma and Thomas (2023), the study finds that Japanese local GAAP firms with high operating lease usage significantly reduced their reliance on operating leases after the issuance of IFRS 16 in 2016. This behavior suggests that the influence of IFRS 16 extended beyond IFRS adopters, affecting firms under local GAAP before formal revisions were made. Additionally, the evidence indicates that treated firms with high sales growth and overinvestment were more likely to reduce operating lease utilization, suggesting that reporting incentives were a key driver of this behavior.

Overall, the results highlight that the global impact of IFRS can manifest in local GAAP firms even before the formal adoption of corresponding standards. In Japan, this phenomenon illustrates how the process of convergence to IFRS creates an environment where corporate behavior aligns

with international standards prior to regulatory alignment. These findings contribute to our understanding of the international effects of accounting regulations and emphasize the need for future research to account for "pre convergence" effects in countries with similar convergence practices.

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Figure 1: History of Key Changes in Lease Standards in Japan and Abroad

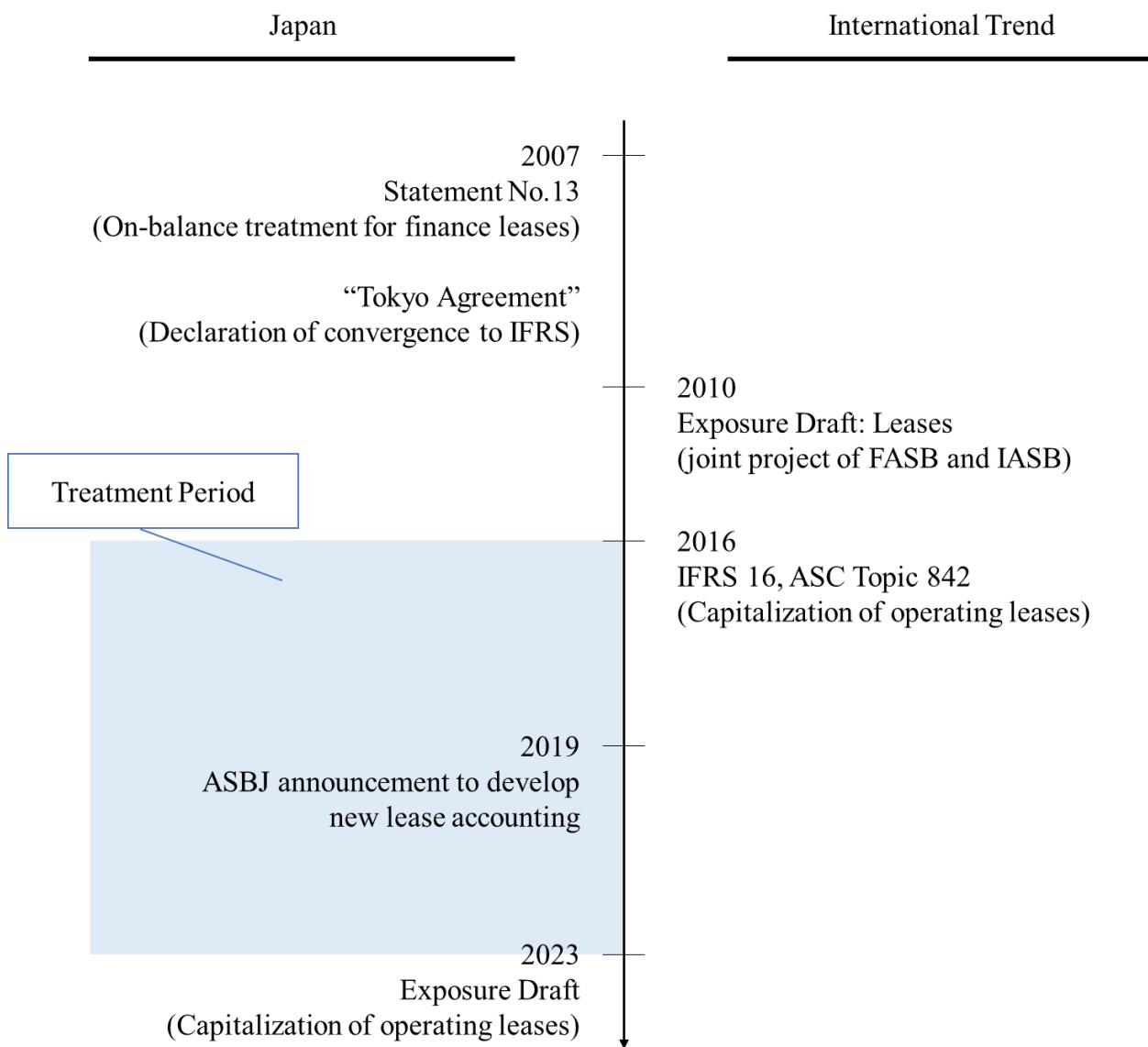


Table 1: Descriptive statistics

Note: This table presents the descriptive statistics of the variables used in the analysis. The detailed definition of each variable is presented in Appendix 1.

stats	N	mean	sd	min	p25	p50	p75	max
<i>Oplease</i>	14,241	0.057	0.149	0.000	0.002	0.008	0.039	1.056
$\Delta Oplease$	14,241	0.011	0.034	-0.010	0.000	0.001	0.006	0.241
