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

Weili Ge
Ph.D. Candidate in Accounting
Ross School of Business
University of Michigan
701 Tappan Street
Ann Arbor, MI 48109
Phone: 734-763-3529 (office)
geweili@bus.umich.edu

Current Draft: January 23, 2006
First Draft: June 30, 2005

Abstract

This paper examines the implications of the off-balance-sheet treatment of operating leases for future earnings and stock returns. The property rights granted by an operating lease contract generate both future benefits (off-balance-sheet capital investment) and future obligations (off-balance-sheet financing liabilities) for the lessee. The change in the off-balance-sheet capital investment can be viewed as a form of growth in net operating assets and also a form of off-balance-sheet accruals. By examining the footnote disclosure on operating leases, this paper shows that, after controlling for current earnings, greater off-balance-sheet operating lease activities lead to lower future earnings. This finding is consistent with diminishing marginal returns to investment in operating lease activities. Additional tests show that investors incorrectly estimate the implications of off-balance-sheet lease activities for future earnings. A long-short investment strategy that exploits this misestimation generates significant future abnormal stock returns. These results suggest that the accrual anomaly documented in prior research extends to off-balance-sheet lease accruals.

---

* This paper was awarded First Prize in the 2005 Chicago Quantitative Alliance Annual Academic Competition. I would like to thank the members of my committee: Patricia Dechow (Chair), Eugene Imhoff, Richard Sloan, Lu Zheng (Finance), and Ji Zhu (Statistics). I thank Carol Anilowski, Judson Caskey, Peter Demerjian, Ilia Dichev, Mei Feng, Michelle Hanlon, Raffi Indjejikian, Andrew Jackson, Reuven Lehavy, Lian Fen Lee, Feng Li, Sarah McVay, Karl Muller, Scott Richardson, Cathy Shakespeare and the participants at the University of Michigan workshop and Chicago Quantitative Alliance 2005 conference for their helpful comments. I would like to recognize financial support from the Paton Fellowship Fund, the Deloitte & Touche Foundation, the Robert Neary Scholarship, and the Harry H. Jones Endowment Fund for Research on Earnings Quality at the University of Michigan.

1. 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 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,

[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.
[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."

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.

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-

[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.

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. 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 2005) 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.

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

[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.

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 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

[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.

predicting one-year-ahead earnings, suggesting that accounting distortions drive some of the lower persistence of on-balance-sheet accruals.

The remainder of the paper is organized as follows. Section 2 discusses prior research and my predictions. Section 3 describes the sample formation, and section 4 presents the empirical results. Section 5 concludes.

2. Background on leases and predictions

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 establish executive

[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.

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).

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

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. More specifically, managers will keep investing until the internal rate of return on the new project is equal to the

[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.

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.[12]

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

[12] In addition, Titman et al. (2004) document that firms with increased capital investment experience lower future benchmark-adjusted returns. 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 only announce 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.

[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."

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. In addition, lower future earnings are more likely with operating leases, because lease proposals appear to be scrutinized less carefully than capital expenditure proposals (Brealey and Myers 2003). 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 earnings management because they are not recognized on balance sheet and are unlikely to be 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 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 expenditure and future abnormal stock returns. 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). 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.

3. 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.[16] 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).[17] The issues related to the thereafter number are discussed in more detail in Section 3.2. Ten percent is used to measure the cost of debt; this rate has been used by Standard & Poor's to capitalize operating leases.[18] The present value of the scheduled minimum future operating lease cash flows for the next five years is calculated as follows:[19]

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

[16] SFAS 13 is effective for fiscal years ending on or after December 1978 (see Imhoff and Thomas 1988).
[17] Compustat has collected the future lease payments beyond the next five years only since 2000 (Compustat Item #389).
[18] 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 are similar when I use 8% or 12% as the discount rate to calculate the present value of operating leases.
[19] 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. As a robustness test, I also 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 remain extremely similar.

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

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

Δ*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 Δ*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).[20] 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 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

[20] 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.

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 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.[21]

[21] Missing data on operating leases could either result from 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.

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. As to calculating $\Delta OPLEASE$, 78 percent of the sample has zero rent for the fifth year, which suggests that the associated thereafter number is zero. Thus only 22 percent of firm-years have understated liabilities. Moreover, I expect that the *change* in the thereafter number tends to be correlated with the *change* in the first five years' rents.

To facilitate the understanding of the potential impact of the thereafter rental payments, I incorporate the thereafter portion of lease payments (Compustat Item #389) 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).[22] 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

[22] See Appendix A for an example for the calculation of *OPLEASE* using the Imhoff et al. (1991) approach.

of lease obligations when companies raise capital through operating leases. Panel B presents the correlations between *ΔOPLEASE_TN* and Δ*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.

