Off-balance-sheet activities, earnings persistence and stock prices: Evidence from operating leases

by

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DEDICATION

This dissertation is dedicated to☐
Jia Ge (my father),
Chengjiong Zhou (my mother),
and Lixin Lin (my friend).
Thank you for your patience and unwavering support.

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CHAPTER I

INTRODUCTION

This paper investigates whether the information disclosed in the operating lease footnotes can be used to predict future earnings and future stock returns. The property rights granted by an operating lease contract represent both future benefits and future obligations for the lessee. The transaction can therefore be viewed as creating both off-balance-sheet operating assets and off-balance-sheet financing liabilities. Prior research shows that growth in net operating assets (accruals) and the raising of external financing to fund such growth are both associated with lower future earnings and stock returns.[1] However, the existing literature has focused on on-balance-sheet activities. This paper corroborates and extends previous research by examining the implications of off-balance-sheet operating lease activities for future firm performance.

Operating leases are similar to mortgages and other financing plans in which an asset is obtained with financing that requires pre-specified future payments that include principal and interest. In substance, most operating leases represent assets and liabilities of the lessee company (Imhoff, Lipe and Wright 1991).[2] Under Generally Accepted Accounting Principles (GAAP), when a firm classifies a lease as "operating," it is not

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[1] See, for example, Abarbanell and Bushee (1997, 1998); Fairfield, Whisenant and Yohn (2003a); Richardson, Sloan, Soliman and Tuna (2005, 2006); and Bradshaw, Richardson and Sloan (2005).

[2] In a Special Report, *Leases: Implementation of a New Approach*, published by the FASB and other G4+1 organizations, it is suggested that each separate right arising out of a lease contract represents an asset and each separate obligation represents a liability that lessees need to recognize and account for individually.

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recognized on the balance sheet. Imhoff and Thomas (1988) provide evidence
suggesting that lessees engage in costly restructurings of capital leases to avoid
recognition of these leases on the balance sheet.[3] The SEC, in a June 15, 2005 staff
report to Congress and the President on off-balance-sheet activities, recommends that the
accounting guidance for leases be reconsidered, since many lease arrangements are
structured to avoid crossing the "bright lines" in the accounting standards.[4]

Operating leases are a prevalent type of off-balance-sheet financing and one of the
largest sources of corporate financing. The 2005 SEC staff report estimates that
undiscounted total non-cancelable future cash flow obligations associated with operating
leases for U.S. companies are approximately $1.25 trillion. A recent survey by the
Equipment Leasing Association (ELA) states that eight out of ten companies in the U.S.
lease some or all of their equipment. Moreover, according to Compustat data, operating
lease liabilities in 2004 accounted for 39.7 percent of total fixed claims on average, while
capital lease obligations accounted for just 1.5 percent, and long-term debt accounted for
58.8 percent of total fixed claims.[5] The extensive use of operating leases indicates that
many companies lease assets such as office space or stores through operating leases
rather than capital leases. In other words, the unrecorded assets and liabilities from
operating leases are of the same order of magnitude as on-balance-sheet assets and
liabilities. Given the pervasive use and materiality of operating leases, it is important to
examine the implications of the off-balance-sheet operating lease activities for future
earnings and valuation.

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[3] As discussed in the 2004 AICPA conference on SEC developments, "lease accounting is a great example
of accounting for the form of a transaction over its substance."
[4] See the SEC website: http://www.sec.gov/news/studies/soxoffbalancerpt.pdf.
[5] Total fixed claims are defined as the sum of the book value of long-term debt, the book value of capital
leases, and the present value of future operating lease obligations.

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In this paper, operating lease activities are measured in two ways. First, operating lease activity is measured as the *change* in the present value of future non-cancelable operating lease obligations (see Imhoff et al. 1991). Second, the *change* in the following year's rent obligation disclosed in the footnotes is calculated to capture the short-term effects of off-balance-sheet lease activities. The first measure captures the level of financing through operating leases. The second approach facilitates predictions of the timing of the lease obligation's impact on short-term future earnings and stock returns. I use both measures to proxy for growth in capital investment in operating leases or off-balance-sheet lease accruals. The results for both measures indicate that increases in operating lease activities lead to lower future earnings, after controlling for current earnings. These findings are consistent with diminishing marginal returns to the investment in operating leases.

Additional tests investigate whether investors fully anticipate the negative relation between off-balance-sheet operating lease activities and future earnings. The analysis based on the Mishkin (1983) framework indicates that the stock market behaves as if the operating lease activities have positive implications for future earnings. A long-short investment strategy based on off-balance-sheet lease activities generates significant one-year-ahead abnormal hedge returns. The abnormal returns based on operating lease activities are robust to the inclusion of Fama-French (1993) risk factors and the momentum factor (Jegadeesh and Titman 1993; Carhart 1997). Further examination reveals that firms with greater changes in off-balance-sheet lease activities are likely to be experiencing greater changes in on-balance-sheet accruals and external financing. Firms tend to grow with both on-balance-sheet and off-balance-sheet operating assets.

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However, the information in off-balance-sheet lease activities has incremental explanatory power in the prediction of future earnings and stock returns.

This paper makes three contributions to the existing literature. The first relates to the literature on recognition and disclosure in financial reporting. This paper highlights the importance of incorporating disclosed but not recognized items into predictions of future earnings. Prior research has shown the link between various types of disclosed information and future earnings. For example, Rajgopal, Shevlin and Venkatachalam (2003) document that one leading indicator: order backlog, predicts future earnings. The findings of this paper suggest that the mandatory disclosure of future operating lease obligations also helps predict future earnings. In addition, this paper finds that stock prices do not correctly impound the operating lease information contained in footnote disclosures, corroborating the findings of Imhoff, Lipe and Wright (1993).

The second contribution of the paper is to provide more comprehensive definitions of capital investment, accruals and external financing. An increase in the present value of future operating lease obligations is equivalent, in substance, to growth in net operating assets.[6] A large body of research documents that firms that increase capital investments or experience asset growth realize lower future earnings and stock returns (e.g., Abarbanell and Bushee 1997, 1998; Titman, Wei and Xie 2004; Cooper, Gulen and Schill 2005). Recent research on accruals (e.g., Richardson et al. 2005, 2006; Dechow and Ge 2006) measures accruals as the change in net operating assets. This paper points out that the new capital investment in off-balance-sheet operating leases should be included as part of total change in capital investment as well as total accruals.

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[6] For example, JetBlue plans to expand its fleet by three planes. JetBlue can obtain the right to use three new planes through either purchasing or off-balance-sheet leasing. These three new planes are real operating assets regardless of whether they are included on the balance sheet.

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Prior research also documents that external financing activities are associated with lower future firm performance (see Ritter 2003). This relation holds for different types of corporate financing activities, including equity offerings and public debt offerings (e.g., Ritter, 1991; Bradshaw et al. 2004; Cassar 2005). However, existing studies focus on the external financing activities recognized in the financial statements, and ignore a major category of corporate financing: *off-balance-sheet financing*. This paper shows that the negative relation between external financing activities and future firm performance, specifically earnings and stock returns, also holds for off-balance-sheet financing through leases. This paper extends prior research on external financing by suggesting that incorporating both on-balance-sheet and off-balance-sheet financing enables one to simultaneously examine the relation between a firm's *complete* set of corporate financing activities and future firm performance.

The third contribution of the paper is to help discriminate between the competing explanations for the Sloan (1996) result that the accrual component of earnings is less persistent than the cash flow component. One stream of research suggests that the lower persistence of the accrual component of earnings is due to subjective estimation and low reliability of accruals (e.g., Xie 2001; Dechow and Dichev 2002; Richardson et al. 2005, 2006). Another stream of literature attributes the lower persistence of accruals to firm growth and the associated diminishing marginal returns to increased investment (e.g., Fairfield, Whisenant and Yohn 2003a). An examination of the relation between off-balance-sheet operating lease activities and future earnings provides new evidence regarding the underlying cause. The "accruals" created by operating lease activities are less prone to earnings management, because they are not recognized on balance sheet and

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less likely to be manipulated by managers to boost contemporaneous earnings. They are also objectively computed from the mandatory lease footnote disclosure of future lease obligations. Moreover, off-balance-sheet accruals are less subject to the "denominator effect" documented by Fairfield et al. (2003b), because off-balance-sheet assets are not included in the denominator. [7] Therefore, the finding that operating lease accruals, which involve less subjective estimation, lead to lower future earnings is more consistent with the diminishing marginal returns explanation, suggesting that accounting distortions are an *incomplete* explanation for the lower persistence of accruals. However, I also find that on-balance-sheet accruals are less persistent than off-balance-sheet lease accruals in predicting one-year-ahead earnings, suggesting that accounting distortions drive some of the lower persistence of on-balance-sheet accruals.

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[7] Fairfield et al. (2003b) suggest that the lower persistence of the accrual component of earnings is not due to earnings management, but rather to the growth in invested capital, which is in the denominators of accruals and the profitability measure.

CHAPTER II

BACKGROUND ON LEASES, ACCRUALS AND PREDICTIONS

2.1 Background on Leases

Leasing is a common way to obtain the use of productive assets. The Equipment

Leasing Association (ELA) states that $208 billion (31 percent) out of the $668 billion of

productive assets acquired by businesses in the U.S. were acquired through leasing in

2003.[8] Leases can be classified as either capital leases or operating leases from the

lessee's perspective. Capital leases are similar to purchases by the lessee and require

balance sheet recognition of an asset and an obligation. In contrast, operating leases are

off-balance-sheet activities for the lessee and are reflected in the income statement as rent

expense.[9] Graham, Lemmon and Schallheim (1998) find that operating leases account

for a much larger part of firms' capital structures than capital leases. The high use of

operating leases is partly due to the benefit of balance sheet management arising from

operating leases. To illustrate, when SFAS No. 13 on leases was implemented, the terms

of most leases were structured to avoid balance sheet recognition (Imhoff and Thomas

1988). In addition, Imhoff et al. (1993) provide evidence that compensation committees

do not adjust reported ROA (return on assets) to reflect operating leases when they

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[8] See the Equipment Leasing Association's website: http://www.elaonline.com/industrydata/overview.cfm.
[9] Synthetic leases are operating leases. A synthetic lease is treated as an operating lease for financial reporting purposes and can still enjoy the tax benefit of the asset ownership. Sale/leaseback transactions are also considered operating lease activities as long as the associated leases are not reported on the balance sheet.

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establish executive cash compensation.[10] Brealey and Myers (2003) also suggest that off-balance-sheet leasing can be used to circumvent restrictive covenants.

The "bright line" nature of lease accounting results in different accounting treatment for economically similar arrangements.[11] For example, a lease that has payments equal to 90 percent of an asset's fair value will be classified as a capital lease and recognized on the balance sheet, while a lease that has payments equal to 89 percent will be classified as an operating lease. Both academic researchers and practitioners have reached the consensus that, in substance, many off-balance-sheet operating leases represent both "assets" and "liabilities" (see Lipe 2001). Moreover, as suggested by the special report on the topic of leases published by the FASB and other G4+1 organizations, when one applies the definitions of assets and liabilities to leases, each separate right arising out of a lease contract represents an asset and each separate obligation represents a liability for the lessee, including those short-term leases.

An increase in operating leases can be viewed as an increase in operating assets that are financed by the lessor. Note that an increase in operating leases also suggests an increase in the obligation to make future payments. At the inception of each lease, the unrecorded lease asset and unrecorded lease liability both equal the present value of the future lease payments (Imhoff et al. 1991). Changes in the "assets" resulting from operating leases can be viewed as changes in "off-balance-sheet capital investment" and

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[10] From a performance evaluation perspective, Dutta and Reichelstein (2005) argue that, for long-term leases, the operating lease accounting method cannot obtain strong goal congruence; better goal congruence can be achieved by the capital lease accounting method together with a particular depreciation schedule.
[11] To be a capital lease, a lease has to meet one or more of the following criteria: the lease term is longer than 75% of the estimated economic life of the equipment; the lease gives title of the asset to the lessee at the end of the lease; the lease contains a bargain option to buy the equipment at the end of the lease; or the present value of the lease payments (the sum of the payments at any given time during the course of the lease) is larger than 90% of the fair market value of the asset.

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therefore also a form of "off-balance-sheet accruals." Accruals are defined as the change in net operating assets other than cash (see Richardson et al. 2005, 2006).

2.2 Prior Research on Accruals and External Financing

Sloan (1996) documents that the accrual component of earnings is less persistent than the cash flow component in predicting future earnings. He suggests that this difference results from the greater subjectivity and lower reliability of accruals. Building on Sloan (1996), Richardson et al. (2005) extend the definition of accruals to include non-current net operating accruals. Non-current net operating accruals are dominated by changes in property, plant and equipment (PPE) and the intangible assets recognized on the balance sheet. These non-current accruals are closely related to capital expenditures on long-term assets. This paper extends the definition of accruals further to include off-balance-sheet accruals that also affect earnings. Off-balance-sheet lease accruals are similar to capital expenditures on PPE in that they are typically used to obtain the right to use long-term equipment or office space.

Fairfield, Whisenant and Yohn (2003a) investigate the relation between accruals and growth in net operating assets. After decomposing growth in net operating assets into accruals and growth in long-term net operating assets, they find that both short-term operating accruals and growth in long-term net operating assets are negatively associated with one-year-ahead return on assets. They conclude that "the accrual anomaly documented in Sloan (1996) is a special case of what could be viewed as a more general growth anomaly" (page 354). They implicitly assume that long-term accruals are less subject to manipulation than short-term accruals. However, Richardson et al. (2005)

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argue that these long-term accruals are also subject to estimation error and managerial manipulation; they document a negative relation between non-current accruals and future earnings.

Taking a different perspective, this paper suggests that an analysis of the relation between off-balance-sheet lease accruals and earnings persistence will shed light on the above alternative explanations for two reasons. First, operating lease accruals are computed objectively from mandatory lease footnote disclosures, which are obtained directly from lease agreements. Thus, these off-balance-sheet accruals cannot induce accrual accounting distortions into earnings. Second, as the denominators of operating lease accruals and earnings are assets recognized on balance sheet, which do not include off-balance-sheet assets, off-balance-sheet accruals are not subject to the "denominator effect" documented by Fairfield et al. (2003b).

There is also a large body of research on the relation between corporate financing activities and future firm performance. Ritter (2003) points out in his survey that external financing transactions are negatively related to future stock returns. These include initial public offerings (Ritter 1991), seasoned equity offerings (Loughran and Ritter 1997), public debt offerings (Spiess and Affleck-Graves 1999) and bank borrowings (Billett, Flannery and Garfinkel 2001). Taking a different approach, Bradshaw et al. (2005) develop a comprehensive measure of net external financing based on the cash flow statement data; this comprehensive measure exhibits a stronger negative relation with future stock returns than the individual mechanisms examined in previous research. In addition, a few studies investigate the direct relation between external financing and future operating performance and find that increases in external financing are generally

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associated with lower future earnings (e.g., Bradshaw et al. 2005; Cassar 2005). The existing studies have focused on external financing activities recognized on the balance sheet. Analyzing leases adds to this literature by focusing on off-balance-sheet external financing and showing a similar negative relation.

2.3 Predictions

I expect off-balance-sheet operating lease activities to be negatively associated with future earnings (return on assets), *ceteris paribus*. The NPV (net present value) rule suggests that managers accept investments that have positive net present values. Theoretically, managers should keep investing until the internal rate of return on the new project is equal to the firm's cost of capital. Interestingly, however, many studies have shown that increased capital investments are followed by lower future firm performance. For example, Abarbanell and Bushee (1997) find that increases in industry-adjusted capital expenditure lead to decreases in future earnings. Fairfield et al. (2003a) and Richardson et al. (2005) find that growth in long-term net operating assets is negatively associated with one-year-ahead return on assets. In addition, Titman et al. (2004) document that those firms with increased capital investment experience lower future benchmark-adjusted returns.[12]

Prior research conjectures that lower operating performance following increased capital investment results from diminishing marginal returns to investment. Fairfield et

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[12] Moreover, Cooper et al. (2005) investigate the growth effect for total assets and document a strong negative relation between growth in firms' total assets and future stock returns. Some event studies find that stock prices respond favorably to announcements of capital expenditure plans (e.g., McConnell and Muscarella 1985). However, firms might announce only the capital expenditure plans that will be viewed favorably. Trueman (1986) suggests that management might use a high level of capital investment to signal favorable information.

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al. (2003a) argue that diminishing marginal returns occur when firm managers exploit the most profitable investment opportunities before less profitable investment opportunities.[13] Their argument is based on Stigler's (1963) assertion that competition will always equalize return on investments in all industries.[14] Note that diminishing marginal returns do not necessarily suggest managers taking negative NPV projects. More generally, diminishing marginal returns occur when firms increase production, supply increases, and profits start to fall. A more severe form of diminishing marginal returns is over-investment associated with negative NPV projects.[15] Titman et al. (2004) suggest that those managers who are empire builders might invest for their personal benefit rather than for shareholders' benefit. A few other related studies provide evidence supporting managers over-investing in assets (e.g., Richardson 2006; Li 2004; Richardson and Sloan 2003).