<i>Finlease</i>	11,204	0.019	0.042	0.000	0.002	0.006	0.018	0.293
$\Delta Finlease$	10,848	0.004	0.011	-0.006	0.000	0.001	0.004	0.073
<i>OCF</i>	14,241	0.070	0.086	-0.235	0.027	0.061	0.106	0.384
<i>Cash</i>	14,241	0.226	0.240	0.009	0.081	0.151	0.275	1.438
<i>Netincome</i>	14,241	0.036	0.063	-0.226	0.011	0.030	0.058	0.274
<i>Assets</i>	14,241	1.209	0.862	0.297	0.703	1.007	1.393	5.780
<i>Lev</i>	14,241	0.269	0.278	0.000	0.048	0.200	0.400	1.526
<i>StdOCF</i>	14,241	0.034	0.044	0.002	0.011	0.021	0.039	0.288
<i>Growth</i>	14,241	0.044	0.139	-0.370	-0.021	0.032	0.094	0.626
<i>CAPEX</i>	14,241	0.051	0.058	0.000	0.015	0.034	0.063	0.352
<i>DepAssets</i>	14,106	0.221	0.251	0.004	0.070	0.155	0.271	1.565
$\Delta OL/CPX$	13,726	2.441	7.631	0.001	0.052	0.277	1.381	60.097
<i>OL/PPE</i>	14,220	0.367	1.064	0.000	0.007	0.037	0.204	7.788

Table 2: Changes in operating lease utilization

Note: This table presents the mean value in operating lease variable ($\Delta Oplease$) for treatment group and control group by year. *Treat_90P*, *Treat_3Q*, *Treat_Med* are firms where, as of 2014, the proportion of operating lease to total assets accounted for top 10%, 25%, 50%, respectively. *Control_Med* is firms other than *Treat_Med* = 1.

Year	<i>Treat_90P</i>	<i>Treat_3Q</i>	<i>Treat_Med</i>	<i>Control_Med</i>
2011	0.052	0.030	0.017	0.001
2012	0.063	0.034	0.020	0.001
2013	0.058	0.033	0.020	0.001
2014	0.059	0.034	0.021	0.001
2015	0.066	0.035	0.021	0.001
2016				
2017	0.049	0.033	0.019	0.002
2018	0.055	0.030	0.020	0.003
2019	0.048	0.029	0.020	0.002
2020	0.044	0.029	0.019	0.002
2021	0.045	0.026	0.017	0.003
2022	0.048	0.032	0.020	0.004