[Table 1]

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.[23] The analysis is restricted to observations after the release of SFAS 95 in order to 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*.[24] *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

[23] 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).

[24] 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).

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.[25] Therefore, free cash flow matches the flow in earnings better than CFO because earnings include capital charges such as depreciation and amortization charges that are ignored in CFO. Total Accruals, as outlined above, is similar to the measure used in recent papers on total accruals (e.g., Dechow and Ge 2005; 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:

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

$\Delta EQUITY$ 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

[25] 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.

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.[26]

4. Empirical Results

4.1 Descriptive 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

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

means and medians close to zero, suggesting that capital leases are not as important as operating leases as a financing mechanism.[27] This is consistent with the findings in Graham et al. (1998).

Panel B provides both Spearman and Pearson correlations. First, Δ*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 finding 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 Δ*OPLEASE* and *CFF* (Spearman=0.140), indicating that off-balance-sheet and on-balance-sheet financing activities are complements rather than substitutes. Third, there is a stronger positive correlation between Δ*OPLEASE* and Δ*DEBT* (Spearman=0.119) than the correlation between Δ*OPLEASE* and Δ*EQUITY* (Spearman=0.056). This correlation indicates that a firm raising more on-balance-sheet debt is likely to also raise more off-balance-sheet debt. Debt and leases do not appear to be substitutes, which is also found by Ang and Peterson (1984). Moreover, consistent with prior research, there is a negative correlation between Δ*EQUITY* and Δ*DEBT* (Spearman=-0.045), indicating refinancing activities.

[Table 2]

*4.2 Industry distribution across Δ**OPLEASE** deciles*

Table 3 reports the industry distribution of the sample across Δ*OPLEASE* deciles. The industry classification scheme is based on Frankel, Johnson and Nelson (2002). Panel A reports

[27] *ΔPPE_CAPLEASE* and *ΔCAPLEASE* have low standard deviations; thus, the statistical power is likely to be low for empirical analyses using these two variables. *ΔPPE_CAPLEASE* is also a noisy variable. Many companies do not separately disclose PPE under capital leases. Compustat sometimes includes leasehold improvement related to operating leases as PPE under leases (Compustat Item #159). Moreover, Compustat stopped collecting data on PPE under leases after 1997.

the percentage of firms in each industry group for each Δ*OPLEASE* decile. The extreme Δ*OPLEASE* deciles have a higher presence in Durable Manufacturers, Computers, Retail, and Services. For example, Computers consists of 25 percent for the lowest decile and 19 percent for the highest decile of Δ*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 Δ*OPLEASE* decile within each industry group. Looking across Δ*OPLEASE* deciles, the extreme Δ*OPLEASE* deciles have a relatively larger presence in Computers, Retail, and Services. Low Δ*OPLEASE* deciles also have a larger presence in Pharmaceuticals, while higher Δ*OPLEASE* deciles have a larger presence in Transportation. Note that leasing firms are not only concentrated in a few industries. There are also certain industry variations in Δ*OPLEASE* in the sample. In order to investigate whether the results are industry driven, I reperform the empirical analyses using industry indicator variables. Additionally, I adjust all main financial variables by the industry medians. The results continue to hold with both specifications.

[Table 3]

4.3 Characteristics for decile portfolios sorted by operating leases

Table 4 reports the mean values for select characteristics of Δ*OPLEASE* deciles, where firms are ranked annually by Δ*OPLEASE* and sorted into ten portfolios. Δ*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 Δ*OPLEASE* firms experience poorer earnings and lower past sales growth than high Δ*OPLEASE* firms. Consistent with Table 2, low Δ*OPLEASE* firms have lower growth in on-balance-sheet operating assets. Specifically, they have lower PPE accruals and total accruals than high Δ*OPLEASE* firms. The relation is nearly monotonic. Dechow and Ge (2005)

document that low accrual firms are generally declining firms that are exiting businesses, downsizing and undertaking restructurings. Thus, the monotonic relation between total accruals and Δ*OPLEASE* suggests that low Δ*OPLEASE* firms are also likely to be declining firms (e.g., exiting business and ending lease contracts) while high Δ*OPLEASE* firms are likely to be rapidly growing firms (e.g., expanding business and entering new lease contracts to rent office space). Low Δ*OPLEASE* firms have lower *CFF* (0.052) than high Δ*OPLEASE* firms (0.108), suggesting that high Δ*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. These firms also 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 and Desai, Rajgopal and Venkatachalam 2004).

[Table 4]

4.4 Operating lease activities and future 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 estimate the following regression:

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

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 higher operating lease activities lead to lower one-year-ahead earnings, consistent with prediction one.