If diminishing marginal returns apply to capital investments in operating leases, then an increase in operating leases will be followed by a decrease in firm operating performance on average. For firms with similar levels of current operating performance, the firms that experience larger increases in operating leases have lower future operating performance than similar firms with less investment in operating leases. Richardson et al. (2005, 2006) argue that accounting distortions also cause lower future earnings following long-term on-balance-sheet accruals. However, the "accruals" created by operating lease activities are less prone to accrual accounting distortion because they are

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[13] Fairfield et al. (2003a) also suggest that the lower persistence of the accrual component of earnings might result from conservative accounting. However, Richardson et al. (2006) show that conservative accounting does not explain the empirical regularity.

[14] As pointed out by Richardson et al. (2006), Stigler's arguments are for industry-level return on investments. His argument applies to firm-level returns assuming that either the firm dominates the industry or firm-level performance is highly correlated in the same industry.

[15] Richardson (2006) defines over-investment as "investment expenditure beyond that required to maintain assets in place and to finance expected new investments in positive NPV projects."

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not recognized on balance sheet and so are not manipulated by managers to boost earnings. Therefore, I expect increases in operating leases to be associated with lower future earnings, due to diminishing marginal returns to investment.

P1: Increases in off-balance-sheet operating leases are associated with lower future earnings, after controlling for contemporaneous earnings.

The first prediction also relates to the literature on external financing. Prior studies have documented that increases in external financing are generally followed by lower future operating performance. The existing evidence is in support of the market timing hypothesis (e.g., Ritter 1991; Bradshaw et al. 2005). The market timing hypothesis suggests that management is able to time corporate financing activities to take advantage of "windows of opportunity" when cost of external capital is low. Then the management is likely to invest the external capital in projects with lower rates of returns (see Zhang 2005).

The next hypothesis concerns the extent to which stock prices reflect the implications of operating leases for future earnings. A large body of research suggests that investors do not correctly price the implications of asset growth for future earnings. Titman et al. (2004) and Abarbanell and Bushee (1998) document a negative relation between capital investment and future abnormal stock returns.[16] Prior research on accruals also finds that investors do not correctly price short-term operating accruals (e.g., accounts receivable) and long-term operating accruals (e.g., changes in PPE). See Sloan (1996), Fairfield et al. (2003a), and Richardson et al. (2005).

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[16] In contrast to capital investment, prior research on R&D spending documents a positive relation between R&D spending and future stock returns (e.g., Chan, Lakonishok and Sougiannis 2001)

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Several recent papers attempt to attribute the mispricing of accruals to sample selection biases (Kraft, Leone and Wasley 2005) and risk factors (Khan 2005; Zach 2004). By identifying the role of off-balance-sheet operating lease accruals in the forecasting of future earnings, this study provides a new setting in which to corroborate and extend prior evidence.

I expect off-balance-sheet lease activities to be negatively associated with future stock returns. As discussed earlier, the existing evidence in the literature is largely consistent with the mispricing of on-balance-sheet capital investment, accruals and any type of external financing. If the above results are generalizable to off-balance-sheet activities, investors would fail to incorporate the negative implications of off-balance-sheet leasing for future earnings in a timely manner. This would result in a negative relation between operating leasing and future stock returns. It is worth noting that information on operating leases is disclosed in footnotes to financial statements. As pointed out by Hirshleifer and Teoh (2003), investors have limited attention and cognitive processing power. Less salient information that requires more cognitive processing is less likely to be used by investors and more likely to be priced incorrectly. If investors fail to correctly price the accounting information recognized on the financial statements, I hypothesize that they are less likely to correctly price the information in operating leases, which are not recognized on the financial statements. Therefore, my prediction regarding future stock returns is as follows:

P2: Increases in off-balance-sheet operating leases are associated with lower future abnormal stock returns.

CHAPTER III

RESEARCH DESIGN AND DATA

3.1 Measuring Off-balance-sheet Operating Lease Activities

Data on operating leases are obtained from Compustat. SEC registrants are

required by SFAS 13 to report the minimum payments of non-cancelable operating leases

for the following five years and a total amount of payments for the "thereafter years," the

years after the fifth year.[17] For example, in its 10-K filing for the 2002 fiscal year,

Starbucks reports minimum future rental payments under non-cancelable operating lease

obligations (in thousands) of $248,016 for year 2003, $243,519 for year 2004, $232,641

for year 2005, $219,384 for year 2006, $203,395 for year 2007, and $863,874 for the

thereafter years. See Appendix A for an example of footnote disclosure. Prior to year

2000, Compustat tabulated only the future rental payments for the next five years

(Compustat Item #96, #164, #165, #166, and #167), but not the payment for the thereafter

years (thereafter number). Compustat has collected the future lease payments beyond the

next five years only since 2000 (Compustat Item #389). The issues related to the

thereafter number are discussed in more detail in Section 3.2 and Section 5.2.3. Ten

percent is used to measure the cost of debt; this rate has been used by Standard & Poor's

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[17] SFAS 13 is effective for fiscal years ending on or after December 1978 (see Imhoff and Thomas 1988).

to capitalize operating leases. SFAS 13 requires a lessee to use the incremental borrowing rate to determine present value of lease payments. However, the information about the incremental borrowing rate is not available from Compustat. The results using alternative discount rates to calculate the present value of operating leases are discussed in Section 5.2.1.

The present value of the scheduled minimum future operating lease cash flows for the next five years is calculated as follows:

$$OPLEASE_t = \frac{RENT_{t+1}}{1.1} + \frac{RENT_{t+2}}{1.1^2} + \frac{RENT_{t+3}}{1.1^3} + \frac{RENT_{t+4}}{1.1^4} + \frac{RENT_{t+5}}{1.1^5}$$

Off-balance-sheet financing through operating leases is measured as the change in the present value of future operating lease obligations ($\Delta OPLEASE$).

$$\Delta OPLEASE_t = OPLEASE_t - OPLEASE_{t-1}$$

$\Delta OPLEASE$ is deflated by average total assets (Compustat Item #6) to measure the amount of operating lease financing relative to the existing asset base. I also use $\Delta OPLEASE$ to proxy for new capital investment in operating leases or off-balance-sheet lease accruals. At the inception of a lease contract, the unrecorded asset and unrecorded liability resulting from the lease both equal the present value of the future lease payments (see Appendix B).[18] As illustrated in the figure of Appendix B, after the inception of a lease, the unrecorded asset is less than the unrecorded liability until the lease expires. The unrecorded lease asset equals the cost (PV of future lease obligations) less accumulated depreciation; the unrecorded lease liability equals the cost (PV of future lease obligations) less the accumulated paid interests. The difference between the

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[18] This is assuming there is no material down payment in the lease contract. The unrecorded liability will be less than the unrecorded asset if there is a material down payment.

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unrecorded lease asset and unrecorded lease liability depends on the percentage of the total lease life expired and the interest rate. Note that companies usually have a portfolio of leases; information on the details of each lease in the portfolio is not disclosed.

Appendix C provides an example to illustrate how off-balance-sheet operating lease accruals differ from off-balance-sheet operating lease financing. A company is assumed to enter a new five-year lease contract *each* year from Year 0 to Year 5, and then no longer takes new leases from Year 6 to Year 10. Year 0 to Year 4 is the growth stage of the company; Year 5 to Year 6 is the steady state (e.g., the company takes a new lease when another lease expires), and Year 7 to Year 10 is the declining stage. It appears that the operating lease accruals are smaller than the operating lease financing when the firm is growing, equal to the operating lease financing when the firm is at a steady stage, and larger than the operating lease financing when the firm is declining. This suggests that using $\Delta OPLEASE$ to proxy for off-balance-sheet lease accruals is likely to overstate the lease accruals for growing firms, and understate the lease accruals for declining firms. Since the magnitude of off-balance-sheet lease accruals tends to be equal to or smaller than the magnitude of off-balance-sheet financing, using $\Delta OPLEASE$ to proxy for operating lease accruals might understate the magnitude of the coefficient.

The second proxy for off-balance-sheet lease activities is the change in the following year's minimum rental payment disclosed in the footnotes. This proxy differs from $\Delta OPLEASE$ in three ways. First, an increase in the following year's rent payment would normally lead to higher next year's rent expense and thus have a *direct* impact on next year's earnings. Second, there is no need to estimate the interest rate for this proxy. Third, using $\Delta RENT$ is useful in that the lack of data on rent payments beyond the

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following five years is no longer a concern. The change in the following year's rent payment is calculated as:

$$\Delta RENT_t = RENT_{t+1} - RENT_t$$

$\Delta RENT$ is also deflated by average total assets. Data on the following year's rent ($RENT_{t+1}$) are obtained from Compustat Item #96. Note that the information for $RENT_{t+1}$ is disclosed in year t's footnotes, and the information for $RENT_t$ is disclosed in year t-1's footnotes. When calculating $\Delta OPLEASE$ and $\Delta RENT$, I replace the missing values with zero and delete those observations with zero changes in operating leases.[19]

3.2 Rent Payments for the Thereafter Years

As discussed in the previous section, operating lease payments more than five years into the future have been available on Compustat only since 2000. To be consistent, I calculate future operating lease obligations based on the next five years' lease payments for all years. In this section, I investigate how the lack of thereafter lease payments would affect the empirical analysis. The first proxy for off-balance-sheet lease activities is measured as the change in the present value of the future rental payments ($\Delta OPLEASE$). Omitting the thereafter number would understate the off-balance-sheet liabilities. The second proxy is based on the change in the first year's lease payment ($\Delta RENT$); thus lack of the thereafter number does not affect this measure.

To facilitate the understanding of the potential impact of the thereafter rental payments, I incorporate the thereafter portion of lease payments (Compustat Item #389)

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[19] Missing data on operating leases could result from either data unavailability or lease obligations of zero. As a robustness check, I delete the observations with missing data on all of the following five years' rents and replace the remaining missing fields with zero. The number of observations remains similar, and the empirical results are extremely similar.

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into calculating future operating lease obligations for firm-year observations from 2000 to 2003. $\Delta OPLEASE\_TN$ is the change in the present value of the leasing obligations based on the first five years' rent payments and the rent for the thereafter years using the approach developed by Imhoff et al. (1991). See Appendix A for an example of the calculation of $OPLEASE$ using the Imhoff et al. (1991) approach.

The descriptive results are reported in Table 1. The mean of $\Delta OPLEASE$ is 0.004, suggesting that, on average, companies raise financing through operating leases. The mean (0.006) of $\Delta OPLEASE\_TN$ is higher than the mean (0.004) of $\Delta OPLEASE$. This finding indicates that lack of the thereafter number understates the change of lease obligations when companies raise capital through operating leases. Panel B presents the correlations between $\Delta OPLEASE\_TN$ and $\Delta OPLEASE$ (Pearson=0.903, Spearman=0.938). Both of these correlations are significant at less than a one percent level. The high correlation mitigates the concern that the lack of the thereafter number would significantly alter the tenor of the results. It suggests that the exclusion of the thereafter lease payments is likely to reduce the power of the tests.

3.3 Calculating Total Accruals, Net External Financing, and Stock Returns

Other financial data are obtained from the Compustat annual database. Stock return data are obtained from the CRSP daily and monthly stock returns files. The resulting sample covers all firm-years with available data on Compustat and CRSP for the period 1988-2004. The sample is not restricted to NYSE/AMEX firms; therefore, it does not have the exchange listing bias suggested by Kraft Leone and Wasley (2005). The analysis is restricted to observations after the release of SFAS 95 in order to

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calculate the measure of accruals from the statement of cash flows (Hribar and Collins 2002). In addition, there are fewer missing operating lease observations in more recent years. I remove firm-year observations lacking Compustat data necessary to calculate the primary financial statement variables used in the tests.

Data from the statement of cash flows is used to calculate total accruals. Total Accruals (*TACC*) is calculated as the difference between earnings (Compustat item #123) and free cash flows (*FCF*). Free cash flows are calculated as *CFO* + *CFI*. *CFO* is cash flows from operations (*CFO*, Compustat item #308). *CFI* is cash flows from investing activities (Compustat item #311), as reported on the statement of cash flows. Free cash flows reflect the impact of cash spent on PPE, acquisitions and other investments that have been capitalized as assets on the balance sheet. It also reflects cash received from the sale of divested assets and other investments.[20] Therefore, free cash flows match the flow in earnings better than CFO because earnings include capital charges such as depreciation and amortization charges that are ignored in CFO. In addition, I subtract the cash portion of discontinued operations and extraordinary items (Compustat item #124) from free cash flows to calculate total accruals per Hribar and Collins (2002). Total Accruals, as outlined above, is similar to the measure used in recent papers on total accruals (e.g., Dechow and Ge 2006; Richardson et al. 2006; Dechow et al. 2005).

Following Bradshaw et al. (2004), I measure the net amount of cash flow received from external financing activities (*CFF*) as:

$$CFF = \Delta EQUITY + \Delta DEBT$$

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[20] The equipment acquisition in a capital lease does not show up as a capital expenditure in CFI under GAAP. SFAS No. 95 requires firms to disclose non-cash simultaneous financing and investing activities either in a narrative or in a schedule, which is included as a separate section of the statement of cash flows.

$\Delta EQUITY$ is defined as net cash received from the sale (and/or purchase) of common and preferred stock less cash dividends paid (Compustat item #108 less Compustat item #115 less Compustat item #127). $\Delta DEBT$ represents net cash received from the issuance (and/or reduction) of debt (Compustat item #111 less Compustat #114 plus Compustat item #301). Note that throughout the paper all variables are scaled by average assets. I refer to these variables by the numerator's name for simplicity.

Stock returns are measured using compounded buy-hold size-adjusted returns, inclusive of dividends and other distributions. Returns are calculated for a twelve-month period beginning four months after the end of the fiscal year. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as the market value at the beginning of the return accumulation period. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio.

The one percent tails of all financial statement variables are trimmed in order to remove extreme outliers. The final sample with non-missing financial statement data consists of 59,235 firm-year observations.[21]

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[21] The results remain similar if each regression is estimated using only observations with data available for that regression.

CHAPTER IV

DESCRIPTIVE STATISTICS

4.1 Summary Statistics

Table 2 provides summary statistics of the financial variables used in the analysis. Panel A reports descriptive statistics. All variables are scaled by average assets. $\Delta OPLEASE$ has a mean of 0.007, indicating that, on average, companies increase future operating lease obligations. The average annual growth in future operating lease obligations is about 0.7 percent of total assets. The mean of *TACC* is 0.024, suggesting the average firm's on-balance-sheet accruals are around 2.4 percent of total assets. The mean values for *CFF*, $\Delta EQUITY$, and $\Delta DEBT$ are 0.049, 0.033, and 0.016, respectively, consistent with an overall propensity for raising capital. The amount of net operating lease financing is less than that of balance sheet financing (0.007 versus 0.033 and 0.016). One possible reason is that companies usually take a portfolio of leases, and increase or reduce their lease transactions more smoothly than they do their equity or debt issuances, which are more lump sum in nature. The mean of operating lease liabilities as a percentage of total fixed claims is 0.438; the mean of long-term debt as a percentage of total fixed claims is 0.562 (untabulated). Capitalized leased PPE ($\Delta PPE\_CAPLEASE$) and the change of capitalized lease obligations ($\Delta CAPLEASE$) both have means and medians close to zero, suggesting that capital leases are not as important as operating leases as a financing mechanism. $\Delta PPE\_CAPLEASE$ and $\Delta CAPLEASE$ have low

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standard deviations; thus, the statistical power is likely to be low for empirical analyses using these two variables. This is consistent with the findings in Graham et al. (1998). The issue related to capital leases is further discussed in Chapter VIII.

Panel B provides both Spearman and Pearson correlations. First, $\Delta OPLEASE$ is positively correlated with $TACC$ (Spearman=0.234) as well as with ΔPPE (Spearman=0.305), suggesting that firms tend to grow their on-balance-sheet and off-balance-sheet operating activities at the same time. This is consistent with the findings of Feng, Gramlich and Gupta (2005) that the change in the number of special purpose entities is positively related to on-balance-sheet total accruals. Second, there is a positive correlation between $\Delta OPLEASE$ and CFF (Spearman=0.140), indicating that off-balance-sheet and on-balance-sheet financing activities tend to be complements rather than substitutes. Third, there is a stronger positive correlation between $\Delta OPLEASE$ and $\Delta DEBT$ (Spearman=0.119) than the correlation between $\Delta OPLEASE$ and $\Delta EQUITY$ (Spearman=0.056). This correlation indicates that a firm raising more on-balance-sheet debt is also likely to raise more off-balance-sheet debt. Debt and leases do not appear to be substitutes, which is consistent with the findings of Ang and Peterson (1984). Moreover, consistent with prior research, there is a negative correlation between $\Delta EQUITY$ and $\Delta DEBT$ (Spearman=-0.045), indicating refinancing activities.