Table 3: Difference in differences analysis on operating leases

Note: This table presents the results of the difference in differences analysis on the effect of IFRS 16 issuance on the operating lease usage in local GAAP firms in Japan. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$
<i>Post</i>	0.004* (0.002)	0.002*** (0.000)	0.004** (0.002)	0.002*** (0.000)
<i>Treat_Med * Post</i>	-0.008* (0.004)	-0.003*** (0.001)		
<i>Treat_3Q * Post</i>			-0.015** (0.007)	-0.007*** (0.002)
<i>OCF</i>	-0.018 (0.021)	-0.009 (0.007)	-0.018 (0.021)	-0.009 (0.007)
<i>Cash</i>	0.006 (0.031)	-0.014*** (0.005)	0.006 (0.031)	-0.014*** (0.005)
<i>Netincome</i>	-0.073** (0.033)	0.013 (0.010)	-0.074** (0.033)	0.012 (0.010)
<i>Assets</i>	0.016 (0.011)	0.006*** (0.002)	0.016 (0.011)	0.006*** (0.002)
<i>Lev</i>	0.010 (0.015)	0.002 (0.004)	0.010 (0.015)	0.002 (0.004)
<i>StdOCF</i>	0.124*** (0.043)	-0.012 (0.016)	0.126*** (0.042)	-0.011 (0.016)
<i>Growth</i>	0.037*** (0.012)	0.008** (0.004)	0.037*** (0.012)	0.008** (0.004)
<i>Constant</i>	0.030*** (0.010)	0.006*** (0.002)	0.030*** (0.010)	0.006*** (0.002)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	14,241	14,241	14,241	14,241
AdRs	0.877	0.504	0.878	0.505

Table 4: Tests on capital expenditure

Note: This table presents the results of the difference in differences analysis on the effect of IFRS 16 issuance on capital expenditures in local GAAP firms in Japan. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>CAPEX</i>	(2) <i>DepAssets</i>	(3) <i>CAPEX</i>	(4) <i>DepAssets</i>
<i>Post</i>	0.005*** (0.001)	0.009** (0.004)	0.004*** (0.001)	0.005 (0.003)
<i>Treat_Med * Post</i>	-0.006*** (0.002)	-0.013** (0.005)		
<i>Treat_3Q * Post</i>			-0.009*** (0.003)	-0.008 (0.006)
<i>OCF</i>	-0.009 (0.009)	0.130*** (0.036)	-0.009 (0.009)	0.130*** (0.036)
<i>Cash</i>	-0.040*** (0.011)	-0.228*** (0.048)	-0.040*** (0.011)	-0.227*** (0.048)
<i>Netincome</i>	0.050*** (0.015)	-0.133*** (0.045)	0.050*** (0.015)	-0.132*** (0.045)
<i>Assets</i>	0.033*** (0.004)	0.206*** (0.019)	0.033*** (0.004)	0.206*** (0.019)
<i>Lev</i>	0.004 (0.007)	0.049*** (0.017)	0.004 (0.007)	0.050*** (0.017)
<i>StdOCF</i>	-0.040 (0.027)	-0.036 (0.067)	-0.039 (0.028)	-0.036 (0.067)
<i>Growth</i>	0.005 (0.005)	-0.011 (0.016)	0.005 (0.005)	-0.011 (0.016)
<i>Constant</i>	0.017*** (0.004)	0.007 (0.017)	0.017*** (0.004)	0.007 (0.017)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	14,241	14,099	14,241	14,099
AdRs	0.660	0.937	0.661	0.937

Table 5: Tests on operating lease or buy decision

Note: This table presents the results of the difference in differences analysis on the effect of IFRS 16 issuance on lease-to-buy decisions in local GAAP firms in Japan. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) $\Delta OL/CPX$	(2) $\Delta OL/CPX$	(3) OL/PPE	(4) OL/PPE
<i>Post</i>	0.041* (0.023)	0.058*** (0.021)	0.027* (0.016)	0.035** (0.015)
<i>Treat_Med * Post</i>	-0.043 (0.045)		-0.052* (0.031)	
<i>Treat_3Q * Post</i>		-0.146** (0.071)		-0.132*** (0.050)
<i>OCF</i>	-0.475 (0.393)	-0.477 (0.393)	-0.503*** (0.161)	-0.507*** (0.161)
<i>Cash</i>	-0.224 (0.244)	-0.232 (0.244)	0.289 (0.257)	0.288 (0.259)
<i>Netincome</i>	0.006 (0.449)	-0.003 (0.448)	-0.325 (0.235)	-0.335 (0.235)
<i>Assets</i>	0.016 (0.085)	0.016 (0.085)	-0.154** (0.077)	-0.155** (0.077)
<i>Lev</i>	0.078 (0.144)	0.078 (0.144)	-0.127 (0.097)	-0.126 (0.097)
<i>StdOCF</i>	-0.139 (0.654)	-0.099 (0.651)	0.245 (0.376)	0.267 (0.373)
<i>Growth</i>	-0.005 (0.173)	-0.003 (0.174)	0.076 (0.081)	0.078 (0.081)
<i>Constant</i>	0.474*** (0.106)	0.471*** (0.106)	0.553*** (0.058)	0.552*** (0.058)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	13,708	13,708	14,213	14,213
AdRs	0.493	0.493	0.798	0.799