The earlier results in Table 2 and Table 4 suggest that firms with greater changes in off-balance-sheet 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.

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

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

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

In Equation (II), β_1 measures the persistence of the adjusted free cash flow component 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. Note

that *(EARNINGS$_t$ - ΔOPLEASE$_t$ - TACC$_t$)* is equivalent to free cash flows adjusted for operating leases.

Δ*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 Δ*OPLEASE* declines from -0.159 to -0.075, suggesting that part of the negative relation between Δ*OPLEASE* and future earnings can be explained by on-balance-sheet accruals. Note that the coefficient on total accruals (*TACC*) is more negative than Δ*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. The results are reported in Panel B of Table 5. Specifically, regression (2) includes *CFF* and regression (3) includes Δ*EQUITY* and Δ*DEBT*. Δ*OPLEASE* remains negatively related to future earnings after controlling for on-balance-sheet external financing. The magnitude of the coefficient on Δ*OPLEASE* (-0.098) is larger than Δ*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 Δ*OPLEASE* is significantly more negative than the coefficient on Δ*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).[28] A firm with poor earnings 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). Then the lessor can pass on some of the tax benefits to the lessee in the form of low lease payments. Therefore, operating leases are likely to be associated with low expected future taxable income.

[Table 5]

Table 6 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 6 investigates the sensitivity of the results to using two-year-ahead earnings. The results in Table 6 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 diminishing marginal returns to increased investment in operating leases.

[28] 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]

Table 7 reports the same set of analyses as Table 5 but uses $\Delta RENT$ to proxy for operating leasing activities. As expected, the coefficient estimate on $\Delta RENT$ is significantly negative (-0.551). After controlling for on-balance-sheet accruals and external financing, $\Delta RENT$ remains negatively related to next period earnings.[29]

[Table 7]

The finance literature has focused on studying the determinants of leasing decisions following Miller and Upton (1976). Prior research has found 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).[30] Note that these findings apply only to true leases from a legal and tax point of view. Operating leases are usually true leases. To investigate whether the negative relation between operating lease activities and future earnings is driven by these determinants, I estimate the following regression:

$$EARNINGS_{t+1} = \beta_0 + \beta_1 EARNINGS_t + \beta_2 \Delta OPLEASE_t + \beta_3 TACC_t + \beta_4 MTR_{t-1} + \beta_5 SHUMWAY_t + \beta_6 BooktoMarket_t \quad \text{(III)}$$

where *MTR* is the firm's marginal tax rate, estimated using the simulation approach developed by Shevlin (1990) and Graham (1996b).[31] *BooktoMarket* is the book to market ratio to proxy for the

[29] As expected, $\Delta RENT$ is insignificantly associated with two-year-ahead earnings (untabulated) because $\Delta RENT$ is the change of the following year's rent. Moreover, $\Delta RENT$ remains negatively related to one-year-ahead earnings after controlling for the change in the rents from the second year to the fifth year.

[30] The use of true leases allows tax benefit transfers from low marginal-tax-rate firms to high marginal-tax-rate firms. 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).

[31] 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.

firm's investment opportunity set. Financial distress (*SHUMWAY*) is measured using the model developed by Shumway (2001):[32]

$$SHUMWAY = \frac{e^{\alpha}}{1+e^{\alpha}}$$
$$\alpha = -13.303 - 1.982 * NI + 3.593 * TL - 0.467 * SIZE - 1.809 * RET + 5.791 * SIGMA$$

In results not tabulated, I find that $\Delta OPLEASE$ remains negatively related to one-year-ahead earnings (β_2=-0.099; t=-2.52) after controlling for marginal tax rate, financial distress and book to market. This finding gives further support to Prediction P1.

4.5 Stock return tests

In this section, 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 8 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.

[32] 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.

The coefficient magnitude of -0.843 suggests that an increase in off-balance-sheet operating lease accruals equal to one percent of average assets results in a -0.843 percent abnormal stock return in the subsequent year.[33] In Columns 2-5, the coefficient magnitude on Δ*OPLEASE* becomes smaller as more on-balance-sheet accruals are included as controlling variables. However, Δ*OPLEASE* remains significant. Panel B reports the results after controlling for on-balance-sheet external financing. Δ*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 8]

Table 9 supplements the regression analyses in Table 8 by using the second proxy for operating lease activities: Δ*RENT*. The coefficient on Δ*RENT* is -2.34, suggesting that an increase in Δ*RENT* equal to one percent of average assets results in a -2.34 percent abnormal stock return over the subsequent year. The coefficient on Δ*RENT* is more negative than the coefficient on Δ*OPLEASE* (-0.843). The relative coefficient magnitude is consistent with the relative coefficient magnitude in the earnings regression results reported in Table 5 and Table 7. Again this finding is consistent with the naive investor hypothesis and Prediction P2. After controlling for *ΔPPE*, *TACC*, as well as on-balance-sheet financing variables, Δ*RENT* continues to be negatively related to future stock returns.