4.2 Industry Distribution across $\Delta OPLEASE$ Deciles

Table 3 reports the industry distribution of the sample across $\Delta OPLEASE$ deciles. The industry classification scheme is based on Frankel, Johnson and Nelson (2002). Panel A reports the percentage of firms in each industry group for each $\Delta OPLEASE$

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decile. The extreme $\Delta OPLEASE$ deciles have a higher presence in Computers, Retail, and Services. For example, Computers consists of 25 percent for the lowest decile and 19 percent for the highest decile of $\Delta OPLEASE$; Retails consists of 12.4 percent of the lowest decile and 26.6 percent for the highest decile.

Panel B presents the percentage of firms in each $\Delta OPLEASE$ decile within each industry group. Looking across $\Delta OPLEASE$ deciles, the extreme $\Delta OPLEASE$ deciles have a relatively larger presence in Computers, Retail, and Services. Low $\Delta OPLEASE$ deciles also have a larger presence in Pharmaceuticals, while higher $\Delta OPLEASE$ deciles have a larger presence in Transportation (e.g. the airline industry). Note that leasing firms are not only concentrated in a few industries. There are also certain industry variations in $\Delta OPLEASE$ in the sample. Section 5.2.2 investigates whether the results are industry driven.

4.3 Characteristics for Decile Portfolios Sorted by Operating Leases

Table 4 reports the mean values for select characteristics of $\Delta OPLEASE$ deciles, where firms are ranked annually by $\Delta OPLEASE$ and sorted into ten portfolios. $\Delta OPLEASE$ varies from a mean of -4.2% of total assets in the lowest decile to a mean of 8.2% of total assets in the highest decile. Low $\Delta OPLEASE$ firms experience poorer earnings and lower past sales growth than high $\Delta OPLEASE$ firms. Consistent with Table 2, low $\Delta OPLEASE$ firms have lower growth in on-balance-sheet operating assets. Specifically, they have lower PPE accruals and total accruals than high $\Delta OPLEASE$ firms. The relation is nearly monotonic. Dechow and Ge (2006) document that low accrual firms are generally declining firms that are exiting businesses, downsizing and

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undertaking restructurings. Thus, the monotonic relation between total accruals and $\Delta OPLEASE$ suggests that low $\Delta OPLEASE$ firms are also likely to be declining firms (e.g., exiting business and ending lease contracts), while high $\Delta OPLEASE$ firms are likely to be rapidly growing firms (e.g., expanding business and entering new lease contracts to rent office space). Low $\Delta OPLEASE$ firms have lower CFF (0.052) than high $\Delta OPLEASE$ firms (0.108), suggesting that high $\Delta OPLEASE$ firms increase both of their on-balance-sheet financing and off-balance-sheet financing. In summary, firms with increases in operating leases have performed well in the past, increased investment in operating assets, and raised funds externally.

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CHAPTER V

EMPIRICAL ANALYSIS – OPERATING LEASE ACTIVITIES AND FUTURE EARNINGS

5.1 Operating Lease Activities and One-year-ahead Earnings

Table 5 provides a regression analysis of future earnings performance on change in operating lease obligations. Earnings are measured as earnings before extraordinary items (Compustat item #123) deflated by average total assets. Contemporaneous earnings are included in the regression to control for the autocorrelation of earnings. I conduct all of the regression analyses following the Fama and MacBeth (1973) procedure of estimating annual cross-sectional regressions and reporting the time series averages of the resulting regression coefficients. I first estimate the following regression:

$$EARNINGS_{t+1} = \beta_0 + \beta_1 \, EARNINGS_t + \beta_2 \, \Delta OPLEASE_t \qquad (I)$$

Prediction P1 predicts β_2 to be negative. The result in Column (1) of Panel A indicates that there is a statistically significant negative relation between $\Delta OPLEASE$ and future earnings. The coefficient estimate on $\Delta OPLEASE$ is -0.159, indicating that, after controlling for contemporaneous earnings, higher operating lease activities lead to lower one-year-ahead earnings, consistent with Prediction P1.

Figure 1 shows the time-series properties of earnings for firm-years in the extreme deciles when ranked by operating leases. Year 0 stands for the year in which firms are

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ranked into extreme lease deciles; the plots demonstrate mean earnings in the three years before and after Year 0. Consistent with the results in Table 5, earnings appear to mean-revert quickly for both portfolios. This figure illustrates the lower persistence of earnings for both top decile lease firms and bottom decile lease firms.

The earlier results in Table 2 and Table 4 suggest that firms with greater changes in off-balance-sheet lease activities tend to have higher on-balance-sheet accruals. Previous research (e.g., Richardson et al. 2005) has shown that on-balance-sheet accruals reduce earnings persistence. Therefore, I next investigate whether the negative relation between operating leasing and earnings persistence is incremental to the relation between on-balance-sheet accruals and future earnings. The results are reported in Panel A of Table 5.

In Column (2) of Panel A, I include on-balance-sheet PPE accruals (growth in PPE) in addition to $\Delta OPLEASE$. Recall that $\Delta OPLEASE$ and ΔPPE are highly correlated (Spearman=0.305). The coefficient on ΔPPE is negative and statistically significant (-0.067), consistent with the findings in Richardson et al. (2005). In Column (3) and (4) of Panel A, total accruals ($TACC$) is included as an additional control variable.

$$EARNINGS_{t+1} = \beta_0 + \beta_1\ EARNINGS_t + \beta_2\ \Delta OPLEASE_t + \beta_3\ TACC_t \qquad\qquad (\text{II})$$

Equation (II) can be interpreted using the following two equations:

$$EARNINGS_{t+1} = \alpha_0 + \alpha_1\ (EARNINGS_t - \Delta OPLEASE_t - TACC_t) + \alpha_2\ \Delta OPLEASE_t + \alpha_3\ TACC_t \quad (\text{IIa})$$
$$EARNINGS_{t+1} = \alpha_0 + \alpha_1\ EARNINGS_t + (\alpha_2 - \alpha_1)\ \Delta OPLEASE_t + (\alpha_3 - \alpha_1)\ TACC_t \qquad (\text{IIb})$$

In Equation (II), β_1 measures the persistence of the adjusted free cash flow component ($EARNINGS_t - \Delta OPLEASE_t - TACC_t$) of earnings. Note that $\Delta OPLEASE$ can be viewed as a capital expenditure that would reduce cash flows from investing. β_2 measures the

persistence of $\Delta OPLEASE$ relative to the cash flow component, and β_3 measures the persistence of $TACC$ relative to the cash flow component.

$\Delta OPLEASE$ remains negatively related to future earnings after controlling for on-balance-sheet total accruals, consistent with Prediction P1. The magnitude of the coefficient on $\Delta OPLEASE$ declines from -0.159 to -0.075, suggesting that part of the negative relation between $\Delta OPLEASE$ and future earnings can be explained by on-balance-sheet accruals. Note that the coefficient on total accruals ($TACC$) is more negative than $\Delta OPLEASE$ (-0.120 versus -0.075 in Column 4); the difference is significant at the 10 percent level (untabulated), indicating that low reliability of on-balance-sheet accruals also contributes to lower earnings persistence.

Previous analysis in Table 2 and Table 4 indicates that firms doing more on-balance-sheet external financing have more off-balance-sheet external financing. Therefore, I next investigate whether the negative relation between operating leasing and future earnings still exists after controlling for on-balance-sheet financing variables. Recall that operating lease activities are capital investment and external financing activities at the same time. The results are separately reported in Panel B of Table 5, which focuses on the financing side of operating lease activities. Note that total accruals and external financing are not in the same regression because these two variables are highly correlated (Spearman Correlation = 0.459). In later analysis (Table 19), I show that the results are robust to the inclusion of total accruals and external financing in the same regression.

Specifically, regression (2) includes CFF, and regression (3) includes $\Delta EQUITY$ and $\Delta DEBT$. $\Delta OPLEASE$ remains negatively related to future earnings after controlling

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for on-balance-sheet external financing. The magnitude of the coefficient on $\Delta OPLEASE$ (-0.098) is larger than $\Delta DEBT$ (-0.051), indicative of a stronger negative relation between off-balance-sheet lease financing and future earnings than the relation between on-balance-sheet debt and future earnings. It appears that firms that use leases tend to perform worse than firms that use debt financing. The coefficient on $\Delta OPLEASE$ is significantly more negative than the coefficient on $\Delta DEBT$ (p-value < 0.01; untabulated). There are two possible reasons. The first is that leasing reduces the lessor's bankruptcy costs compared to financing with debt. Leasing contracts have a higher priority than debt in bankruptcy (see Eisfeldt and Rampini 2005).[22] A firm with poor expected future performance is more likely to get financing through operating leases than debt. Moreover, purchasing an asset enables the buyer to have accelerated depreciation, which is a tax advantage relative to an operating lease that tends to have evenly spread payments. However, if the taxable income is low, the lessee would not be able to use the tax advantage; it is better to let the lessor own the asset and make better use of depreciation tax shields (Brealey and Myers 2003; Scholes, Wolfson, Erickson, Maydew and Shevlin 2004). See also Chapter VII. Then the lessor can pass on some of the tax benefits to the lessee in the form of low lease payments. Therefore, firms are more likely to use operating leases when management expects low future taxable income.

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[22] In the event of bankruptcy, if the bankruptcy court decides that the asset is "essential" to the lessee's business, the lessor is entitled to receive lease payments in accordance with the original lease agreement, because these payments are classified as administrative expenses, which are satisfied first in the bankruptcy code. Otherwise, the lessor can immediately recover the possession of the equipment and file a claim against the lessee for economic losses incurred. However, other outstanding creditor claims have lower priority and are not guaranteed to be met. This leasing advantage only applies to those leases when the lessor retains ownership of the asset. These leases are called "true" leases from a legal and tax point of view. Operating leases are usually true leases (see Krishnan and Moyer 1994 and Sharpe and Nguyen 1995).

Table 6 reports the same set of analyses as Table 5 but uses $\Delta RENT$ to proxy for operating leasing activities. Note that $\Delta RENT$ has a direct effect on one-year-ahead earnings. As expected, the coefficient estimate on $\Delta RENT$ is significantly negative (-0.551). Similar to the results presented in Table 5, after controlling for on-balance-sheet accruals and external financing, $\Delta RENT$ remains negatively related to next period earnings.

In Table 7, $\Delta OPLEASE$ is decomposed into two components: change in the present value of the one-year-ahead rent payment ($\Delta OPLEASE$-ST) and change in the present value of the future rent payments beyond the first year ($\Delta OPLEASE$-LT). The results in Table 7 alleviate concerns about whether, in the specification in Table 6, the long-term component of $\Delta OPLEASE$ is a correlated omitted variable. The results suggest that the negative relation between $\Delta OPLEASE$ and one-year-ahead earnings is driven by $\Delta OPLEASE$-ST, which has an immediate impact on one-year-ahead earnings. $\Delta OPLEASE$-LT is not significant in predicting next year's earnings.

5.2 Operating Lease Activities and Two-year-ahead Earnings

Table 8 replicates the analyses in Table 5, replacing the dependent variable with two-year-ahead earnings. It is possible that new capital investments in operating leases have not affected earnings in one year, while the rent expenses have. Table 8 investigates the sensitivity of the results to using two-year-ahead earnings. The results in Table 8 suggest that $\Delta OPLEASE$ remains negatively associated with two-year-ahead earnings, even after controlling for on-balance-sheet accruals or on-balance-sheet net external financing. This finding gives further support for Prediction P1, consistent with

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diminishing marginal returns to increased investment in operating leases. Further

analysis also suggests that the negative relation between $\Delta OPLEASE$ and two-year-ahead

earnings is primarily driven by, $\Delta OPLEASE\text{-}LT$, the long-term component of $\Delta OPLEASE$

(not tabulated).

5.2 Robustness Checks

5.3.1. Alternative Discount Rate

In the main analysis, ten percent is used to determine present value of lease

payments. This section investigates whether the results are sensitive to using alternative

discount rates to calculate the present value of operating leases. I select two alternative

discount rates: eight percent and the short-term average borrowing interest rate. The

results are reported in Table 9. The short-term average borrowing interest rate is able to

capture the cross-sectional difference in the discount rate. One potential concern is that

the operating lease obligation will be overstated if the discount rate is understated. Firms

in financial distress are likely to have higher discount rates and lower future income. The

findings in Table 9 suggest that $\Delta OPLEASE$ is negatively associated with future earnings

using alternative discount rates, and the results remain both quantitatively and

qualitatively similar.

5.3.2. Industry Adjustment

As discussed in Section 4.2, certain industries (e.g., Retail, Transportation and the

Service Industry) involve more operating lease activities than other industries. For

example, the airline industry uses lots of leases. In this section, I investigate whether

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lower future earnings following increases in operating leases are driven by a few industries. I adjust all main financial variables by the industry medians and do the same regression analyses as those in Table 5. The results are reported in Table 10. It appears that the coefficient estimate magnitude declines slightly. However, $\Delta OPLEASE$ remains significantly negatively related to one-year-ahead earnings after controlling for the industry effect. Additionally, I reperform the empirical analyses using industry indicator variables (not tabulated). The results continue to hold.

5.3.3. Incorporating the Thereafter Portion of Future Lease Payments

The sample period of this paper is from 1988 to 2003. Since the thereafter portion of future lease payments is available only for years 2000-2003, to be consistent, I calculate future operating lease liabilities based on the next five years' lease payments for all time periods. In this section, as a robustness test, I include the thereafter portion of future lease payments in calculating $OPLEASE$ for firm-year observations after 2000 using the approach developed by Imhoff et al. (1991). The results are presented in Table 11.

$\Delta OPLEASE$ continues to be negatively associated with future earnings. Across all the specifications, the coefficient estimate magnitudes on $\Delta OPLEASE$ become slightly smaller and the t-statistics become slightly larger. For example, the coefficient estimate magnitude in Column (1) of Panel A declines from -0.159 (as reported in Table 5) to -0.127, and the t-statistic increases from -4.36 to -5.56. This change is likely due to the fact that the inclusion of the thereafter number increases the standard deviation of

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$\Delta OPLEASE$ (0.040; untabulated); therefore, it lowers the magnitude of the coefficient estimates and increases the power of the test.

5.3.4. Check for Autocorrelation

This section investigates whether the results are robust to controlling for the autocorrelation in the annual coefficient estimates. The results are reported in Table 12. Reported regression coefficients are mean coefficients from 16 annual regressions weighting each annual coefficient by the square root of sample size for each year. The t-statistics are based on the standard error of the coefficient estimates across the annual regressions, adjusted for autocorrelation in the annual coefficient estimates based on an assumed AR(1) autocorrelation structure. Standard errors are multiplied by an adjustment factor,

$$\sqrt{\frac{(1+\phi)}{(1-\phi)}\frac{2\phi(1-\phi^{n})}{n(1-\phi)^{2}}}$$

where n is the number of annual regressions and φ is the first-order autocorrelation of the annual coefficient estimates. After adjusting for autocorrelation in the annual coefficient estimates, $\Delta OPLEASE$ remains a statistically significant variable in explaining one-year-ahead income across all model specifications.

5.3.5. Gross Margin, Profit Margin and Asset Turnover

The main results suggest that earnings decline following high operating lease activities. I next investigate how the two multiplicative components of earnings based on

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DuPont analysis vary with the rank of $\Delta OPLEASE$. DuPont analysis decomposes earnings in the following way:[23]

$$\frac{EARNINGS}{ASSETS} = \frac{EARNINGS}{SALES} \; X \; \frac{SALES}{ASSETS} = PROFIT \; MARGIN \; X \; ASSET \; TURNOVER \; .$$

To better understand what drives the lower future earnings for high leasing firms, I study one-year-ahead changes in profit margin and asset turnover based on the rank of $\Delta OPLEASE$. The results are reported in Table 13. Consistent with the regression analysis, the first two columns suggest that high $\Delta OPLEASE$ firms have lower change in one-year-ahead earnings. In the next four columns, high $\Delta OPLEASE$ firms appear to have a lower change in one-year-ahead gross margin [(Sales-Cost of Goods Sold)/Sales] and a lower change in one-year-ahead profit margin (Δ Profit Margin$_{t+1}$) than low $\Delta OPLEASE$ firms, even though the relations are not always monotonic. The last two columns show that high $\Delta OPLEASE$ firms experience a lower change in one-year-ahead asset turnover (ΔAsset Turnover$_{t+1}$) than lower $\Delta OPLEASE$ firms and the relation is nearly monotonic. Taken together, the evidence presented indicates that those high $\Delta OPLEASE$ firms experience both declines in future profit margins and operating efficiency, leading to declines in future earnings.

Increases in operating leases directly lead to increases in the future periods' lease payments, which lower future earnings. I then investigate whether high operating lease firms have declines in earnings before rent expenses. The results are reported in Table 14. The dependent variable is measured as [Sales (Compustate item 12) – Cost of Goods Sold (Compustate item 41)]/Average Assets (Compustate item 6).

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[23] See Soliman (2004) for a detailed literature review on Dupont analysis.