Table 6: Tests on finance leases

Note: This table presents the results of the difference in differences analysis on the effect of IFRS 16 issuance on the usage of finance lease in local GAAP firms in Japan. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>Finlease</i>	(2) Δ <i>Finlease</i>	(3) <i>Finlease</i>	(4) Δ <i>Finlease</i>
<i>Post</i>	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)	0.000 (0.000)
<i>Treat_Med * Post</i>	-0.001 (0.002)	-0.001 (0.000)		
<i>Treat_3Q * Post</i>			-0.003 (0.003)	-0.001 (0.001)
<i>OCF</i>	0.010 (0.007)	0.001 (0.002)	0.010 (0.007)	0.001 (0.002)
<i>Cash</i>	-0.012* (0.007)	-0.001 (0.002)	-0.012* (0.007)	-0.001 (0.002)
<i>Netincome</i>	-0.028** (0.012)	-0.006 (0.004)	-0.029** (0.012)	-0.006 (0.004)
<i>Assets</i>	0.015*** (0.003)	0.003*** (0.001)	0.015*** (0.003)	0.003*** (0.001)
<i>Lev</i>	-0.003 (0.005)	0.002 (0.001)	-0.003 (0.005)	0.002 (0.001)
<i>StdOCF</i>	0.002 (0.019)	-0.016*** (0.005)	0.003 (0.018)	-0.016*** (0.005)
<i>Growth</i>	0.003 (0.003)	0.002* (0.001)	0.003 (0.003)	0.002* (0.001)
<i>Constant</i>	0.006** (0.003)	0.002** (0.001)	0.006** (0.003)	0.002** (0.001)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	11,157	10,789	11,157	10,789
AdRs	0.828	0.490	0.828	0.490

Table 7: Tests of pre-trend assumptions

Note: This table presents the results of the test of pre-trend assumptions of the analyses in Table 3. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$
<i>Post</i>	0.004* (0.002)	0.002*** (0.000)	0.004** (0.002)	0.002*** (0.000)
<i>Treat_Med * Post</i>	-0.007 (0.005)	-0.002** (0.001)		
<i>Treat_Med * FY2014</i>	0.002 (0.003)	0.002 (0.001)		
<i>Treat_Med * FY2015</i>	0.001 (0.003)	0.002 (0.001)		
<i>Treat_3Q * Post</i>			-0.013 (0.009)	-0.005** (0.002)
<i>Treat_3Q * FY2014</i>			0.006 (0.005)	0.004 (0.003)
<i>Treat_3Q * FY2015</i>			0.005 (0.006)	0.004 (0.003)
<i>OCF</i>	-0.018 (0.021)	-0.009 (0.007)	-0.018 (0.021)	-0.009 (0.007)
<i>Cash</i>	0.006 (0.031)	-0.015*** (0.005)	0.006 (0.031)	-0.015*** (0.005)
<i>Netincome</i>	-0.074** (0.033)	0.012 (0.010)	-0.075** (0.033)	0.012 (0.010)
<i>Assets</i>	0.016 (0.011)	0.006*** (0.002)	0.016 (0.011)	0.006*** (0.002)
<i>Lev</i>	0.010 (0.015)	0.002 (0.004)	0.010 (0.015)	0.002 (0.004)
<i>StdOCF</i>	0.124*** (0.043)	-0.011 (0.016)	0.127*** (0.042)	-0.010 (0.016)
<i>Growth</i>	0.037*** (0.012)	0.008** (0.004)	0.037*** (0.012)	0.008** (0.004)
<i>Constant</i>	0.030*** (0.010)	0.006** (0.002)	0.030*** (0.010)	0.006** (0.002)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	14,241	14,241	14,241	14,241
AdRs	0.877	0.504	0.878	0.505