[33] 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).

[Table 9]

I also conduct the Mishkin (1983) test to test the potential market mispricing of the information in operating leasing.[34] The main system of equations of the analysis is as follows:

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

If investors underestimate the negative implications of Δ*OPLEASE* for future earnings, then $\gamma_2 < \gamma_2^*$. The results are reported in Table 10. 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 10, 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 8. 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 Δ*PPE* 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 Δ*OPLEASE* is incremental to the mispricing of Δ*PPE*. I measure the degree of mispricing using *MISPRICING* = $|\gamma^* - \gamma|$. *MISPRICING* equals to 0.442 (=|0.369-(-0.073)|) for Δ*PPE* and 0.420 for Δ*OPLEASE*. It does not appear that Δ*OPLEASE* is more mispriced than Δ*PPE*. Panel C adds total accruals, and Panel D includes net external financing in the analyses. Consistent with previous research and the findings in Table 8, the market appears to incorrectly impound the

[34] 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.

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 Δ*OPLEASE* and *MISPRICING* = 0.304 for *TACC*).

[Table 10]

Two observations emerge from Table 10. First, investors do *not* appear to ignore operating lease information disclosed in footnotes. This finding is consistent with the findings in a few previous studies (e.g., Landsman 1986; Barth 1994) 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.[35] 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 findings are not entirely surprising.

Table 11 reports mean future stock returns for portfolios of firms formed on Δ*OPLEASE* and Δ*RENT*. Each of the above variables is ranked in each calendar year 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. Table 11 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.

[35] However, comparison between recognized versus disclosed accruals is inherently difficult because firms self-select into growing on-balance-sheet assets and off-balance-sheet assets (see Bernard and Schipper 1994).

I start by examining the future raw returns following Δ*OPLEASE*. The lowest decile of Δ*OPLEASE* has a mean raw return of 28.6 percent, while the highest decile of Δ*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 Δ*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 market value deciles within the sample.[36] 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. Table 12 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).[37] It appears that the hedge returns to the operating lease activity variables are robust to the inclusion of these potential risk factors.[38]

[36] 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.

[37] Monthly returns for each of the 10 portfolios based on 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.

[38] 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).

[Table 11]

5. Conclusion

This paper 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 been restricted to 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 off-balance-sheet accruals; the change in the off-balance-sheet liability can be viewed as off-balance-sheet financing.

I show that, similar to on-balance-sheet accruals and 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 financing activities. I then investigate whether lower future earnings and stock returns are due to off-balance-sheet versus on-balance-sheet activities. The results suggest that information about off-balance-sheet activities disclosed in footnotes has incremental explanatory power in the prediction of future earnings and stock returns. Stock prices act as if investors fail to identify correctly the implications of these operating lease activities for future earnings.

References

Abarbanell, Jeffery and Brian Bushee, 1998, Abnormal returns to a fundamental analysis strategy. The Accounting Review 73 (1): 19-45.

Abarbanell, Jeffery and Brian Bushee, 1997, Fundamental analysis, future earnings, and stock prices. Journal of Accounting Research 35 (1): 1-24.

Ang, James, and Pamela P. Peterson, 1984, The leasing puzzle. Journal of Finance 39: 1055-1065.

Barber, M. Brad and John D. Lyon. 1997. Detecting long-run abnormal stock returns: the empirical power and specification of test statistics. Journal of Financial Economics 43:341-72.

Barth, Mary, 1994, Fair value accounting: evidence from investment securities and the market valuation of banks. The Accounting Review 69: 1-25.

Beatty, Anne, Philip G. Berger and Joseph Magliolo, 1995, Motives for forming research & development financing organizations. Journal of Accounting and Economics 19: 411-442.

Bernard, Victor and Katherine Schipper, 1994, Recognition and disclosure in financial reporting. Working paper. University of Michigan and University of Chicago.

Bradshaw, Mark T., Scott A. Richardson, and Richard G. Sloan, 2005, The relation between corporate financing activities, analysts' forecasts and stock returns. Working paper, Harvard Business School.

Brealey, A. Richard and Stewart C. Myers, 2003, Principles of corporate finance. Irwin, McGraw-Hill, 7th.

Bushee, Brian and Jana Smith Raedy, 2005, Factors affecting the implementability of stock market trading strategies. Working paper, University of Pennsylvania.

Carhart, Mark M., 1997, On persistence in mutual fund performance, Journal of Finance 52, 57-82.