After controlling for the autocorrelation of the dependent variable, $\Delta OPLEASE$ is negatively related to the following year's (Sales-Cost of Goods Sold)/Assets. These results are consistent across all model specifications. The results suggest that increases in capital investment in operating leases are associated with declines in margins, supporting Prediction P1. It appears that lower future earnings following high operating lease activities are not purely driven by increases in future lease expenses.[24]

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[24] However, it is possible that, for certain industries (e.g., airline), rent expenses are included as part of cost of goods sold.

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CHAPTER VI

EMPIRICAL ANALYSIS – OPERATING LEASE ACTIVITIES AND FUTURE STOCK RETURNS

6.1 Regression Analysis

In this chapter, I investigate whether investors fully anticipate the implications of operating lease activities for future earnings. $\Delta OPLEASE$ and $\Delta RENT$ should not be able to predict future abnormal stock returns if investors correctly price the implications of operating leases for future earnings. Prior research has shown that investors fail to fully anticipate the lower earnings persistence resulting from accruals and external financing, consistent with the naïve investor hypothesis. If investors also underestimate the negative implications of operating leasing for future earnings, there will be a negative relation between $\Delta OPLEASE$ and future abnormal returns as well as a negative relation between $\Delta RENT$ and future abnormal returns.

Table 15 reports the results of the regression analyses of future size-adjusted returns on $\Delta OPLEASE$. As reported in Panel A, the coefficient on $\Delta OPLEASE$ is significantly negative. This is consistent with Prediction 2, indicating the mispricing of off-balance-sheet lease accruals. The coefficient magnitude of -0.843 suggests that an increase in off-balance-sheet operating lease accruals equal to one percent of average

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assets results in a -0.843 percent abnormal stock return in the subsequent year.[25] In

Columns 2-5, the coefficient magnitude on $\Delta OPLEASE$ becomes smaller as more on-

balance-sheet accruals are included as controlling variables. However, $\Delta OPLEASE$

remains significant. Panel B reports the results after controlling for on-balance-sheet

external financing. $\Delta OPLEASE$ appears to be negatively related to future stock returns

after controlling for those external financing activities reflected in financial statements.

The results in Column (5) in Panel A and Column (4) in Panel B suggest that the results

continue to hold after control for book-to-market.

Table 16 supplements the regression analyses in Table 15 by using the second

proxy for operating lease activities: $\Delta RENT$. The coefficient on $\Delta RENT$ is -2.34,

suggesting that an increase in $\Delta RENT$ equal to one percent of average assets results in a

-2.34 percent abnormal stock return over the subsequent year. The coefficient on $\Delta RENT$

is more negative than the coefficient on $\Delta OPLEASE$ (-0.843). The relative coefficient

magnitudes of $\Delta OPLEASE$ and $\Delta RENT$ are consistent with the relative coefficient

magnitudes in the earnings regression results reported in Table 5 and Table 6. Again this

finding is consistent with the naive investor hypothesis and Prediction P2. After

controlling for ΔPPE, $TACC$, and on-balance-sheet financing variables, $\Delta RENT$ continues

to be negatively related to future stock returns.

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[25] This result still holds if the stock return variable is trimmed or winsorized. This mitigates the concern regarding the outlier problem addressed in Kraft et al. (2005). However, the distribution of stock returns is positively skewed. Core (2005) suggests that the approach used in Kraft et al. (2005) is inappropriate, because trimming skewed stock return results in biased estimates. See also Teoh and Zhang (2005) and Kothari, Sabino and Zach (2005).

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6.2 Mishkin Tests

I also conduct the Mishkin (1983) test to test the potential market mispricing of

the information in operating leasing.[26] The main system of equations of the analysis is as

follows:

$$EARNINGS_{t+1} = \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 \Delta OPLEASE_t + v_{t+1}$$
$$ABNORMALRETURN_{t+1} = \beta(EARNINGS_{t+1} - \gamma_0 - \gamma_1^* EARNINGS_t - \gamma_2^* \Delta OPLEASE_t) + e_{t+1}$$ **(IV)**

If investors underestimate the negative implications of $\Delta OPLEASE$ for future earnings,

then $\gamma_2 < \gamma_2^*$. The results are reported in Table 17. The analysis based on the Mishkin

framework explicitly tests how investors value operating leases, complementing previous

stock return regression analysis. In Panel A of Table 16, γ_2 is significantly negative

(-0.201), while γ_2^* is significantly positive (0.395). The results reject the null that the

investors correctly price the operating leasing information for one-year-ahead earnings,

consistent with the conclusions from Table 14. The investors appear to overvalue the

growth in operating leases relative to its ability to predict one-year-ahead earnings.

Panel B includes PPE accruals in the regressions. The valuation coefficient on

ΔPPE is significantly higher than the forecasting coefficient, suggesting that investors

overprice growth in PPE. This finding is consistent with Fairfield et al. (2003a). It

appears that the mispricing of $\Delta OPLEASE$ is incremental to the mispricing of ΔPPE.

I measure the degree of mispricing using $MISPRICING = |\gamma^* - \gamma|$. $MISPRICING$

equals to 0.442 (=|0.369-(-0.073)|) for ΔPPE and 0.420 for $\Delta OPLEASE$. It does not

appear that $\Delta OPLEASE$ is more mispriced than ΔPPE. Panel C adds total accruals, and

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[26] To test the market efficiency as to the variables in the model, the Mishkin approach does not require a complete specification of the relation between variables in the forecasting equation and earnings at t+1 (Sloan 1996). This approach does maintain the assumption that stock prices are efficient as to those variables that are correlated with the predictor variables and are omitted from the forecasting equation (Fairfield et al. 2003a). However, this assumption does not affect the inference regarding overall market efficiency.

Panel D includes net external financing in the analyses. Consistent with previous research and the findings in Table 15, the market appears to incorrectly impound the information contained in total accruals and external financing on future earnings. Moreover, the mispricing of operating leases still holds after controlling for the mispricing of on-balance-sheet accruals and external financing. Off-balance-sheet lease accruals do not appear to be more mispriced than on-balance-sheet accruals or external financing (for example, $MISPRICING = 0.365$ for $\Delta OPLEASE$ and $MISPRICING = 0.304$ for $TACC$).

Two observations emerge from Table 17. First, investors do *not* appear to ignore operating lease information disclosed in footnotes. Rather, investors value these operating lease activities as if they have positive implications for future earnings. This finding is in contrast of those of a few previous studies (e.g., Landsman 1986; Barth 1994), which found that disclosed footnote information is at least partially reflected in stock prices. Second, growth in off-balance-sheet operating leases is not more mispriced than growth in on-balance-sheet operating assets. It is well known that analysts (e.g., Standard & Poor's analysts) adjust balance sheets for operating leases. For example, Graham and Dodd (1988) recommend that coverage ratios incorporate the unrecorded liabilities. Therefore, these two inferences are not entirely surprising.

6.3 Hedge Return Analysis

6.3.1 Full Sample Analysis

Table 18 Panel A reports mean future stock returns for portfolios of firms formed on $\Delta OPLEASE$ and $\Delta RENT$. Each of the above variables is ranked in each calendar year

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and assigned to ten portfolios based on the ranks. I calculate the mean annual stock returns for each decile. The hedge returns, calculated as the difference between the extreme deciles, are reported. Panel A of Table 18 also reports t-statistics for the significance of the hedge returns for each variable, based on the time-series of annual hedge returns following the Fama and Macbeth (1973) procedure.

I start by examining the future raw returns following $\Delta OPLEASE$. The lowest decile of $\Delta OPLEASE$ has a mean raw return of 28.6 percent, while the highest decile of $\Delta OPLEASE$ has a mean of 15.1 percent. The mean of the annual hedge returns is 13.5 percent. In addition, a similar trading strategy based on $\Delta RENT$ generates a theoretical hedge return of 11.6 percent. These findings are consistent with the regression analysis results, in support of Prediction P2. The second column reports the size-adjusted returns when the size portfolios are based on market value of equity deciles of NYSE, AMEX and NASDAQ firms; the third column reports the size-adjusted returns when size portfolios are based on market value deciles within the sample.[27] The mean of annual hedge returns is 12.9 percent and 9.0 percent respectively. Column (4) reports control firm-adjusted returns, which are the differences in returns between a sample observation and a control firm matched on size and book-to-market; the control firm observation has a market value between 0.70 and 1.30 times the treatment firm's market value and has the closest book-to-market ratio within the matched size subset. The procedure is specified in Barber and Lyon (1997). The mean of annual hedge returns based on control firm-adjusted returns is 9.4 percent.

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[27] The size-adjusted returns in Column (2) tend to be positive. This is because the sample of the paper already excludes those firms with zero changes in operating leases. Smaller firms are more likely to use leases (Eisfeldt and Rampini 2005). Therefore, size-adjusted returns of the sample firms are likely to be positive, because the size portfolios are based on all public firms. However, using this size-adjusted return does not influence cross-sectional analysis. Column (3) shows size-adjusted returns within the sample.

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Panel A also reports hedge returns using alpha from Fama and French's (1993) three-factor model and four-factor model (Jegadeesh and Titman, 1993; Carhart, 1997). Monthly returns for each of the 10 portfolios are regressed, over the 160 months in the sample period, on mimicking returns to the three Fama and French (1993) factors – the market factor (MKT), size (SMB), book-to-market (HML), and the returns to the momentum factor (UMD) (Jegadeesh and Titman 1993). I multiply monthly hedge returns by 12 to obtain annual hedge returns. It appears that the hedge returns to the operating lease activity variables are robust to the inclusion of these potential risk factors.[28]

I also implement a two-dimensional trading strategy based on $\Delta OPLEASE$ and *TACC* (total accruals) to investigate whether the hedge returns to $\Delta OPLEASE$ still exist conditional on *TACC*. The results are presented in Panel B of Table 18. I rank stocks independently on $\Delta OPLEASE$ and *TACC* and report the future size-adjusted stock returns for the portfolio combinations. Given my focus is on extreme deciles, I combine deciles 2 to 9 together. By reading across the columns in Panel B of Table 18, the $\Delta OPLEASE$ trading strategy generates positive hedge returns, holding total accruals constant. Similarly, in each row, there are positive hedge returns to the accrual trading strategy, holding $\Delta OPLEASE$ constant. The evidence suggests that $\Delta OPLEASE$ trading strategy earnings abnormal returns incremental to the accruals strategy, consistent with the regression results in Table 15.

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[28] However, part of the hedge returns might be due to barriers to arbitrage (Mashruwala, Rajgopal and Shevlin 2005; Lev and Nissim 2005; Bushee and Raedy 2005).

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6.3.2 Analysis for the Stocks in High Lease Industries

I next focus on industries that use operating leases more heavily and look at their future portfolio abnormal stock returns. As shown in Table 3, companies in Computers, Retail, Services and Transportation engage in more operating lease activities than other industries. The first column in Table 19 Panel A shows the percentage of firms in these four industries (high lease industries) based on $\Delta OPLEASE$. As expected, extreme deciles have a larger presence in the high lease industries. If the investors better understand the implications of leasing in high lease industries, I expect to find a lower hedge return to the stocks in high lease industries. The next four columns in Table 19 Panel A show the hedge returns to the $\Delta OPLEASE$ trading strategy based on industry. It turns out that stocks in high lease industries actually earn slightly higher hedge returns than stocks in other industries. The differences are not statistically significant using a t-test (not tabulated). Panel B of Table 19 presents mean future stock returns for portfolios formed on $\Delta OPLEASE$ when the portfolios are constructed only within the sample of stocks in high lease industries. The reported hedge returns are slightly higher than those in Table 18 Panel A. Taken together, the evidence presented in Table 19 does not support more efficient market pricing for those industries that use leases more heavily.

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CHAPTER VII

DETERMINANTS OF LEASE DECISION

This chapter investigates whether the negative relation between operating lease activities and future earnings can be explained by the endogeneity of the leasing decision. The finance literature has focused on studying the determinants of leasing decisions following Miller and Upton (1976). The findings of prior research are consistent with the conjecture that low tax rate firms, firms in financial distress, and growth firms tend to lease more (Sharpe and Nguyen 1995; Graham et al. 1998; Eisfeldt and Rampini 2005).

In this chapter, I first study the univariate relation between operating lease activities and firm characteristics related to marginal tax rate, financial distress and growth. The results are reported in Table 20. Then I use regression analyses to assess the association between operating lease activity and future earnings, after controlling for the above firm characteristics. Table 21 presents the regression results. Note that the focus of previous research is on the *level* of operating lease liabilities as part of capital structure, while this paper focuses on the *change* in operating lease liabilities. This issue is discussed in detail in Section 7.4.

7.1 Operating Lease Activity and Marginal Tax Rate

In a leasing contract, the ability to transfer ownership rights can create value for both parties: leasing allows low tax rate firms to sell tax shields to high tax rate lessors,

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who value the tax benefits more highly (see Myers, Dill, and Bautista 1976; Graham et al. 1998). According to IRS, only the use of true leases allows tax benefit transfers from low marginal-tax-rate firms to high marginal-tax-rate firms.[29] Operating leases are predominantly true leases. Thus, the use of operating leases is expected to be negatively related to tax rate. Graham et al. (1998) provide evidence supporting the hypothesis that low tax rate firms use more operating leases.

Table 20 reports the means of marginal tax rate by $\Delta OPLEASE$ deciles, where firms are ranked annually by $\Delta OPLEASE$ and sorted into ten portfolios. Marginal tax rate is estimated using the simulation approach developed by Shevlin (1990) and Graham (1996b).[30] The finding is partially consistent with previous research. On average, low $\Delta OPLEASE$ firms have the lowest marginal tax rate (10.3%) among all deciles; marginal tax rate increases to 20.6% at Rank 6-7 and then declines to 17.7% for the highest $\Delta OPLEASE$ firms. As shown in Table 4, low lease firms have poor past performance, which is usually associated with low marginal tax rates.

7.2 Operating Lease Activity and Financial Distress

One of the differences between leasing and secured lending is treatment in bankruptcy. For a true lease, in Chapter 11, a lessee can assume the lease and continue to make payments (administrative expenses) or reject the lease and return assets. For a non-true lease, the lease is recharacterized as secured credit and the asset is subject to

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[29] Another example of off-balance-sheet activities that allow tax benefit transfers is off-balance-sheet R&D partnerships (Shevlin 1987; Beatty, Berger and Magliolo 1995).
[30] The marginal tax rate data is obtained from John Graham's website: www.duke.edu/~jgraham. I would like to thank John Graham for providing the data.

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automatic stay, which prohibits recovery of or foreclosure on collateral. Leasing contracts have high priority in bankruptcy relative to debt. Leasing and ex ante measures of financial distress are expected to be positively correlated.

Financial distress (*SHUMWAY*) is measured using the model developed by Shumway (2001):

$$SHUMWAY = \frac{e^{\alpha}}{1 + e^{\alpha}}$$

$$\alpha = -13.303 - 1.982 * NI + 3.593 * TL - 0.467 * SIZE - 1.809 * RET + 5.791 * SIGMA$$

The variables included in the model are: net income scaled by total assets (*NI*), total liabilities scaled by total assets (*TL*), relative size measured as the logarithm of each firm's size relative to the total size of the NYSE and AMEX market (*SIZE*), past market-adjusted return (*RET*), and the idiosyncratic standard deviation of each firm's stock returns (*SIGMA*). *SIGMA* is calculated by first regressing each stock's monthly returns in t-1 on the value-weighted NYSE/AMEX index return during the same time period. SIGMA is the standard deviation of the residual of the regression. I use the parameter estimates provided in Shumway (2001) to estimate the probability of bankruptcy.

Table 20 shows the means of Shumway score based on $\Delta OPLEASE$ deciles. Low $\Delta OPLEASE$ firms appear to have a higher probability of bankruptcy using the Shumway score (0.56%) than high $\Delta OPLEASE$ firms (0.098%). This is inconsistent with the idea that high financial distress firms tend to lease more. However, as shown in Table 4, low $\Delta OPLEASE$ firms have poor past performance (e.g., earnings and past sales growth). These firms are likely to be in financial distress and are downsize their business and let lease contracts expire without replacing them.

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7.3 Operating Lease Activity and Growth

Young, fast-growing, innovation-intensive firms face severe information asymmetry problems. Firms facing high costs of external funds can economize on the cost of funding by leasing (Sharpe and Nguyen 1995).

The analysis in Table 20 suggests that high $\Delta OPLEASE$ firms have a lower book-to-market ratio, suggesting that investors have high expectations of future growth for these firms (e.g., Lakonishok, Shleifer and Vishny 1994). This is consistent with the idea that growth firms tend to use more leases than non-growth firms.

7.4 Correlations

This section reconciles my findings with those in prior research regarding the relation between operating lease activities, marginal tax rate and financial distress. This dissertation studies the *change* in operating lease liabilities, while the focus of prior research is the *level* of operating lease liabilities as part of capital structure. Table 20 Panel B shows that $\Delta OPLEASE$ and *OPLEASE* are positively correlated; however, the magnitude of the Pearson Correlation is only 0.123, indicating that the endogeneity issue associated with the level variable (*OPLEASE*) does not necessarily apply to the change variable ($\Delta OPLEASE$).