Table 8: Alternative definitions of treated firms

Note: This table presents the results using alternative definitions of treatment group. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$
<i>Post</i>	0.007*** (0.002)	0.002*** (0.001)	0.007*** (0.002)	0.002*** (0.001)
<i>Treat_Sales * Post</i>	-0.013*** (0.004)	-0.003*** (0.001)		
<i>Treat_Liab * Post</i>			-0.013*** (0.004)	-0.003*** (0.001)
<i>OCF</i>	-0.019 (0.021)	-0.009 (0.007)	-0.018 (0.021)	-0.009 (0.007)
<i>Cash</i>	0.007 (0.031)	-0.014*** (0.005)	0.007 (0.031)	-0.014*** (0.005)
<i>Netincome</i>	-0.075** (0.033)	0.013 (0.010)	-0.074** (0.033)	0.013 (0.010)
<i>Assets</i>	0.016 (0.011)	0.006*** (0.002)	0.016 (0.011)	0.006*** (0.002)
<i>Lev</i>	0.010 (0.015)	0.002 (0.004)	0.010 (0.015)	0.003 (0.004)
<i>StdOCF</i>	0.125*** (0.043)	-0.012 (0.016)	0.124*** (0.043)	-0.012 (0.016)
<i>Growth</i>	0.037*** (0.012)	0.008** (0.004)	0.037*** (0.012)	0.008** (0.004)
<i>Constant</i>	0.030*** (0.010)	0.006*** (0.002)	0.030*** (0.010)	0.006** (0.002)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	14,241	14,241	14,241	14,241
AdRs	0.878	0.504	0.878	0.504

Table 9: Placebo tests using capital-intensive firms as treated firms

Note: This table presents the results using placebo treatment group. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

Dep. Var.	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$
<i>Post</i>	0.003 (0.003)	0.001* (0.001)	0.000 (0.003)	0.001* (0.001)
<i>Treat_PPE/Assets * Post</i>	-0.005 (0.004)	-0.001 (0.001)		
<i>Treat_PPE/Sales * Post</i>			-0.000 (0.004)	-0.001 (0.001)
<i>OCF</i>	-0.018 (0.021)	-0.009 (0.007)	-0.018 (0.021)	-0.009 (0.007)
<i>Cash</i>	0.007 (0.030)	-0.014*** (0.005)	0.007 (0.031)	-0.014*** (0.005)
<i>Netincome</i>	-0.072** (0.033)	0.013 (0.010)	-0.072** (0.033)	0.013 (0.010)
<i>Assets</i>	0.016 (0.011)	0.006*** (0.002)	0.016 (0.011)	0.006*** (0.002)
<i>Lev</i>	0.009 (0.016)	0.002 (0.004)	0.010 (0.015)	0.002 (0.004)
<i>StdOCF</i>	0.123*** (0.043)	-0.012 (0.016)	0.122*** (0.043)	-0.012 (0.016)
<i>Growth</i>	0.037*** (0.012)	0.008** (0.004)	0.037*** (0.012)	0.008** (0.004)
<i>Constant</i>	0.030*** (0.010)	0.006*** (0.002)	0.030*** (0.010)	0.006*** (0.002)
<i>Firm FE</i>	Included	Included	Included	Included
Observations	14,241	14,241	14,241	14,241
AdRs	0.877	0.503	0.877	0.503

Table 10: DID estimation with firms having no foreign subsidiaries.

Note: This table presents the results on the DID estimation using observations with no foreign subsidiaries. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

VARIABLES	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>CAPEX</i>	(4) <i>DepAssets</i>	(5) <i>Oplease</i>	(6) $\Delta Oplease$	(7) <i>CAPEX</i>	(8) <i>DepAssets</i>
<i>Post</i>	-0.005 (0.006)	0.003** (0.001)	0.006* (0.003)	0.006 (0.008)	-0.003 (0.004)	0.003*** (0.001)	0.005** (0.002)	-0.002 (0.007)
<i>Treat_Med * Post</i>	-0.009 (0.008)	-0.007*** (0.002)	-0.008* (0.004)	-0.010 (0.010)				
<i>Treat_3q * Post</i>					-0.019* (0.011)	-0.011*** (0.003)	-0.009** (0.004)	0.002 (0.010)
Firm Controls	Included Included	Included Included	Included Included	Included Included	Included Included	Included Included	Included Included	Included Included
Observations	5,018	5,018	5,018	4,960	5,018	5,018	5,018	4,960
AdRs	0.892	0.494	0.635	0.946	0.893	0.497	0.635	0.946