Cassar, Gavin, 2005, External financing and firm operating performance. Working paper. University of Pennsylvania.

Cooper, Michael, Huseyin Gulen, and Michael J. Schill, 2005. What best explains the corss-section of stock returns? Exploring the asset growth effect. Working paper. Purdue University.

Core, John E., 2005, Discussion of an analysis of the theories and explanations offered for the mis-pricing of accruals and accruals components, Working paper, University of Pennsylvania.

Dechow, Patricia M. and Catherine M. Schrand. 2004. *Earnings quality.* The Research Foundation of CFA Institute. Charlottesville, Virginia.

Dechow, Patricia M., Scott A. Richardson, and Richard Sloan. 2005. The persistence and pricing of the cash component of earnings. Working paper, University of Michigan.

Dechow, Patricia M. and Weili Ge, 2005. The persistence of earnings and cash flows and the role of special items: implications for the accrual anomaly. Review of Accounting Studies. Forthcoming.

Dechow, Patricia M. and Ilia Dichev, 2002. The quality of accruals and earnings: The role of accrual estimation errors. The Accounting Review 77 Supplement: 35-59.

Desai, Hemang, Shivaram Rajgopal, and Mohan Venkatachalam, 2004, Value-glamour and accruals mispricing: one anomaly or two? Accounting Review 79 (2): 355-385.

Diamond, Michael, Earl Stice, and James Stice, 2000, *Financial Accounting: Reporting and analysis*. South-Western College Publishing.

Dutta, Sunil and Stefan Reichelstein, 2005, Accrual accounting for performance evaluation, Review of Accounting Studies 10: 527-552.

Eisfeldt, Andrea and Adriano A. Rampini, 2005, Leasing, ability to repossess, and debt capacity. Working paper, Northwestern University.

Fairfield, Patricia M., J. Scott Whisenant, and Teri Lombardi Yohn, 2003a, Accrued earnings and growth: Implications for future profitability and market mispricing, The Accounting Review 78 (1): 353-371.

Fairfield, Patricia M., J. Scott Whisenant, and Teri Lombardi Yohn, 2003b, The differential persistence of accruals and cash flows for future operating income versus future profitability, Review of Accounting Studies 8 (2-3): 221-243.

Fama, Eugene F., and Kenneth R. French, 1993, Common risk factors in the return on bonds and stocks, Journal of Financial Economics 33, 3-53.

Fama, Eugene F. and Mcbeth, J. D., 1973. Risk, return and equilibrium – empirical tests. The Journal of Political Economy 81, 607-636.

Feng, Mei, Jeffrey D. Gramlich, and Sanjay Gupta, 2005, Off-balance-sheet entities: what motivates firms to sponsor them and how sponsorship impacts accruals, leverage and return on equity. Working paper, University of Pittsburgh.

Frankel, Richard M., Marilyn F. Johnson, and Karen K. Nelson. 2002, The relation between auditors' fees for non-audit services and earnings management. The Accounting Review 77 (Supplement): 71-105.

Graham, Benjamin and David L. Dodd, 1934, *Security Analysis*. New York, NY: McGraw Hill.

Graham, John R., 1996, Proxies for the marginal tax rate. Journal of Financial Economics 42: 187-221.

Graham, John R., Michael L. Lemmon, and James S. Schallheim, 1998, Debt, leases, taxes, and the endogeneity of corporate tax status. The Journal of Finance 53 (1): 131-162.

Hirshleifer, David, Kewei Hou, Siew Hong Teoh, Yinglei Zhang. 2004, Do investors overvalue firms with bloated balance sheets? Journal of Accounting & Economics 38: 297

Hirshleifer, David and Siew Hong Teoh, 2003, Limited attention, information disclosure, and financial reporting. Journal of Accounting and Economics 36: 337-386.

Hribar, Paul and Daniel Collins, 2002, Errors in estimating accruals: implications for empirical research. Journal of Accounting Research 40, 105-134.

Imhoff, Eugene A., Robert C. Lipe, and David W. Wright, 1997, Operating leases: Income Effects of constructive capitalization. Accounting Horizons 11 (2): 12-32.

Imhoff, Eugene A., Robert C. Lipe, and David W. Wright, 1993, The effects of recognition versus disclosure on shareholder risk and executive compensation. Journal of Accounting, Auditing, & Finance 8 (4): 335-368.

Imhoff, Eugene A., Robert C. Lipe, and David W. Wright, 1991, Operating leases: Impact of constructive capitalization. Accounting Horizons 5 (1): 51-63.

Imhoff, Eugene A. and Jacob K. Thomas, 1988, Economic consequences of accounting standards: The lease disclosure rule change. Journal of Accounting and Economics 10: 277-310.