Interestingly, both $\Delta OPLEASE$ and *TACC* are positively correlated with marginal tax rate and negatively correlated with Shumway score. In contrast, *OPLEASE*, the level variable, is negatively correlated with marginal tax rate and positively correlated with Shumway score, which is consistent with the findings in prior literature. Note that the

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lease-versus-buy decision is already conditional on the company's decision to grow assets and is more likely to be captured by studying the level variable ($OPLEASE$). Differently, $\Delta OPLEASE$ represents the company's decision to grow assets and increase capital investments in the form of operating leases.

7.5 Multivariate Analysis

As evidenced in Table 20, marginal tax rate, Shumway score, and book-to-market ratio still vary based on the ranks of the operating lease variable. To investigate whether the negative relation between operating lease activities and future earnings is driven by these determinants, I include these variables in the regression analysis. Results are presented in Table 21.

In Panel A of Table 21, I first present limited regressions controlling for each of the determinants variables. In the final column, I present a complete regression with all the control variables. Across all columns, $\Delta OPLEASE$ is negatively associated with one-year-ahead earnings. This finding gives further support to Prediction P1, suggesting that the negative relation between $\Delta OPLEASE$ and future income goes beyond those variables that are potentially correlated with the leasing decision. Note that in Column (4) of Panel A, both $TACC$ and CFF are included as control variables. Both coefficient estimate magnitudes and t-statistics on these two variables are lower than those in previous tables. This is because $TACC$ and CFF are highly correlated. Referring to Table 2 Panel B, the Spearman correlation between $TACC$ and CFF is 0.459, consistent with the intuition that firms raise external financing and grow their assets at the same time. Panel B of Table 21 investigates whether $\Delta OPLEASE$ can still predict stock returns after including the

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additional control variables: marginal tax rate, Shumway score, and book-to-market.

Similar to the findings in Table 21 Panel A, $\Delta OPLEASE$ continues to be negatively

associated with one-year-ahead size adjusted returns.

CHAPTER VIII

CAPITAL LEASE ASSETS AND CAPITAL LEASE LIABILITIES

In this dissertation, I focus on operating lease activities, which are not recognized on the balance sheet. As discussed in Section 2.1, for financing reporting purpose, leases can be classified as either capital leases or operating leases by the lessee. Operating leases are off-balance-sheet and are much more frequently used compared to capital leases (see Graham et al. 1998); therefore, this paper focuses on operating leases. In the main analyses, change in future lease obligations is used to proxy for change in assets created by operating leases. In this chapter, I investigate the correlation between capital lease assets and capital lease liabilities to better understand the relation between lease assets and liabilities.

Compustat collects PPE under capital leases (Item #159) and capitalized lease obligations (Item #84).[31] There are two limitations associated with data on PPE under capital leases. First, some companies don't separately disclose PPE under capital leases because they already have ownership. Second, Compustat sometimes includes leasehold improvement as part of PPE under leases (Compustat Item #159) and sometimes does not. The inclusion of leasehold improvement can significantly change the magnitude of the data item. To reduce the influence of the data error introduced by Compustat, I exclude those observations with PPE under capital leases (capitalized obligations) greater

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[31] Compustat stopped collecting data for PPE under leases after 1997.

than five times of the capitalized lease obligation (PPE under capital leases) and obtain

the correlation between PPE-leases and capitalized lease obligations. The results are

reported in Table 22. The Pearson correlation between capitalized lease obligations and

PPE-leases is 0.780, while the Spearman correlation is 0.840, suggesting that lease

liability is a reasonable proxy for lease assets. Change in the capital lease debt is also

reasonably correlated with change in capital lease assets (Pearson = 0.661; Spearman =

0.539).

CHAPTER IX

CONCLUSION

This dissertation investigates the relation between off-balance-sheet activities, earnings persistence and stock prices by focusing on operating leases. Previous research in the area of capital investment, accruals and external financing has focused on the investment and external financing activities that are recognized in the financial statements. However, the property rights granted by an operating lease contract represent future benefits and future obligations. Thus the change in the off-balance-sheet asset can be viewed as off-balance-sheet capital investment and, therefore, off-balance-sheet accruals. Likewise, the change in the off-balance-sheet liability can be viewed as a source of off-balance-sheet financing.

I show that, similar to on-balance-sheet accruals and sources of external financing, off-balance-sheet operating lease activities are negatively associated with future earnings and stock returns. Additional tests reveal that firms with more off-balance-sheet lease activities also engage in more on-balance-sheet investing and external financing activities. I then investigate whether lower future earnings and stock returns are due to off-balance-sheet activities, on-balance-sheet activities or a combination of both. The results suggest that information about off-balance-sheet activities disclosed in footnotes has incremental explanatory power in the prediction of future earnings and

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stock returns. Stock prices act as if investors fail to correctly identify the implications of operating lease activities for future earnings. Investors appear to value operating lease activities as if they are positively associated with future operating performance.

I provide further tests to better understand the lower future earnings following high capital investment in operating leases. I investigate the multiplicative components of earnings and find that firms with high operating leases activities have both declines in future profit margins and future asset turnover compared to low operating lease firms. Moreover, the negative relation between operating lease activities and future earnings continues to hold after controlling for the potential determinants of leasing decisions. This result is also robust to using alternative discount rates in calculating the present value of future lease obligations and controlling for the industry effect.

A long-short investment strategy based on off-balance-sheet lease information generates significant one-year-ahead abnormal hedge returns, ranging from 7.3 percent to 12.9 percent using different abnormal return measures. The operating lease trading strategy also generates abnormal stock returns incremental to the accrual trading strategy.

This dissertation sheds insight into the current debate on the explanations for the accrual anomaly found by Sloan (1996). Figure 2 illustrates the alternative explanations in the existing literature. Taken together, my findings give support to the explanation of diminishing marginal returns to investment as well as the explanation of "windows of opportunity." This paper suggests that the abnormal returns to the accrual trading strategy cannot be completely attributable to risk and data errors. Earnings management and accrual estimation error also appear to be an incomplete explanation.

The stock market mispricing of off-balance-sheet operating lease information documented in this paper is likely part of a larger phenomenon of mispricing related to off-balance-sheet information disclosure. For example, Landsman and Ohlson (1990) document that the stock market is inefficient in incorporating information regarding net pension liability. In a similar vein, Picconi (2004) provides evidence suggesting that firms might take advantage of investors' incomplete processing of pension information footnote disclosure and manage earnings. Future research might investigate how mispricing of off-balance-sheet information varies based on the type and nature (e.g., complexity, readability; see Li 2006) of the disclosure.

FIGURES

FIGURE 1

Time series properties of earnings based on operating leases
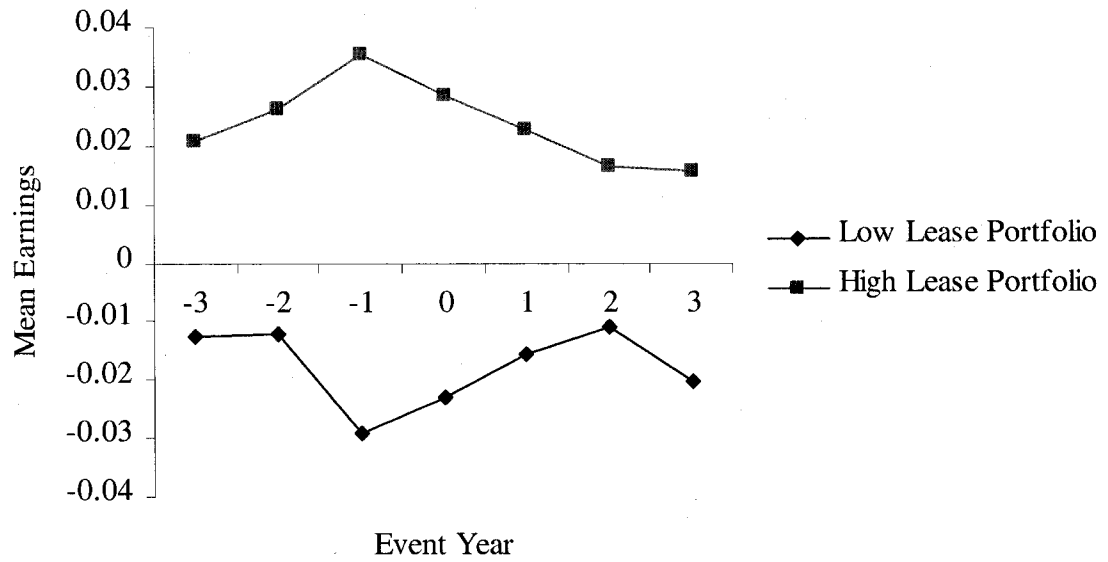
Year 0 is the year in which firms are ranked and assigned in equal numbers to ten portfolios based on $\Delta OPLEASE$. $EARNINGS$ is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate.

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FIGURE 2

The contribution of this dissertation to the current debate on the accrual anomaly

Competing explanations	
Earnings management (Xie 2001)	
Estimation error (Dechow and Dichev 2002; Richardson et al. 2006)	
Growth and diminishing marginal returns/overinvestment (Fairfield et al. 2003; Titman et al., Desai et al.)	√
Fixation on earnings (Sloan 1996) and ignoring footnote disclosure	
Risk (Khan 2005)	
Data errors (Kraft et al. 2005)	
Windows of opportunity (Bradshaw et al. 2005)	√
The use of average assets to scale accruals (Fairfield et al. 2003)	

TABLES

TABLE 1

Capitalization of operating leases based on the next five years' rent and the rent in the thereafter years

Panel A: Descriptive statistics

Variable	Mean	Std Dev	Median	25%	75%	Min	Max
ΔOPLEASE - based on the next five years' rent	0.004	0.029	0.0007	-0.005	0.010	-0.155	0.213
ΔOPLEASE_TN – based on the next five years' rent and the thereafter number	0.006	0.040	0.0004	-0.007	0.013	-0.193	0.352
ΔOPLEASE_TN - ΔOPLEASE	0.002	0.018	0	-0.0006	0.001	-0.138	0.332

Panel B: Spearman / Pearson correlation

	ΔOPLEASE	*ΔOPLEASE_TN*
ΔOPLEASE	1	0.903
		<0.001
ΔOPLEASE_TN	0.938	1
	<0.001	

This table is based on a sample of 15,795 firm-year observations from 2000 to 2003. *ΔOPLEASE* is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔOPLEASE_TN* is calculated as the change of capitalized operating leases based on Imhoff, Lipe and Wright (1991), using the next five years' minimum rent and the thereafter number (Compustat item 389). The methodology is illustrated in Appendix A. Both of the variables are scaled by average total assets.

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TABLE 2
Summary statistics for the full sample

Panel A: Descriptive statistics

Category	Variable	Mean	Median	Std Dev	25%	75%	Min	Max
	EARNINGS	-0.024	0.027	0.188	-0.044	0.071	-1.898	0.347
Off-balance-sheet	ΔOPLEASE	0.007	0.001	0.034	-0.004	0.012	-0.262	0.277
	ΔRENT	0.003	0.001	0.010	-0.001	0.005	-0.097	0.085
On-balance-sheet Accruals	ΔPPE	0.023	0.007	0.080	-0.010	0.043	-0.396	0.589
	ΔPPE_CAPLEASE	0.000	0.000	0.008	0.000	0.000	-0.203	0.093
	TACC	0.024	0.024	0.183	-0.052	0.112	-1.336	0.826
On-balance-sheet External Financing	CFF	0.049	0.002	0.173	-0.035	0.074	-0.390	1.428
	ΔEQUITY	0.033	0.000	0.144	-0.012	0.011	-0.236	1.427
	ΔDEBT	0.016	0.000	0.101	-0.025	0.039	-0.389	0.727
	ΔCAPLEASE	0.000	0.000	0.007	0.000	0.000	-0.064	0.077

Table 2 Continued
Panel B: Spearman / Pearson correlation

	EARNINGS	ΔOPLEASE	ΔRENT	ΔPPE	ΔPPE_CAPLEASE	TACC	CFF	ΔEQUITY	ΔDEBT	ΔCAPLEASE
EARNINGS		**0.083**	**0.062**	0.167	0.009	0.520	-0.350	-0.380	-0.057	0.007
ΔOPLEASE	0.145		**0.816**	**0.222**	**0.038**	**0.191**	**0.120**	**0.073**	**0.100**	**0.076**
ΔRENT	0.108	0.776		**0.224**	**0.034**	**0.191**	**0.136**	**0.086**	**0.109**	**0.076**
ΔPPE	0.292	**0.305**	**0.300**		0.050	0.436	0.255	0.079	0.324	0.160
ΔPPE_CAPLEASE	0.028	**0.061**	**0.055**	0.096		0.026	0.013	0.005	0.015	0.066
TACC	0.469	**0.234**	**0.225**	0.530	0.050		0.374	0.149	0.427	0.070
CFF	-0.202	**0.140**	**0.175**	0.315	0.032	0.459		0.812	0.552	0.060
ΔEQUITY	-0.260	**0.056**	**0.113**	0.063	0.000	0.085	0.532		-0.039	0.018
ΔDEBT	-0.036	**0.119**	**0.121**	0.316	0.036	0.448	0.698	-0.045		0.077
ΔCAPLEASE	0.003	**0.063**	**0.057**	0.142	0.081	0.065	0.069	0.003	0.094	

The sample covers 59,235 firm-year observations for the period 1988-2003. EARNINGS is earnings before extraordinary items (Compustat item 123). ΔOPLEASE is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔRENT is the change in the first year's operating lease payment (Compustat item 96). ΔPPE is the change in PPE other than capitalized leased PPE (Compustat item 8 – Compustat item 159). ΔPPE_CAPLEASE is the change of capitalized leased PPE (Compustat item 159). TACC is total accruals, calculated as EARNINGS – CFO-CFI. CFO is cash flow from operations (Compustat item 308). CFI is cash flow from investing (Compustat item 311). CFF is net external financing reflected on balance sheet, calculated as the sum of ΔEQUITY and ΔDEBT. ΔEQUITY is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). ΔDEBT is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). ΔCAPLEASE is the change of capitalized lease obligations (Compustat item 84). All variables are scaled by average total assets (Compustat item 6). All correlations greater than 0.01 in absolute magnitude are significant at less than 0.01 levels.

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TABLE 3

Industry composition for decile portfolios sorted by operating leases

Panel A: Percentage of the firms in each industry group for each $\Delta OPLEASE$ decile (Column)

Industry groups	Lowest	2	3	4	5	6	7	8	9	Highest
Agriculture	0.2	0.3	0.4	0.4	0.5	0.3	0.4	0.3	0.4	0.1
Mining & Construction	1.5	1.9	2.4	3.6	2.9	2.6	2.5	1.7	1.4	0.9
Food & Tobacco	1.6	2.0	2.7	3.3	2.6	3.0	2.6	1.9	1.6	1.2
Textile and Apparel	1.4	2.3	2.3	1.9	1.7	2.0	2.1	2.2	1.7	1.3
Lumber, Furniture, & Printing	2.6	3.2	4.1	4.8	4.6	5.1	4.6	3.6	3.3	1.5
Chemicals	1.6	2.5	3.6	3.9	3.3	3.3	3.2	2.2	1.6	1.0
Refining & Extractive	1.1	3.0	5.2	6.7	6.1	4.8	4.7	2.8	1.9	1.1
Durable Manufacturers	21.2	29.5	29.0	26.9	24.5	27.5	25.3	25.3	20.4	14.2
Computers	**25.0**	18.8	14.9	9.9	8.3	10.7	13.1	15.9	17.5	**19.0**
Transportation	5.5	4.2	4.3	5.3	6.5	6.1	5.9	5.9	6.2	7.4
Utilities	1.0	1.1	1.2	1.7	1.8	1.6	1.4	1.3	1.0	0.8
Retail	**12.4**	11.2	9.6	7.5	6.6	9.6	12.1	13.9	19.0	**26.6**
Services	**14.7**	10.0	8.8	6.9	7.7	8.0	9.5	12.1	14.0	**16.9**
Banks & Insurance	4.9	4.2	6.4	13.2	18.7	10.5	7.5	5.9	5.0	4.0
Pharmaceuticals	5.6	6.0	5.3	3.9	4.2	4.9	5.3	4.9	5.0	4.3
Total	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*

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Table 3 Continued

Panel B: Percentage of the firms in each $\Delta OPLEASE$ decile for each industry group (Row)

Industry groups	Lowest	2	3	4	5	6	7	8	9	Highest	Total
Agriculture	6.6	8.1	11.1	13.1	14.7	8.6	13.1	10.1	11.6	3.0	100%
Mining & Construction	7.0	8.7	11.3	16.9	13.5	12.0	11.9	7.8	6.7	4.1	100%
Food & Tobacco	6.9	9.0	12.0	14.7	11.7	13.4	11.3	8.6	7.1	5.3	100%
Textile and Apparel	7.2	11.9	12.2	10.2	9.1	10.6	11.3	11.9	8.9	6.8	100%
Lumber, Furniture, & Printing	6.8	8.5	11.0	13.0	12.2	13.7	12.2	9.7	8.9	4.0	100%
Chemicals	6.0	9.3	13.9	14.9	12.8	12.6	12.1	8.6	6.3	3.7	100%
Refining & Extractive	3.0	8.2	13.8	17.9	16.4	12.9	12.5	7.5	5.1	2.8	100%
Durable Manufacturers	8.7	12.1	11.9	11.0	10.1	11.3	10.4	10.4	8.4	5.8	100%
Computers	**16.3**	12.3	9.7	6.5	5.4	7.0	8.6	10.4	11.4	**12.4**	100%
Transportation	9.5	7.3	7.6	9.2	11.3	10.7	10.2	10.4	10.8	**12.9**	100%
Utilities	7.5	8.8	9.2	13.4	13.8	12.1	10.9	10.4	7.8	5.9	100%
Retail	**9.7**	8.7	7.4	5.9	5.1	7.5	9.4	10.8	14.8	**20.7**	100%
Services	**13.5**	9.2	8.1	6.4	7.1	7.4	8.8	11.2	12.9	**15.5**	100%
Banks & Insurance	6.1	5.3	8.0	16.4	23.3	13.1	9.4	7.3	6.2	4.9	100%
Pharmaceuticals	**11.3**	12.1	10.7	8.0	8.5	10.0	10.7	9.9	10.1	8.7	100%

The sample covers 59,235 firm-year observations for the period 1988-2003. Firms-year observations are ranked annually and assigned in equal numbers to decile portfolios. Industry classifications are compiled using the following SIC codes: Agriculture: 0100-0999; Mining: 1000–1299, 1400–1999; Food & Tobacco: 2000–2199; Textiles and Apparel: 2200–2399; Lumber, Furniture, & Printing: 2400-2796; Chemicals: 2800–2824, 2840–2899; Refining & Extractive: 1300–1399, 2900–2999; Durable Manufacturers: 3000–3569, 3580-3669, 3680-3999; Computers: 3570–3579, 3670–3679, 7370–7379; Transportation: 4000–4899; Utilities: 4900–4999; Retail: 5000–5999; Services: 7000–7369, 7380–9999; Banks & Insurance: 6000–6999; Pharmaceuticals: 2830–2836.