Table 11: J GAAP vs non J GAAP (US GAAP or IFRS)

Note: This table presents the results on the firms adopting different GAAP. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

VARIABLES	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) CAPEX	(4) DepAssets	(5) <i>Oplease</i>	(6) $\Delta Oplease$	(7) CAPEX	(8) DepAssets
<i>Post</i>	0.004** (0.002)	0.002*** (0.000)	0.005*** (0.001)	0.010*** (0.004)	0.004** (0.002)	0.002*** (0.000)	0.004*** (0.001)	0.006* (0.003)
<i>Treat_Med * Post</i>	-0.007* (0.004)	-0.003*** (0.001)	-0.006*** (0.002)	-0.013*** (0.005)				
<i>Treat_Med * Post * US/IFRS</i>	-0.004 (0.009)	0.000 (0.004)	0.004 (0.006)	0.002 (0.014)				
<i>Treat_3q * Post</i>					-0.015** (0.007)	-0.007*** (0.002)	-0.009*** (0.003)	-0.008 (0.006)
<i>Treat_3q * Post * US/IFRS</i>					-0.016 (0.022)	0.001 (0.011)	-0.000 (0.011)	0.006 (0.027)
<i>US/IFRS</i>	0.003 (0.006)	0.003* (0.002)	0.004 (0.006)	0.022* (0.011)	0.003 (0.003)	0.003** (0.001)	0.006 (0.005)	0.004 (0.011)
<i>Treat_Med * US/IFRS</i>	0.018 (0.012)	0.000 (0.005)	-0.003 (0.009)	-0.049** (0.021)				
<i>Treat_3q * US/IFRS</i>					0.063* (0.038)	0.004 (0.014)	-0.024* (0.014)	-0.080* (0.042)
<i>US/IFRS * Post</i>	0.003 (0.004)	0.001 (0.001)	-0.008* (0.004)	-0.023** (0.009)	0.002 (0.003)	-0.000 (0.001)	-0.007* (0.004)	-0.025*** (0.008)
<i>Control</i>	Included	Included	Included	Included	Included	Included	Included	Included
<i>Firm</i>	Included	Included	Included	Included	Included	Included	Included	Included
Observations	14,878	14,878	14,878	14,736	14,878	14,878	14,878	14,736
AdRs	0.878	0.506	0.662	0.934	0.878	0.507	0.662	0.934

Table 12: Sample split

Note: This table presents the results using sample divided into periods before and after ASBJ started development of new standards on operating leases in 2019. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	2014 - 2018				2017 - 2022			
Dep. Var.	<i>Oplease</i>	$\Delta Oplease$	<i>Oplease</i>	$\Delta Oplease$	<i>Oplease</i>	$\Delta Oplease$	<i>Oplease</i>	$\Delta Oplease$
<i>Post</i>	0.004*** (0.001)	0.002*** (0.001)	0.003*** (0.001)	0.002*** (0.000)				
<i>Treat_Med * Post</i>	-0.009*** (0.003)	-0.004*** (0.001)						
<i>Treat_3Q * Post</i>			-0.014*** (0.005)	-0.008*** (0.002)				
<i>Post_ASBJ</i>					0.004** (0.002)	-0.001 (0.001)	0.004** (0.002)	-0.000 (0.001)
<i>Treat_Med * Post_ASBJ</i>					-0.008* (0.004)	0.001 (0.001)		
<i>Treat_3Q * Post_ASBJ</i>							-0.015** (0.006)	-0.001 (0.002)
<i>Firm FE</i>	Included	Included	Included	Included	Included	Included	Included	Included
Observations	4,896	4,896	4,896	4,896	6,379	6,379	6,379	6,379
AdRs	0.939	0.567	0.939	0.569	0.900	0.509	0.900	0.509

Table 13: Heterogeneity analysis

Note: This table presents the results of the test for variations in treatment effect. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