Jegadeesh, N., and S. Titman, 1993. Returns to buying winners and selling losers: Implications for stock market efficiency. Journal of Finance, 48, 65-92.

Khan, Mozaffar, 2005, Are accruals really mispriced? Evidence from tests of an intertemporal capital asset pricing model. Working paper. MIT.

Kraft, Arthur, Andrew Leone, and Charles Wasley, 2005, An analysis of the theories and explanations offered for the mis-pricing of accruals and accrual components. Working paper, University of Rochester.

Kothari, S. P., Jowell S. Sabino and Tzachi Zach, 2005, Implications of survival and data trimming for tests of market efficiency. Journal of Accounting and Economics 39: 129-161.

Krishnan, V. Sivarama and R. Charles Moyer, 1994, Bankruptcy costs and the financial leasing decision. Financial Management 23, 31-42.

Lakonishok, Josef, Andrei Shleifer and Robert W. Vishny, 1994, Contrarian investment, extrapolation, and risk. Journal of Finance 49 (5): 1541-1578.

Landsman, W., 1986, An empirical investigation of pension fund property rights. The Accounting Review 61: 662-691.

Lev, Baruch and Doron Nissim, 2005, The persistence of the accruals anomaly." Contemporary Accounting Research (forthcoming).

Li, Donglin, 2004, The implications of capital investment for future profitability and stock returns – an overinvestment perspective. Dissertation, University of California, Berkeley.

Lipe, Robert C., 2001, Lease accounting research and the G4+1 proposal. Accounting Horizons 15 (3): 299-310.

Mashruwala, A. Christina, Shivaram Rajgopal, and Terry Shevlin, 2005, Why is the accrual anomaly not arbitraged away? The role of idiosyncratic risk and transaction costs, Working paper, University of Washington.

McConnell, J. John and Chris J. Muscarella, 1985, Corporate capital expenditure decisions and the market value of the firm, Journal of Financial Economics 14: 399-422.

Miller, Merton H., and Charles W. Upton, 1976, Leasing, buying, and the cost of capital services, Journal of Finance 31: 761-786.

Mishkin, Frederic S., 1983, A rational expectations approach to macroeconometrics: Testing policy effectiveness and efficient markets models. Chicago, IL: University of Chicago Press for the National Bureau of Economic Research.

Nailor, Hans and Andrew Lennard, 2000, Special Report: Leases: Implementation of a new approach. Financial Accounting Standards Board.

Rajgopal, Shivaram, Terry Shevlin, and Mohan Venkatachalam, 2003, Does the stock market fully appreciate the implications of leading indicators for future earnings? Evidence from order backlog, Review of Accounting Studies 8: 461-492.

Richardson, Scott A., 2006, Over-investment of free cash flow, Forthcoming, Review of Accounting Studies.

Richardson, Scott A., Richard G. Sloan, Mark T. Soliman, and A. Irem Tuna, 2006, The implications of accounting distortions and growth for accruals and profitability, Forthcoming, The Accounting Review.

Richardson, Scott A., Richard G. Sloan, Mark T. Soliman, and A. Irem Tuna, 2005, Accrual reliability, earnings persistence and stock prices, Journal of Accounting and Economics, 39: 437-485.

Richardson, Scott A. and Richard G. Sloan, 2003, External financing, capital investment and future stock returns. Working paper, University of Pennsylvania.

Ritter, Jay R., 1991, The long run performance of initial public offerings, Journal of Finance, 46: 3-27.

Scholes, S. Myron, Mark A. Wolfson, Merle M. Erickson, Edward L. Maydew, and Terry J. Shevlin, 2004. *Taxes and business strategy: a planning approach* (3rd edition). Prentice Hall.

Securities and Exchange Commission (SEC), 2005, Report and recommendations pursuant to Section 401(c) of the Sarbanes-Oxley Act of 2002 on arrangements with off-balance sheet implications, special purpose entities, and transparency of filings by issuers. Washington, D.C.

Shevlin, Terry, 1990, Estimating corporate marginal tax rates. Journal of the American Taxation Association, Spring: 51-67

Shevlin, Terry, 1987, Taxes and off-balance-sheet financing: Research and development limited partnerships. The Accounting Review 62 (3): 480-509.

Sloan, Richard G., 1996, Do stock prices fully reflect information in accruals and cash flows about future earnings? The Accounting Review 71 (3): 289-315.

Sharpe, Steven A. and Hien H. Nguyen, 1995, Capital market imperfections and the incentive to lease. Journal of Financial Economics 39: 271-294.

Shumway, Tyler, 2001, Forecasting bankruptcy more accurately: A simple hazard model. The Journal of Business 74 (1): 101-124.