TABLE 4

Mean values of selected characteristics for decile portfolios sorted by operating leases for 59,235 firm-year observations from 1988 to 2003

Portfolio Rank	Off-balance-sheet activity		Accounting performance		Accruals		External financing			Asset pricing variables	
	ΔOPLEASE	ΔRENT	EARNINGS	SALES GROWTH	ΔPPE	TACC	CFF	ΔEQUITY	ΔDEBT	BV	MV ($m)
1	-0.042	-0.009	-0.139	0.042	-0.012	-0.075	0.052	0.056	-0.004	121	303
2	-0.011	-0.002	-0.062	0.088	0.003	-0.023	0.036	0.035	0.001	198	503
3	-0.004	-0.001	-0.023	0.110	0.012	0.003	0.029	0.024	0.005	321	862
4	-0.001	0.000	0.009	0.122	0.017	0.024	0.019	0.009	0.010	557	1332
5	0.000	0.000	0.015	0.140	0.022	0.037	0.026	0.007	0.019	814	1906
6	0.003	0.001	0.012	0.172	0.026	0.042	0.032	0.013	0.019	721	1822
7	0.006	0.003	0.008	0.209	0.031	0.048	0.044	0.021	0.023	544	1481
8	0.013	0.005	-0.006	0.255	0.035	0.054	0.063	0.037	0.026	428	1163
9	0.027	0.009	-0.015	0.303	0.041	0.064	0.082	0.051	0.031	278	803
10	0.082	0.021	-0.045	0.393	0.054	0.065	0.108	0.075	0.032	162	588

Firms-year observations are ranked annually and assigned in ascending order to decile portfolios based on ΔOPLEASE. ΔOPLEASE is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. EARNINGS is earnings before extraordinary items (Compustat item 123). SALES GROWTH is past year's sales growth (Compustat item 12). ΔPPE is the change in PPE other than capitalized leased PPE (Compustat item 8 – Compustat item 159). TACC is total accruals calculated as earnings before extraordinary items (Compustat item 123) minus free cash flow (FCF). FCF is calculated as the sum of cash flow from operations (CFO) and cash flow from investing (CFI, Compustat item 311). CFF is net external financing reflected on balance sheet, calculated as the sum of ΔEQUITY and ΔDEBT. ΔEQUITY is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). ΔDEBT is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). BV is book value (Compustat item 60). MV is market capitalization at the end of the fiscal year (Compustat item 25 * Compustat item 199). All variables are scaled by average total assets (Compustat item 6).

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TABLE 5

Operating lease activities (*ΔOPLEASE*) and one-year-ahead earnings

Panel A: Off-balance-sheet accruals (*ΔOPLEASE*) and future earnings

| | One-year-ahead Earnings | | | |
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-3.98)	-0.012 (-3.73)	-0.011 (-3.25)	-0.011 (-3.43)
EARNINGS	0.749 (44.12)	0.758 (45.00)	0.808 (48.82)	0.812 (48.36)
ΔOPLEASE	**-0.159 (-4.46)**	**-0.131 (-3.84)**	**-0.075 (-2.19)**	**-0.087 (-2.51)**
ΔPPE		-0.067 (-3.97)		-0.100 (-5.28)
TACC			-0.120 (-10.57)	
TACC_NET OF PPE				-0.124 (-12.01)
Adjusted R-Square	45.62%	45.94%	46.47%	46.69%

Panel B: Off-balance-sheet financing (*ΔOPLEASE*) and future earnings

| | One-year-ahead Earnings | | |
	(1)	(2)	(3)
Intercept	-0.014 (-3.98)	-0.011 (-3.26)	-0.011 (-3.20)
EARNINGS	0.749 (44.12)	0.719 (46.44)	0.712 (46.12)
ΔOPLEASE	**-0.159 (-4.46)**	**-0.098 (-2.92)**	**-0.098 (-2.93)**
CFF		-0.092 (-8.04)	
ΔEQUITY			-0.121 (-9.16)
ΔDEBT			-0.051 (-6.12)
Adjusted R-Square	45.62%	46.17%	46.23%

This table presents the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). *ΔOPLEASE* is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of *ΔEQUITY* and *ΔDEBT*. *ΔEQUITY* is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). *ΔDEBT* is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 6

Operating lease activities ($\Delta RENT$) and one-year-ahead earnings

Panel A: Off-balance-sheet accruals ($\Delta RENT$) and future earnings

	One-year-ahead Earnings			
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-3.92)	-0.012 (-3.65)	-0.011 (-3.24)	-0.011 (-3.40)
EARNINGS	0.752 (44.96)	0.761 (45.80)	0.811 (50.72)	0.815 (50.18)
ΔRENT	**-0.551 (-4.65)**	**-0.452 (-4.16)**	**-0.253 (-2.22)**	**-0.287 (-2.55)**
ΔPPE		-0.067 (-4.08)		-0.100 (-5.47)
TACC			-0.120 (-10.94)	
TACC_NET OF PPE				-0.124 (-12.34)
Adjusted R-Square	45.80%	46.12%	46.64%	46.87%

Panel B: Off-balance-sheet financing ($\Delta RENT$) and future earnings

	One-year-ahead Earnings		
	(1)	(2)	(3)
Intercept	-0.014 (-3.92)	-0.011 (-3.22)	-0.011 (-3.16)
EARNINGS	0.752 (44.96)	0.721 (47.55)	0.715 (47.31)
ΔRENT	**-0.551 (-4.65)**	**-0.334 (-3.08)**	**-0.339 (-3.10)**
CFF		-0.093 (-8.61)	
ΔEQUITY			-0.122 (-9.82)
ΔDEBT			-0.050 (-6.45)
Adjusted R-Square	45.80%	46.34%	46.41%

This table presents the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔRENT* is the change in the first year's operating lease payment (Compustat item 96). *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). *ΔDEBT* is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 7

Decomposition of operating lease activities (ΔOPLEASE) and one-year-ahead earnings

Panel A: Decomposition of off-balance-sheet accruals (ΔOPLEASE) and future earnings

| | One-year-ahead Earnings | | | |
	(1)	(2)	(3)	(4)
Intercept	-0.013 (-3.92)	-0.012 (-3.66)	-0.011 (-3.25)	-0.011 (-3.41)
EARNINGS	0.752 (44.98)	0.761 (45.80)	0.810 (51.24)	0.815 (50.79)
ΔOPLEASE-ST	**-0.530** **(-3.69)**	**-0.448** **(-3.39)**	**-0.265** **(-1.85)**	**-0.289** **(-2.10)**
ΔOPLEASE-LT	-0.033 (-0.64)	-0.019 (-0.37)	0.001 (0.01)	-0.006 (-0.12)
ΔPPE		-0.067 (-4.14)		-0.101 (-5.54)
TACC			-0.119 (-11.01)	
TACC_NET OF PPE				-0.123 (-12.48)
Adjusted R-Square	45.74%	46.05%	46.57%	46.79%

Panel B: Decomposition of off-balance-sheet financing (ΔOPLEASE) and future earnings

| | One-year-ahead Earnings | | |
	(1)	(2)	(3)
Intercept	-0.013 (-3.92)	-0.011 (-3.23)	-0.011 (-3.17)
EARNINGS	0.752 (44.98)	0.721 (47.44)	0.715 (47.15)
ΔOPLEASE-ST	**-0.530** **(-3.69)**	**-0.334** **(-2.45)**	**-0.341** **(-2.47)**
ΔOPLEASE-LT	-0.033 (-0.64)	-0.011 (-0.21)	-0.010 (-0.20)
CFF		-0.093 (-8.41)	
ΔEQUITY			-0.121 (-9.60)
ΔDEBT			-0.050 (-6.36)
Adjusted R-Square	45.74%	46.27%	46.34%

This table presents the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003.

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Table 7 Continued

EARNINGS is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. $\Delta OPLEASE\text{-}ST$ is the change in the present value of the one-year-ahead rent payment. $\Delta OPLEASE\text{-}LT$ is the change in the present value of the future rent payments beyond the first year. ΔPPE is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). $TACC\_NET\ OF\ PPE$ equals $(TACC - \Delta PPE)$. *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

TABLE 8

Operating lease activities ($\Delta OPLEASE$) and two-year-ahead earnings

Panel A: Off-balance-sheet accruals ($\Delta OPLEASE$) and future earnings

	Two-year-ahead Earnings			
	(1)	(2)	(3)	(4)
Intercept	-0.015 (-3.11)	-0.014 (-2.72)	-0.012 (-2.58)	-0.012 (-2.56)
EARNINGS	0.610 (30.04)	0.617 (29.98)	0.672 (32.59)	0.674 (32.40)
$\Delta OPLEASE$	**-0.138 (-5.57)**	**-0.105 (-4.02)**	**-0.049 (-1.82)**	**-0.059 (-2.13)**
ΔPPE		-0.072 (-3.40)		-0.105 (-4.48)
TACC			-0.126 (-7.99)	
TACC_NET OF PPE				-0.131 (-8.45)
Adjusted R-Square	30.42%	30.70%	31.49%	31.66%

Panel B: Off-balance-sheet financing ($\Delta OPLEASE$) and future earnings

	Two-year-ahead Earnings		
	(1)	(2)	(3)
Intercept	-0.015 (-3.11)	-0.011 (-2.48)	-0.011 (-2.43)
EARNINGS	0.610 (30.04)	0.568 (29.56)	0.558 (29.39)
$\Delta OPLEASE$	**-0.138 (-5.57)**	**-0.056 (-1.94)**	**-0.056 (-1.94)**
CFF		-0.122 (-10.06)	
$\Delta EQUITY$			-0.171 (-11.66)
$\Delta DEBT$			-0.050 (-5.29)
Adjusted R-Square	30.42%	31.43%	31.70%

This table presents the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 50,167 firm-year observations from 1988 to 2002. EARNINGS is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. $\Delta RENT$ is the change in the first year's operating lease payment (Compustat item 96). ΔPPE is the change in PPE (Compustat item 8). TACC is total accruals, calculated as EARNINGS – CFO-CFI. CFO is cash flow from operations (Compustat item 308 – Compustat item 124). CFI is cash flow from investing (Compustat item 311). TACC_NET OF PPE equals (TACC – ΔPPE). CFF is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 9

Using alternative discount rates: $\Delta OPLEASE$ and one-year-ahead earnings

Panel A: Using 8% as the discount rate

| | One-year-ahead Earnings | | | |
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-4.00)	-0.012 (-3.74)	-0.011 (-3.26)	-0.011 (-3.44)
EARNINGS	0.749 (44.34)	0.758 (45.17)	0.808 (48.94)	0.812 (48.50)
ΔOPLEASE	**-0.148 (-4.36)**	**-0.122 (-3.75)**	**-0.068 (-2.09)**	**-0.080 (-2.43)**
ΔPPE		-0.067 (-4.00)		-0.100 (-5.31)
TACC			-0.120 (-10.59)	
TACC_NET OF PPE				-0.124 (-12.02)
Adjusted R-Square	45.63%	45.94%	46.47%	46.69%

Panel B: Using the short-term average borrowing interest rate as the discount rate

| | One-year-ahead Earnings | | | |
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-3.99)	-0.012 (-3.74)	-0.011 (-3.26)	-0.011 (-3.44)
EARNINGS	0.749 (44.22)	0.758 (45.09)	0.808 (48.99)	0.812 (48.53)
ΔOPLEASE	**-0.156 (-4.38)**	**-0.128 (-3.75)**	**-0.072 (-2.11)**	**-0.084 (-2.43)**
ΔPPE		-0.068 (-3.97)		-0.100 (-5.28)
TACC			-0.120 (-10.57)	
TACC_NET OF PPE				-0.124 (-12.02)
Adjusted R-Square	45.64%	45.96%	46.49%	46.70%

This table reports the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). *ΔOPLEASE* is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔRENT* is the change in the first year's operating lease payment (Compustat item 96). *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS - CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC - ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of Δ*EQUITY* and Δ*DEBT*. Δ*EQUITY* is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). Δ*DEBT* is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 10

Adjusting for industry medians: $\Delta OPLEASE$ and one-year-ahead earnings

Panel A: Adjusting for industry medians

| | One-year-ahead Earnings | | | |
	(1)	(2)	(3)	(4)
Intercept	-0.020 (-13.38)	-0.019 (-31.34)	-0.018 (-12.57)	-0.018 (-12.40)
EARNINGS	0.734 (44.57)	0.742 (45.50)	0.790 (50.71)	0.795 (50.19)
$\Delta OPLEASE$	**-0.146** **(-4.27)**	**-0.121** **(-3.75)**	**-0.067** **(-2.10)**	**-0.078** **(-2.44)**
ΔPPE		-0.061 (-4.46)		-0.092 (-5.87)
TACC			-0.113 (-11.44)	
TACC_NET OF PPE				-0.117 (-12.78)
Adjusted R-Square	43.31%	43.56%	44.09%	44.26%

Panel B: Adjusting for industry medians

| | One-year-ahead Earnings | | |
	(1)	(2)	(3)
Intercept	-0.020 (-13.38)	-0.018 (-12.41)	-0.017 (-12.33)
EARNINGS	0.734 (44.57)	0.706 (45.14)	0.702 (44.42)
$\Delta OPLEASE$	**-0.146** **(-4.27)**	**-0.089** **(-2.81)**	**-0.090** **(-2.83)**
CFF		-0.086 (-9.06)	
$\Delta EQUITY$			-0.110 (-10.56)
$\Delta DEBT$			-0.050 (-6.75)
Adjusted R-Square	43.31%	43.79%	43.85%

This table reports the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. $\Delta RENT$ is the change in the first year's operating lease payment (Compustat item 96). ΔPPE is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 11

After incorporating the thereafter portion of the future lease payments: $\Delta OPLEASE$ and one-year-ahead earnings

Panel A: Off-balance-sheet accruals ($\Delta OPLEASE$) and future earnings

	One-year-ahead Earnings			
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-4.00)	-0.012 (-3.74)	-0.011 (-3.26)	-0.011 (-3.44)
EARNINGS	0.750 (44.21)	0.758 (45.17)	0.808 (49.03)	0.812 (48.55)
$\Delta OPLEASE$	**-0.127 (-5.56)**	**-0.098 (-4.44)**	**-0.053 (-2.38)**	**-0.060 (-2.62)**
ΔPPE		-0.069 (-4.04)		-0.101 (-5.33)
TACC			-0.120 (-10.70)	
TACC_NET OF PPE				-0.124 (-12.06)
Adjusted R-Square	45.66%	45.98%	46.50%	46.72%

Panel B: Off-balance-sheet financing ($\Delta OPLEASE$) and future earnings

	One-year-ahead Earnings		
	(1)	(2)	(3)
Intercept	-0.014 (-4.00)	-0.011 (-3.28)	-0.011 (-3.22)
EARNINGS	0.750 (44.21)	0.719 (46.48)	0.713 (46.19)
$\Delta OPLEASE$	**-0.127 (-5.56)**	**-0.075 (-3.36)**	**-0.075 (-3.37)**
CFF		-0.093 (-7.98)	
$\Delta EQUITY$			-0.121 (-9.03)
$\Delta DEBT$			-0.051 (-6.12)
Adjusted R-Square	45.66%	46.20%	46.26%