VARIABLES	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$	(5) <i>Oplease</i>	(6) $\Delta Oplease$	(7) <i>Oplease</i>	(8) $\Delta Oplease$
<i>Post</i>	0.005 (0.003)	0.003*** (0.001)	0.004** (0.002)	0.002*** (0.000)	0.004 (0.003)	0.003*** (0.001)	0.004*** (0.002)	0.002*** (0.000)
<i>Treat_Med * Post</i>	-0.010 (0.007)	0.000 (0.001)	-0.008 (0.005)	-0.005*** (0.001)				
<i>Treat_Med * Post * HighGrowth</i>	0.005 (0.008)	-0.007*** (0.002)						
<i>Treat_Med * Post * Constrained</i>			0.001 (0.011)	0.005** (0.003)				
<i>Treat_3q * Post</i>					-0.016 (0.011)	-0.001 (0.002)	-0.017* (0.009)	-0.010*** (0.002)
<i>Treat_3q * Post * HighGrowth</i>					0.003 (0.014)	-0.013*** (0.004)		
<i>Treat_3q * Post * Constrained</i>							0.007 (0.015)	0.011*** (0.004)
<i>HighGrowth * Post</i>	-0.001 (0.004)	-0.001 (0.001)			0.000 (0.003)	-0.001 (0.001)		
<i>Constrained * Post</i>			-0.001 (0.008)	0.000 (0.001)			-0.001 (0.005)	0.000 (0.001)
<i>Firm FE</i>	Included	Included	Included	Included	Included	Included	Included	Included
<i>Controls</i>	Included	Included	Included	Included	Included	Included	Included	Included
Observations	14,241	14,241	14,241	14,241	14,241	14,241	14,241	14,241
AdRs	0.877	0.505	0.877	0.504	0.878	0.507	0.878	0.506

Table 14: The relation with over investment

Note: This table presents the results of the test for over investment. ***, **, * denotes statistical significance at 1%, 5%, 10%, respectively.

VARIABLES	(1) <i>Oplease</i>	(2) $\Delta Oplease$	(3) <i>Oplease</i>	(4) $\Delta Oplease$
<i>Post</i>	0.004** (0.002)	0.002*** (0.000)	0.004*** (0.002)	0.002*** (0.000)
<i>Treat_Med * Post</i>	-0.008* (0.004)	-0.003** (0.001)		
<i>Treat_Med * Post * OverInv</i>	-0.138 (0.145)	-0.078** (0.034)		
<i>Treat_3q * Post</i>			-0.016** (0.007)	-0.006*** (0.002)
<i>Treat_3q * Post * OverInv</i>			-0.178 (0.206)	-0.094** (0.046)
<i>Post * OverInv</i>	0.010 (0.029)	0.011 (0.011)	0.015 (0.024)	0.007 (0.008)
<i>Firm FE</i>	Included	Included	Included	Included
<i>Controls</i>	Included	Included	Included	Included
Observations	10,265	10,265	10,265	10,265
AdRs	0.896	0.498	0.897	0.499

Appendix

Appendix 1: Definitions of Variables

Variables	Definitions
$Oplease$	An amount equivalent to the future operating lease payment on the last day of the relevant business year divided by lagged sales.
$\Delta Oplease$	A change in future operating lease payments plus “expected lease payments due within one year” as of last year divided by lagged sales.
$Finlease$	Total finance lease obligations (including future lease payments based on off balance sheet treatment allowed for finance leases contracted prior to the accounting standard change) divided by lagged sales.
$\Delta Finlease$	(Change in total finance lease obligations – repayment of lease liabilities – “expected finance lease payments due within one year”) divided by lagged sales.
OCF	Operating cash flow divided by lagged sales.
$Cash$	Cash and cash equivalents divided by lagged sales.
$Netincome$	Net income divided by lagged sales.
$Assets$	Total assets divided by lagged sales.
Lev	Total interest-bearing debt divided by lagged total assets.
$StdOCF$	Three-year standard deviation of operating cash flow divided by lagged sales.
$Growth$	One-year sales growth in percentage.
$CAPEX$	Capital expenditures divided by lagged sales.
$DepAssets$	Depreciable assets divided by lagged sales.
$\Delta OL/CPX$	$\Delta Oplease$ divided by capital expenditures.
OL/PPE	An amount equivalent to the future operating lease payment on the last day of the relevant business year divided by property, plant and equipment.
$HighGrowth$	An indicator variable that takes 1 if the sales growth in 2014 is above median and 0 otherwise.
$Constrained$	An indicator variable that takes 1 if operating cash flow to total assets, current ratio, and leverage in 2014 are all above annual median and 0 otherwise.
$OverInv$	The residual derived from following industry-level regression to predict investment amount.