Teoh, Siew Hong, and Yinglie Zhang, 2005, Loss firms, asset pricing controls, and accounting anomalies, Working paper, Ohio State University.

Titman, Sheridan, K. C. John Wei, and Feixue Xie, 2004, Capital investments and stock returns. Journal of Financial and Quantitative Analysis 39: 677-700.

Trueman, Brett, The relationship between the level of capital expenditure and firm value, Journal of Financial and Quantitative Analysis 21 (2): 115-129.

Xie, Hong, 2001, The mispricing of abnormal accruals, The Accounting Review 76 (3): 357-373.

Zach, Tzachi, 2004, Evaluating the "accrual-fixation" hypothesis as an explanation for the accrual anomaly. Working paper, Washington University in St. Louis.

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

****

Starbucks Corp. (2002 10-K filing)

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[39]
Present value of future operating lease obligations (*OPLEASE*)		1,284,320

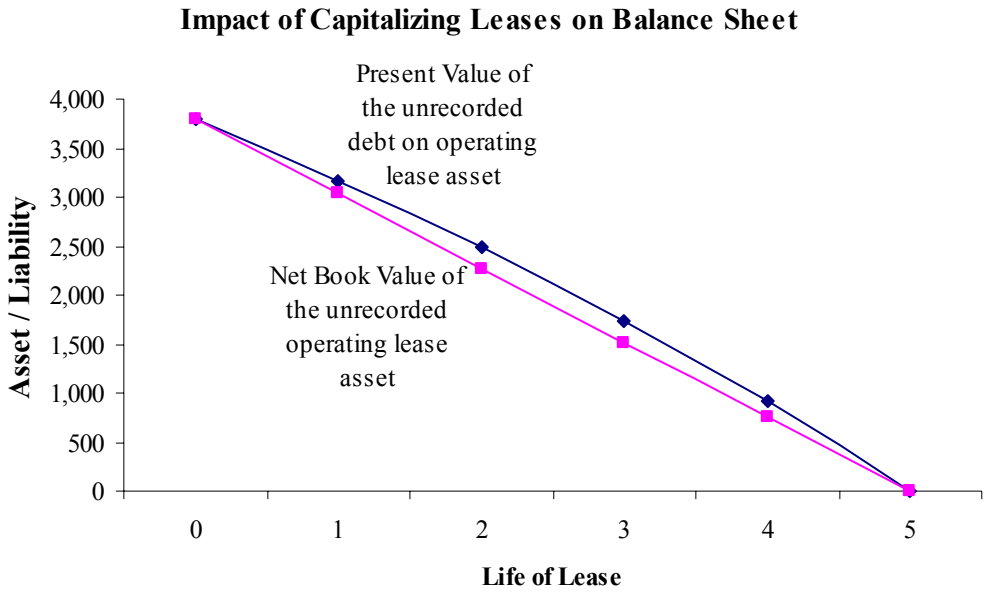
[39] Number of years thereafter = 863,874/203,395=4.24; round to five years; then the thereafter annual payment is 863,874/5=172,774. The present value of a five-year annuity of $172,774 at 10% = 406,674.

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	Depreciation	Interest expense	Depr. +Int. exp.	Impact on operating income[40]	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



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

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%.

			Balance Sheet			Income Statement				Cash Flow Statement
Firm status	Year	No. of leases at year beginning	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	Lease payment
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 (Δ*OPLEASE*)	(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***

TABLE 1

Capitalization of operating leases based on the next five years' rent and the rent in the thereafter years for a sample of 15,795 firm-year observations from 2000 to 2003

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	

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.

TABLE 2

Summary statistics for 59,235 firm-year observations from 1988 to 2003

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

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	

Table 2 Continued

The sample covers 59,235 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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 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 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). Δ*CAPLEASE* 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.

TABLE 3

Industry composition for decile portfolios sorted by operating leases

Panel A: Percentage of the firms in each industry group for each *ΔOPLEASE* 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%*

Panel B: Percentage of the firms in each *ΔOPLEASE* 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%*