This table presents the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 12

After controlling for autocorrelation in the annual coefficient estimates: $\Delta OPLEASE$ and one-year-ahead earnings

	One-year-ahead Earnings			
	(1)	(2)	(3)	(4)
Intercept	-0.014 (-4.12)	-0.012 (-3.73)	-0.011 (-3.25)	-0.011 (-3.26)
EARNINGS	0.749 (36.36)	0.758 (36.66)	0.808 (41.64)	0.719 (38.42)
$\Delta OPLEASE$	**-0.159 (-3.13)**	**-0.131 (-2.71)**	**-0.075 (-1.60)**	**-0.098 (-2.05)**
ΔPPE		-0.067 (-3.47)		
TACC			-0.120 (-8.44)	
CFF				-0.092 (-5.94)
Adjusted R-Square	45.62%	45.94%	46.47%	46.17%

Reported regression coefficients are mean coefficients from 16 annual regressions weighting each annual coefficient by the square root of sample size for each year. The t-statistics (reported in parentheses below coefficient estimates) are based on the standard error of the coefficient estimates across the annual regressions, adjusted for autocorrelation in the annual coefficient estimates based on an assumed AR(1) autocorrelation structure. Standard errors are multiplied by an adjustment factor, $\sqrt{\frac{(1+\phi)}{(1-\phi)} \frac{2\phi(1-\phi^n)}{n(1-\phi)^2}}$ where n

is the number of annual regressions and φ is the first-order autocorrelation of the annual coefficient estimates. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔPPE is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

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TABLE 13

Operating lease activities (*ΔOPLEASE*) and future gross margin, profit margin and asset turnover

ΔOPLEASE Portfolio Rank	*Δ Earnings*$_{t+1}$		*Δ Gross Margin*$_{t+1}$		*Δ Profit Margin*$_{t+1}$		*Δ Asset Turnover*$_{t+1}$	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
1	0.0181	0.0104	0.0022	0.0027	0.0339	0.0102	0.0432	0.0322
2	-0.0056	0.0032	0.0021	0.0011	0.0257	0.0041	0.0132	0.0136
3	-0.0060	0.0006	0.0020	0.0005	0.0169	0.0022	-0.0019	0.0059
4	-0.0054	0.0004	-0.0020	0.0005	-0.0143	0.0015	-0.0011	0.0026
5	-0.0088	-0.0010	0.0022	0.0003	0.0006	0.0000	-0.0094	-0.0003
6	-0.0105	-0.0011	-0.0025	-0.0002	-0.0093	0.0003	-0.0100	-0.0019
7	-0.0113	-0.0016	0.0011	-0.0002	0.0045	-0.0001	-0.0182	-0.0030
8	-0.0169	-0.0031	-0.0054	-0.0012	-0.0306	-0.0004	-0.0214	-0.0063
9	-0.0220	-0.0057	-0.0043	-0.0012	-0.0234	-0.0012	-0.0170	-0.0049
10	-0.0224	-0.0069	0.0018	-0.0014	0.0035	-0.0014	-0.0219	-0.0087

EARNINGS is earnings before extraordinary items (Compustat item 123), deflated by average total assets (Compustat item 6). *Gross Margin* is measured as [Sales (Compustate item 12) – Cost of Goods Sold (Compustate item 41)]/Sales (Compustate item 12). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. $\Delta OPLEASE$ is scaled by average total assets (Compustat item 6). *ΔEarnings*$_{t+1}$ is (*EARNINGS*$_{t+1}$ – *EARNINGS*$_t$). *ΔGross Margin*$_{t+1}$ is (Gross Margin$_{t+1}$-Gross Margin$_t$). *ΔProfit Margin*$_{t+1}$ is change in *EARNINGS/SALES* in Year t+1. *ΔAsset Turnover*$_{t+1}$ is change in *SALES/ASSETS* in Year t+1.

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Table 14

Operating lease activities (*ΔOPLEASE*) and one-year-ahead (Sales-Cost of goods sold)/Assets

	One-year-ahead (Sales-Cost of goods sold)/Assets			
	(1)	(2)	(3)	(4)
Intercept	0.035 (18.09)	0.038 (20.56)	0.034 (19.72)	0.040 (22.59)
Current (Sales-Cost of goods sold)/Assets	0.898 (170.88)	0.901 (172.11)	0.907 (169.08)	0.893 (163.45)
ΔOPLEASE	**-0.161 (-5.87)**	**-0.077 (-2.98)**	**-0.042 (-1.82)**	**-0.124 (-3.88)**
ΔPPE		-0.166 (-10.50)		
TACC			-0.132 (-22.94)	
CFF				-0.055 (-7.20)
Adjusted R-Square	80.51%	80.89%	81.19%	80.64%

This table reports the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for 59,235 firm-year observations from 1988 to 2003. The dependent variable is measured as [Sales (Compustate item 12) – Cost of Goods Sold (Compustate item 41)]/Average Assets (Compustate item 6). *ΔOPLEASE* is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *CFF* is net external financing reflected on balance sheet, calculated as the sum of Δ*EQUITY* and Δ*DEBT*. Δ*EQUITY* is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). Δ*DEBT* is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6).

TABLE 15

Operating lease activities (*ΔOPLEASE*) and one-year-ahead size-adjusted stock return

Panel A: Off-balance-sheet accruals (*ΔOPLEASE*) and future stock returns

	One-year-ahead Size-adjusted Return				
	(1)	(2)	(3)	(4)	(5)
Intercept	0.066 (1.45)	0.078 (1.64)	0.070 (1.55)	0.076 (1.66)	0.035 (0.67)
ΔOPLEASE	**-0.843 (-3.21)**	**-0.606 (-3.05)**	**-0.550 (-2.69)**	**-0.483 (-2.75)**	**-0.481 (-2.55)**
ΔPPE		-0.554 (-3.04)		-0.563 (-3.17)	-0.511 (-3.02)
TACC			-0.314 (-2.85)		
TACC_NET OF PPE				-0.275 (-2.51)	-0.281 (-2.47)
Book to Market					0.065 (3.78)
Adjusted R-Square	0.14%	0.39%	0.56%	0.68%	1.26%

Panel B: Off-balance-sheet financing (*ΔOPLEASE*) and future stock returns

	One-year-ahead Size-adjusted Return			
	(1)	(2)	(3)	(4)
Intercept	0.066 (1.45)	0.081 (1.89)	0.083 (1.90)	0.043 (0.95)
ΔOPLEASE	**-0.843 (-3.21)**	**-0.673 (-2.41)**	**-0.660 (-2.40)**	**-0.646 (-2.28)**
CFF		-0.313 (-4.89)		
ΔEQUITY			-0.190 (-1.57)	-0.151 (-1.28)
ΔDEBT			-0.436 (-7.36)	-0.414 (-6.68)
Book to Market				0.059 (4.38)
Adjusted R-Square	0.14%	1.12%	1.25%	1.67%

This table reports the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future size-adjusted return for 56,755 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). *ΔOPLEASE* is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate.

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Table 15 Continued

ΔPPE is the change in PPE (Compustat item 8). $TACC$ is total accruals, calculated as $EARNINGS - CFO-CFI$. CFO is cash flow from operations (Compustat item 308). CFI is cash flow from investing (Compustat item 311). $TACC\_NET\ OF\ PPE$ equals $(TACC - \Delta PPE)$. CFF is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). BV is book value (Compustat item 60). MV is market capitalization at the end of the fiscal year (Compustat item 25 * Compustat item 199).

Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as the market value at the beginning of the return accumulation period. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio.

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TABLE 16

Operating lease activities (*ΔRENT*) and one-year-ahead size-adjusted stock return

Panel A: Off-balance-sheet accruals (*ΔRENT*) and future stock returns

	One-year-ahead Size-adjusted Return				
	(1)	(2)	(3)	(4)	(5)
Intercept	0.066 (1.47)	0.077 (1.64)	0.069 (1.56)	0.075 (1.67)	0.033 (0.66)
ΔRENT	**-2.34 (-3.96)**	**-1.56 (-3.19)**	**-1.35 (-2.27)**	**-1.11 (-2.07)**	**-1.08 (-1.98)**
ΔPPE		-0.560 (-2.85)		-0.569 (-2.97)	-0.517 (-2.82)
TACC_NET OF PPE				-0.279 (-2.52)	-0.285 (-2.47)
TACC			-0.317 (-2.80)		
Book to Market					0.066 (3.84)
Adjusted R-Square	0.14%	0.40%	0.58%	0.69%	1.29%

Panel B: Off-balance-sheet financing (*ΔRENT*) and future stock returns

	One-year-ahead Size-adjusted Return			
	(1)	(2)	(3)	(4)
Intercept	0.066 (1.47)	0.081 (1.89)	0.082 (1.89)	0.042 (0.94)
ARENT	**-2.34 (-3.96)**	**-1.65 (-2.64)**	**-1.63 (-2.65)**	**-1.59 (-2.46)**
CFF		-0.315 (-5.09)		
ΔEQUITY			-0.193 (-1.61)	-0.154 (-1.32)
ΔDEBT			-0.433 (-7.22)	-0.412 (-6.59)
Book to Market				0.059 (4.46)
Adjusted R-Square	0.14%	1.12%	1.26%	1.69%

This table reports the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future size-adjusted return for 56,755 firm-year observations from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). *ΔRENT* is the change in the first year's operating lease payment (Compustat item 96). *ΔPPE* is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308). *CFI* is cash flow from investing (Compustat item 311).

Table 16 Continued

TACC_NET OF PPE equals (*TACC – ΔPPE*). *CFF* is net external financing reflected on balance sheet, calculated as the sum of Δ*EQUITY* and Δ*DEBT*. Δ*EQUITY* is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). Δ*DEBT* is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). *BV* is book value (Compustat item 60). *MV* is market capitalization at the end of the fiscal year (Compustat item 25 * Compustat item 199).

Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as the market value at the beginning of the return accumulation period. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio.

TABLE 17

Nonlinear Generalized Least Squares Estimation of the Stock Price Reaction to Information in Operating Leases about Future Earnings

Panel A

$$EARNINGS_{t+1} = \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 \Delta OPLEASE_t + v_{t+1}$$

$$ABNORMALRETURN_{t+1} = \beta(EARNINGS_{t+1} - \gamma_0 - \gamma_1{}^* EARNINGS_t - \gamma_2{}^* \Delta OPLEASE_t) + e_{t+1}$$

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.762 (215.73)	$\gamma_1{}^*$	0.911 (52.12)
γ_2	**-0.201** **(-10.52)**	$\gamma_2{}^*$	**0.395** **(4.22)**
		β	1.30 (46.68)

Test of market efficiency:

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level
$EARNINGS$: $\gamma_1 = \gamma_1{}^*$	72.34	<0.001
$\Delta OPLEASE$: $\gamma_2 = \gamma_2{}^*$	39.52	<0.001
$All\ \gamma = \gamma^*$	120.26	<0.001

Panel B

$$EARNINGS_{t+1} = \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 \Delta PPE_t + \gamma_3 \Delta OPLEASE_t + v_{t+1}$$

$$ABNORMALRETURN_{t+1} = \beta(EARNINGS_{t+1} - \gamma_0 - \gamma_1{}^* EARNINGS_t - \gamma_2{}^* \Delta PPE_t - \gamma_3{}^* \Delta OPLEASE_t) + e_{t+1}$$

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.773 (214.83)	$\gamma_1{}^*$	0.898 (50.69)
γ_2	-0.073 (-8.54)	$\gamma_2{}^*$	0.369 (8.63)
γ_3	**-0.168** **(-8.53)**	$\gamma_3{}^*$	**0.252** **(2.62)**
		β	1.30 (46.37)

Test of market efficiency:

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level
$EARNINGS$: $\gamma_1 = \gamma_1{}^*$	49.32	<0.001
ΔPPE: $\gamma_2 = \gamma_2{}^*$	108.04	<0.001
$\Delta OPLEASE$: $\gamma_3 = \gamma_3{}^*$	18.45	<0.001
$All\ \gamma = \gamma^*$	236.77	<0.001

Table 17 Continued
Panel C

$$EARNINGS_{t+1} = \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 TACC_t + \gamma_3 \Delta OPLEASE_t + v_{t+1}$$

$$ABNORMALRETURN_{t+1} = \beta(EARNINGS_{t+1} - \gamma_0 - \gamma_1^* EARNINGS_t - \gamma_2^* TACC_t - \gamma_3^* \Delta OPLEASE_t) + e_{t+1}$$

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.826 (203.94)	γ_1^*	0.833 (40.90)
γ_2	-0.134 (-31.39)	γ_2^*	0.170 (7.61)
γ_3	**-0.093 (-4.84)**	γ_3^*	**0.272 (2.80)**
		β	1.27 (45.19)

Test of market efficiency:

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level
$EARNINGS$: $\gamma_1 = \gamma_1^*$	0.11	0.742
$TACC$: $\gamma_2 = \gamma_2^*$	194.71	<0.001
$\Delta OPLEASE$: $\gamma_3 = \gamma_3^*$	13.72	<0.001
$All \gamma = \gamma^*$	315.43	<0.001

Panel D

$$EARNINGS_{t+1} = \gamma_0 + \gamma_1 EARNINGS_t + \gamma_2 CFF_t + \gamma_3 \Delta OPLEASE_t + v_{t+1}$$

$$ABNORMALRETURN_{t+1} = \beta(EARNINGS_{t+1} - \gamma_0 - \gamma_1^* EARNINGS_t - \gamma_2^* CFF_t - \gamma_3^* \Delta OPLEASE_t) + e_{t+1}$$

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.725 (191.77)	γ_1^*	1.01 (50.15)
γ_2	-0.105 (-26.02)	γ_2^*	0.267 (12.05)
γ_3	**-0.121 (-6.30)**	γ_3^*	**0.214 (2.20)**
		β	1.25 (44.98)

Test of market efficiency:

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level
$EARNINGS$: $\gamma_1 = \gamma_1^*$	211.98	<0.001
CFF: $\gamma_2 = \gamma_2^*$	316.99	<0.001
$\Delta OPLEASE$: $\gamma_3 = \gamma_3^*$	11.47	<0.001
$All \gamma = \gamma^*$	437.87	<0.001

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Table 17 Continued

The sample covers 51,623 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔPPE is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as $EARNINGS - CFO-CFI$. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301).

Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as the market value at the beginning of the return accumulation period. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio.

TABLE 18

Annual mean future size-adjusted stock returns for portfolios formed on off-balance-sheet activities

Panel A Hedge returns for the full sample

	ΔOPLEASE				ΔRENT			
	Raw Return	Size-adjusted Return (1)	Size-adjusted Return (2)	Control-firm-adjusted Returns	Raw Return	Size-adjusted Return (1)	Size-adjusted Return (2)	Control-firm-adjusted Returns
1	0.286	0.141	0.034	0.041	0.259	0.114	0.015	0.004
2	0.241	0.101	0.017	0.040	0.214	0.073	0.000	0.009
3	0.214	0.071	0.007	-0.012	0.214	0.073	0.015	-0.001
4	0.200	0.061	0.007	-0.005	0.201	0.062	0.004	0.001
5	0.209	0.070	0.025	0.033	0.218	0.080	0.029	0.039
6	0.187	0.051	0.007	0.014	0.209	0.071	0.023	0.018
7	0.178	0.040	-0.003	-0.017	0.174	0.035	-0.012	-0.007
8	0.172	0.035	-0.013	-0.015	0.175	0.038	-0.015	-0.020
9	0.168	0.030	-0.023	-0.038	0.193	0.056	-0.004	0.010
10	0.151	0.011	-0.056	-0.053	0.143	0.004	-0.059	-0.069
Hedge Return (t-statistic)	0.135 (2.93)	0.129 (3.18)	0.090 (2.82)	0.094 (2.77)	0.116 (4.04)	0.110 (4.26)	0.074 (3.85)	0.073 (2.54)
Number of years positive / Number of years available	12/16	12/16	12/16	12/16	14/16	15/16	14/16	11/16
Hedge Return based on Three Factor alpha (t-statistic)	0.106 (3.97)				0.089 (3.72)			
Hedge Return based on Four Factor alpha (t-statistic)	0.108 (3.86)				0.097 (3.93)			

Table 18 Continued

Panel B Hedge returns (Size-adjusted Return 1) based on operating lease activities
(ΔOPLEASE) and total accruals (TACC)

Rank of ΔOPLEASE	Rank of TACC = 1	Rank of TACC = 2-9	Rank of TACC = 10	Hedge Return
1	0.243	0.097	-0.037	0.280
2-9	0.141	0.059	-0.017	0.158
10	0.076	0.034	-0.113	0.189
Hedge Return	0.167	0.063	0.076	

The sample covers 56,755 firm-year observations for the period 1988-2003. Firms-year observations are ranked annually and assigned in ascending order to decile portfolios based on the off-balance-sheet, accruals and external financing variables. ΔOPLEASE is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔRENT is the change in the first year's operating lease payment (Compustat item 96). Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The portfolio returns are equal-weighted mean annual buy-hold size-adjusted return.