Table 3 Continued

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

	Off-balance-sheet activity		*Accounting performance*		*Accruals*		*External financing*			*Asset pricing variables*		
Portfolio Rank	***ΔOPLEASE***	***ΔRENT***	***EARNINGS***	***SALES GROWTH***	***ΔPPE***	***TACC***	***CFF***	***ΔEQUITY***	***ΔDEBT***	***BV***	***MV ($m)***	***B/M***
1	-0.042	-0.009	-0.139	0.042	-0.012	-0.075	0.052	0.056	-0.004	121	303	0.613
2	-0.011	-0.002	-0.062	0.088	0.003	-0.023	0.036	0.035	0.001	198	503	0.716
3	-0.004	-0.001	-0.023	0.110	0.012	0.003	0.029	0.024	0.005	321	862	0.710
4	-0.001	0.000	0.009	0.122	0.017	0.024	0.019	0.009	0.010	557	1332	0.742
5	0.000	0.000	0.015	0.140	0.022	0.037	0.026	0.007	0.019	814	1906	0.688
6	0.003	0.001	0.012	0.172	0.026	0.042	0.032	0.013	0.019	721	1822	0.658
7	0.006	0.003	0.008	0.209	0.031	0.048	0.044	0.021	0.023	544	1481	0.637
8	0.013	0.005	-0.006	0.255	0.035	0.054	0.063	0.037	0.026	428	1163	0.622
9	0.027	0.009	-0.015	0.303	0.041	0.064	0.082	0.051	0.031	278	803	0.598
10	0.082	0.021	-0.045	0.393	0.054	0.065	0.108	0.075	0.032	162	588	0.540

Variable Definitions:

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 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 deb (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). B/M is book-to-market. All variables are scaled by average total assets (Compustat item 6).

TABLE 5
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

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)	
Δ*EQUITY*			-0.121 (-9.16)
Δ*DEBT*			-0.051 (-6.12)
Adjusted R-Square	45.62%	46.17%	46.23%

The sample covers 59,235 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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 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 6
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

Panel A: Off-balance-sheet accruals (ΔOPLEASE) 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)
ΔOPLEASE	**-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 (ΔOPLEASE) 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)
ΔOPLEASE	**-0.138** **(-5.57)**	**-0.056** **(-1.94)**	**-0.056** **(-1.94)**
CFF		-0.122 (-10.06)	
Δ*EQUITY*			-0.171 (-11.66)
Δ*DEBT*			-0.050 (-5.29)
Adjusted R-Square	30.42%	31.43%	31.70%

The sample covers 50,167 firm-year observations for the period 1988-2002. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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 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 7
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

Panel A: Off-balance-sheet accruals (ΔRENT) 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 (ΔRENT) 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)	
Δ*EQUITY*			-0.122 (-9.82)
Δ*DEBT*			-0.050 (-6.45)
Adjusted R-Square	45.80%	46.34%	46.41%

The sample covers 59,235 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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 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 8
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

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)		
Δ*EQUITY*			-0.190 (-1.57)	-0.151 (-1.28)
Δ*DEBT*			-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%

The sample covers 56,755 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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).

Table 8 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 – 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 independent variables are assigned in ascending order to deciles and then scaled so that they range from zero (for the lowest decile) to one (for the highest decile).

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 9
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

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)
ΔRENT	**-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%

The sample covers 56,755 firm-year observations for the period 1988-2003. *EARNINGS* is earnings before extraordinary items (Compustat item 123). Δ*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). *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*.

Table 9 Continued

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 independent variables are assigned in ascending order to deciles and then scaled so that they range from zero (for the lowest decile) to one (for the highest decile).

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 10

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

Panel A

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

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

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.762 (215.73)	γ_1^*	0.911 (52.12)
γ_2	**-0.201 (-10.52)**	**γ_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
Δ*OPLEASE*: $\gamma_2 = \gamma_2^*$	39.52	<0.001
All $\gamma = \gamma^*$	120.26	<0.001

Panel B

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

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

Forecasting Coefficients		Valuation Coefficients	
Parameter	Coefficient Estimate (t-statistic)	Parameter	Coefficient Estimate (t-statistic)
γ_1	0.773 (214.83)	γ_1^*	0.898 (50.69)
γ_2	-0.073 (-8.54)	γ_2^*	0.369 (8.63)
γ_3	**-0.168 (-8.53)**	**γ_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
Δ*PPE:* $\gamma_2 = \gamma_2^*$	108.04	<0.001
Δ*OPLEASE*: $\gamma_3 = \gamma_3^*$	18.45	<0.001
All $\gamma = \gamma^*$	236.77	<0.001

Table 10 Continued

Panel C

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

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

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
Δ*OPLEASE*: $\gamma_3 = \gamma_3^*$	13.72	<0.001
All $\gamma = \gamma^*$	315.43	<0.001

Panel D

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

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

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
Δ*OPLEASE*: $\gamma_3 = \gamma_3^*$	11.47	<0.001
All $\gamma = \gamma^*$	437.87	<0.001

Table 10 Continued

The sample covers 51,623 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. *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).

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 11

Annual mean future size-adjusted stock returns for portfolios formed on off-balance-sheet activities for 56,755 firm-year observations from 1988 to 2003

	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)			

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. Δ*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). 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.