The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile , where size is measured as the market value at the beginning of the return accumulation period. For size-adjusted return (1), the size portfolios are based on market value of equity deciles of NYSE, AMEX and NASDAQ firms. For size-adjusted return (2), the size portfolios are based on market value deciles of the sample. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio. The values in parentheses are t-statistics based on the 16 annual hedge returns, with standard errors estimated from the time series of return differences. Three- and four-factor alpha involve 160 months of excess returns (over the ten-year risk-free rate) in the time-series regressions. The factor returns for MKT, SMB, HML and UMD factors were obtained from Kenneth French's website at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/f-f_factors.html. The t-statistics on the hedge returns are those on the intercept from regressing the monthly hedge returns on the mimicking factors over the 160 months, where the hedge return is a zero-net-investment return from a long position in the bottom decile (1) portfolio and a canceling short position in the corresponding top decile (10) portfolio.

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Table 19

Annual mean future size-adjusted stock returns for portfolios formed on off-balance-sheet activities and high lease industry

Panel A Hedge returns based ΔOPLEASE and industry

ΔOPLEASE	% in high lease industry	Raw Return		Size-adj. Return (1)	
		High lease industry	Others	High lease industry	Others
1	59.1%	0.290	0.279	0.143	0.137
2	46.0%	0.219	0.270	0.079	0.129
3	39.3%	0.224	0.212	0.084	0.068
4	33.2%	0.228	0.187	0.092	0.046
5	34.8%	0.213	0.212	0.076	0.071
6	38.4%	0.196	0.180	0.061	0.044
7	43.4%	0.168	0.183	0.029	0.045
8	50.3%	0.179	0.170	0.041	0.033
9	59.4%	0.171	0.165	0.032	0.028
10	70.9%	0.148	0.165	0.009	0.020
Hedge Return		0.142	0.114	0.134	0.117

Panel B Hedge returns for the firms in Retail, Service, Transportation and Computers

	ΔOPLEASE			ΔRENT		
	Raw Return	Size-adjusted Return (1)	Size-adjusted Return (2)	Raw Return	Size-adjusted Return (1)	Size-adjusted Return (2)
1	0.300	0.154	0.047	0.265	0.117	0.019
2	0.228	0.086	0.007	0.235	0.095	0.023
3	0.223	0.082	0.020	0.202	0.062	-0.002
4	0.235	0.095	0.036	0.250	0.110	0.053
5	0.194	0.060	0.011	0.197	0.061	0.010
6	0.180	0.043	-0.001	0.212	0.074	0.024
7	0.165	0.026	-0.016	0.151	0.014	-0.031
8	0.179	0.041	-0.008	0.189	0.053	-0.004
9	0.158	0.021	-0.036	0.180	0.042	-0.013
10	0.143	0.003	-0.060	0.121	-0.018	-0.079
Hedge Return (t-statistic)	0.157 (2.51)	0.150 (2.65)	0.107 (2.58)	0.144 (3.02)	0.135 (3.14)	0.098 (3.03)

The sample covers 56,755 firm-year observations for the period 1988-2003. Firms-year observations are ranked annually and assigned in ascending order to decile portfolios based on the off-balance-sheet, accruals and external financing variables. ΔOPLEASE is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔRENT is the change in the first year's operating lease payment (Compustat item 96).

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Table 19 Continued

Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The portfolio returns are equal-weighted mean annual buy-hold size-adjusted return. Industry classifications are compiled using the following SIC codes: Agriculture: 0100-0999; Mining: 1000–1299, 1400–1999; Food & Tobacco: 2000–2199; Textiles and Apparel: 2200–2399; Lumber, Furniture, & Printing: 2400-2796; Chemicals: 2800–2824, 2840–2899; Refining & Extractive: 1300–1399, 2900–2999; Durable Manufacturers: 3000–3569, 3580-3669, 3680-3999; Computers: 3570–3579, 3670–3679, 7370–7379; Transportation: 4000–4899; Utilities: 4900–4999; Retail: 5000–5999; Services: 7000–7369, 7380–9999; Banks & Insurance: 6000–6999; Pharmaceuticals: 2830–2836.

The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile , where size is measured as the market value at the beginning of the return accumulation period. For size-adjusted return (1), the size portfolios are based on market value of equity deciles of NYSE, AMEX and NASDAQ firms. For size-adjusted return (2), the size portfolios are based on market value deciles of the sample. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio. The values in parentheses are t-statistics based on the 16 annual hedge returns, with standard errors estimated from the time series of return differences.

TABLE 20

Marginal tax rate, Shumway score, and book-to-market

Panel A: Mean values of marginal tax rate, Shumway score, and book-to-market by operating leases

Portfolio Rank	$\Delta OPLEASE$	Marginal Tax Rate	Shumway Score (%)	Book to Market
1	-0.043	0.103	0.555	0.616
2	-0.012	0.141	0.194	0.727
3	-0.005	0.177	0.126	0.713
4	-0.002	0.198	0.083	0.710
5	0.001	0.211	0.010	0.655
6	0.003	0.205	0.016	0.640
7	0.007	0.206	0.066	0.625
8	0.015	0.197	0.071	0.614
9	0.030	0.197	0.059	0.588
10	0.086	0.177	0.098	0.543

Panel B: Pearson correlation

	OPLEASE	TACC	Marginal Tax Rate	Shumway Score	Book to Market
$\Delta OPLEASE$	0.123	0.191	0.080	-0.037	-0.043
	(<.001)	(<.001)	(<.001)	(<.001)	(<.001)
OPLEASE		-0.105	-0.068	0.006	-0.020
		(<.001)	(<.001)	(0.181)	(<.001)
TACC			0.253	-0.110	-0.057
			(<.001)	(<.001)	(<.001)
Marginal Tax Rate				-0.040	-0.005
				(<.001)	(0.286)
Shumway Score					-0.129
					(<.001)

Firms-year observations are ranked annually and assigned in ascending order to decile portfolios based on $\Delta OPLEASE$. $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. The marginal tax rate data is obtained from John Graham's website: www.duke.edu/~jgraham. BV is book value (Compustat item 60). MV is market capitalization at the end of the fiscal year (Compustat item 25 * Compustat item 199).

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TABLE 21

Controlling for the potential determinants of leasing decision

Panel A: *ΔOPLEASE* and future earnings

	One-year-ahead Earnings			
	(1)	(2)	(3)	(4)
Intercept	-0.042 (-7.38)	0.008 (2.31)	-0.011 (-2.84)	-0.010 (-1.97)
EARNINGS	0.693 (32.51)	0.711 (32.44)	0.755 (47.71)	0.711 (27.12)
ΔOPLEASE	**-0.173 (-4.84)**	**-0.166 (-4.35)**	**-0.176 (-5.01)**	**-0.090 (-2.24)**
Rank of Marginal Tax Rate	0.007 (12.59)			0.005 (11.28)
Rank of Shumway Score		-0.004 (-8.95)		-0.003 (-8.31)
Book to market			-0.005 (3.39)	-0.005 (-2.96)
TACC				-0.092 (-6.78)
CFF				-0.025 (-2.06)
Adjusted R-Square	47.04%	46.76%	46.70%	48.93%

Panel B: *ΔOPLEASE* and future stock returns

	One-year-ahead Size-adjusted Stock Return			
	(1)	(2)	(3)	(4)
Intercept	0.096 (1.33)	-0.001 (-0.04)	0.019 (0.39)	0.029 (0.59)
ΔOPLEASE	**-0.771 (-3.91)**	**-0.546 (-2.73)**	**-0.805 (-2.96)**	**-0.415 (-1.93)**
Rank of Marginal Tax Rate	-0.006 (-0.86)			-0.003 (-0.99)
Rank of Shumway Score		0.016 (1.74)		0.010 (1.49)
Book to market			0.073 (4.40)	0.041 (2.32)
TACC				-0.147 (-1.39)
CFF				-0.203 (-1.99)
Adjusted R-Square	0.64%	0.71%	0.75%	2.36%

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Table 21 Continued

This table covers the time-series means and t-statistics for coefficients from annual cross-sectional regressions of future earnings for the sample from 1988 to 2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). $\Delta OPLEASE$ is the change of the present value of the next five years' minimum rent commitment under operating leases (Compustat item 96, 164, 165, 166, and 167). The present value is calculated using 10% discount rate. ΔPPE is the change in PPE (Compustat item 8). *TACC* is total accruals, calculated as *EARNINGS – CFO-CFI*. *CFO* is cash flow from operations (Compustat item 308 – Compustat item 124). *CFI* is cash flow from investing (Compustat item 311). *TACC_NET OF PPE* equals ($TACC - \Delta PPE$). *CFF* is net external financing reflected on balance sheet, calculated as the sum of $\Delta EQUITY$ and $\Delta DEBT$. $\Delta EQUITY$ is net equity financing measured as the proceeds from the sale of common and preferred stock (Compustat item 108) less cash payments for the purchase of common and preferred stock (Compustat item 115) less cash payments for dividends (Compustat item 127). $\Delta DEBT$ is net debt financing measured as the cash proceeds from the issuance of long-term debt (Compustat item 111) less cash payments for long-term debt reductions (Compustat item 114) less the net changes in current debt (Compustat item 301). All variables are scaled by average total assets (Compustat item 6). The marginal tax rate data is obtained from John Graham's website: www.duke.edu/~jgraham. BV is book value (Compustat item 60). MV is market capitalization at the end of the fiscal year (Compustat item 25 * Compustat item 199).

Annual returns are calculated from the start of the fourth month subsequent to the fiscal year-end. The size-adjusted return is calculated by deducting the value-weighted average return for all firms in the same size-matched decile, where size is measured as the market value at the beginning of the return accumulation period. For delisted firms during the future return window, the remaining return is calculated by first applying CRSP's delisting return and then reinvesting any remaining proceeds in the appropriate size-matched portfolio.

TABLE 22

Correlations between capitalized lease obligations and PPE under leases
(Spearman / Pearson)

	Debt - Capitalized Lease Obligation	PPE - Leases (Net)	ΔDebt - Capitalized Lease Obligation	ΔPPE - Leases (Net)
Debt - Capitalized Lease Obligation		0.780 (<0.001)	0.227 (<0.001)	0.149 (<0.001)
PPE - Leases (Net)	0.840 (<0.001)		0.160 (<0.001)	0.212 (<0.001)
ΔDebt - Capitalized Lease Obligation	0.029 (0.093)	0.006 (0.746)		0.661 (<0.001)
ΔPPE - Leases (Net)	0.010 (0.567)	0.030 (0.089)	0.539 (<0.001)	

PPE under capital leases is collected from Compustat Item #159 and capitalized lease obligations is obtained from Compustat Item #84.

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APPENDICES

Appendix A: An example of calculating the unrecorded liability resulting from off-balance-sheet lease activities

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<u>Starbucks Corp. (2002 10-K filing)</u>

FOOTNOTE 10: LEASES

The Company leases retail stores, roasting and distribution facilities and office space under operating leases expiring through 2025. Most lease agreements contain renewal options and rent escalation clauses. Certain leases provide for contingent rentals based upon gross sales.

Minimum future rental payments under non-cancelable lease obligations as of September 29, 2002, are as follows (in thousands):

Fiscal year ending	
2003	248,016
2004	243,519
2005	232,641
2006	219,384
2007	203,395
Thereafter	863,874
Total minimum lease payments	2,010,829

****
Calculating present value of future operating lease obligations (OPLEASE):

	Fiscal 2002	Present Value
Year 1	248,016	225,469
Year 2	243,519	201,255
Year 3	232,641	174,787
Year 4	219,384	149,842
Year 5	203,395	126,292
Thereafter	863,874	406,674[32]
Present value of future operating lease obligations (*OPLEASE*)		1,284,320

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[32] Number of years thereafter = 863,874/203,395=4.24; round to five years; then the thereafter annual payment is 863,874/5=172,774. The present value of a five-year annuity of $172,774 at 10% = 406,674.

Appendix B: An example of capitalizing a five-year operating lease over time

Assume that at the end of Year 0, the company enters a five-year lease contract. The interest rate is 10%. The future minimum payments are as follows:

	Lease payments	Present value at Year 0
Year 0		
Year 1	1,000	909
Year 2	1,000	826
Year 3	1,000	751
Year 4	1,000	683
Year 5	1,000	621
Total present value of future lease payments (*OPLEASE*) at Year 0		**$3,791**

	Balance Sheet			Income Statement				Cash Flow Statement
	End book value of asset	End book value of liability	End book value of equity	Depr.	Interest expense	Depr. +Int. exp.	Impact on operating income[33]	Cash flow from operating activities (CFO)
Year 0	**3,791**	**3,791**						
Year 1	3,033	3,170	-137	758	379	1137	-137	-1,000
Year 2	2,275	2,487	-213	758	317	1075	-75	-1,000
Year 3	1,516	1,736	-219	758	249	1007	-7	-1,000
Year 4	758	909	-151	758	174	932	68	-1,000
Year 5	0	0	0	758	91	849	151	-1,000

Impact of Capitalizing Leases on Balance Sheet

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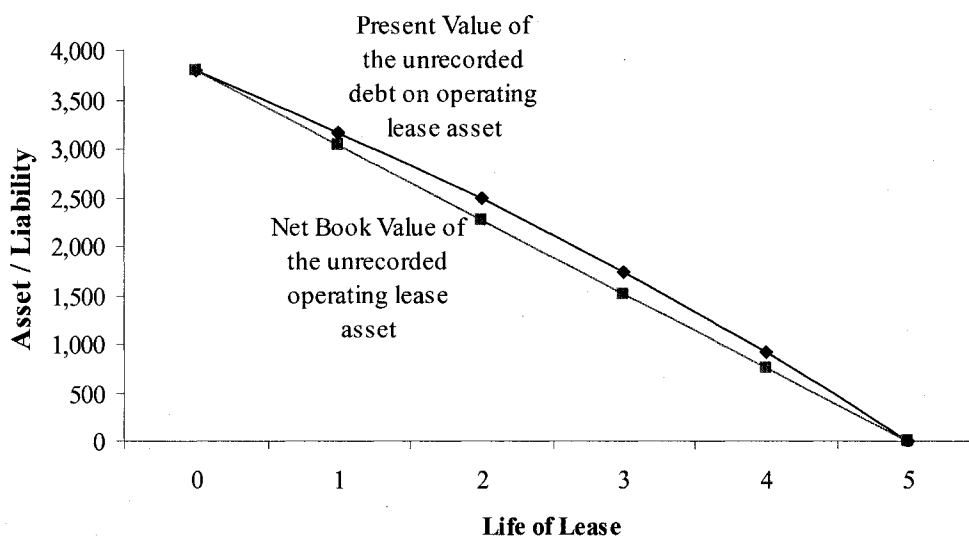
[33] Impact on operating income is calculated as (Lease Payment – Depreciation Expense – Interest Expense) (Imhoff et al. 1997).

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Appendix C: An example of firm growth and operating leases

Assume that at the end of *each* year, from Year 0 to Year 5, the company enters a new five-year lease contract. The company no longer takes new leases from Year 6 to Year 10. The interest rate is 10%.

Firm status	Year	No. of leases at year beginning	Balance Sheet End book value of asset	End book value of liability	End book value of equity	Income Statement Depr.	Interest exp.	Depr. +Int. exp.	Impact on operating Income	Cash Flow Statement Lease pmt.
Growth Stage	Year 0	0	3,791	3,791						
	Year 1	1	6824	6961	-137	758	379	1137	-137	1000
	Year 2	2	9098	9448	-349	1516	696	2212	-212	2000
	Year 3	3	10615	11183	-568	2275	945	3219	-219	3000
	Year 4	4	11373	12092	-719	3033	1118	4151	-151	4000
Steady State	Year 5	5	11373	12092	-719	3791	1209	5000	0	5000
	Year 6	5	7582	8301	-719	3791	1209	5000	0	5000
Declining Stage	Year 7	4	4549	5131	-582	3033	830	3863	137	4000
	Year 8	3	2275	2645	-370	2275	513	2788	212	3000
	Year 9	2	758	909	-151	1516	265	1781	219	2000
	Year 10	1	0	0	0	758	91	849	151	1000

Firm status	Year	ΔOff-balance-sheet asset	ΔOff-balance-sheet liability (ΔOPLEASE)	(ΔOff-balance-sheet asset - ΔOff-balance-sheet liability) / | ΔOff-balance-sheet liability|
Growth Stage	Year 0	3791	3791	*0%*
	Year 1	3033	3170	*-4%*
	Year 2	2275	2486	*-9%*
	Year 3	1516	1736	*-13%*
	Year 4	758	909	*-17%*
Steady State	Year 5	0	0	*0%*
	Year 6	-3791	-3791	*0%*
Declining Stage	Year 7	-3033	-3170	*4%*
	Year 8	-2275	-2486	*9%*
	Year 9	-1516	-1736	*13%*
	Year 10	-758	-909	*17%*

Off-balance-sheet accruals   *Off-balance-sheet financing*

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