

The Valuation Relevance of Lease Contingent Payments

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The objective of this study is to examine empirically the valuation relevance of lease contingent payments. The recently published joint Exposure Draft on Leases by IASB and FASB requires that all leases be capitalized and lease contingent payments be included in the estimate of the liabilities associated with the leases. This study extends the prior research on leasing by examining the valuation relevance of lease contingent payments. Using a data set of 23,276 observations covering 5,107 U.S. firms for the period from 2001 to 2010 inclusive, this paper finds a negative association between equity values and lease contingent payments, indicating that the market participants view lease contingent payments as liabilities. Also, results suggest that although the valuation relevance of operating leases has strengthened under the intensified public and regulatory scrutiny of recent years, no such temporal change in value relevance is observed for lease contingent payments. This study provides pertinent information to facilitate the on-going deliberation concerning the revision of IASB's and FASB's joint Exposure Draft on leases.

Keywords: valuation relevance, off-balance sheet financing, lease contingent payment, operating lease

1. Introduction

The International Accounting Standards Board (IASB)'s and the Financial Accounting Standards Board (FASB)'s joint Exposure Draft (ED), *Leases*, published on 17 August 2010, proposes significant changes to both the recognition and the measurement of leases. For lease recognition, the ED recommends that the "risk and reward of ownership" model on which current lease accounting is based be replaced with the "right-of-use" model for lessees. The "right-of-use" model requires a lessee to recognize the right to use the leased asset as an asset and the obligation to make lease payments as a liability on its balance sheet for all lease contracts, including the current off-balance sheet operating leases. For lease measurement the ED recommends that both lease contingent payments and renewal options be incorporated in the estimate of the liabilities of a lease at its inception. Under current lease accounting, the liabilities associated with a capital lease are determined as the discounted minimum lease payments of the non-cancellable portion of the lease with lease contingent obligations and renewal options ignored.

The changes to lease measurements recommended in the ED have proven to be controversial and have raised serious concerns. For instance, in order to calculate the "expected lease payments" as required under the ED, an entity would need to estimate the probabilities of the possible outcomes upon which the contingent payments are based. The opponents to the proposed changes are concerned with the uncertainty and

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the measurement errors associated with having to make such subjective and judgmental decisions. They believe that the lack of objective and reliable verification of such decisions could potentially render such information too unreliable to be useful. Therefore, they argue strongly that lessees should not be required to include lease contingent payments and renewal options in their estimate of lease liabilities.

In response to the criticism received, the IASB and FASB are currently deliberating and revising the Exposure Draft with the objective to re-expose the revised proposals for lease accounting in the second quarter of 2012. The objective of this study is to provide relevant and timely empirical evidence on the valuation relevance of lease contingent payments. The effect that such a proposed accounting item would have on users' decisions is part of the *ex ante* evidence that standard-setters seek in making their standard setting decisions (Schipper 1994).

This study extends the research on leases by examining a previously unexplored off-balance sheet item, lease contingent payments. According to the estimates of Song (2012), lease contingent payments amount to nearly 20 percent of un-capitalized lease payments. The proponents of the ED argue that lease contingent payments could grow substantially if the new lease accounting rules require the capitalization of operating leases but permit contingent payments to be excluded (e.g., McConnell 2010). Yet there has been little discussion and empirical evidence on the impact of this off-balance sheet item on investors' decision making.

The remainder of this paper is organized as follows: the next section contains a review of prior research on the effect of capitalization of leases and on the valuation relevance of leases; Section 3 consists of hypotheses development; Section 4 presents the research design; Section 5 reports the results; and Section 6 discusses the tests of robustness and limitations of this study. Section 7 concludes.

2. Review of Prior Research

Although financial statements have a wide range of applications, the primary focus of the standard setters is equity investment. According to the Conceptual Framework of the IASB and FASB which articulates the Boards' objectives and criteria and guide its standard setting decisions, relevance and reliability are the two primary criteria the Boards use to choose among accounting alternatives. An accounting amount is relevant if it is capable of making a difference to financial statement users; an accounting amount is reliable if it represents what it purports to represent (FASB 2010). A value relevance study operationalizes the test of relevance and reliability because if an accounting number is value relevant, i.e., if it has a predicted significant relation with the share price, then the number "must reflect information relevant to investors in valuing the firm and is measured reliably enough to be reflected in share prices" (Barth & Beaver 2001). Further, if an accounting amount is shown to be both relevant and reliable, then it should be included in the financial statements.

Prior research on the valuation relevance of off-balance sheet items has examined a wide range of unrecognized items and has generated mixed results. One of the off-

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balance sheet items that have been extensively studied is pension and other post-retirement obligations. Landsman (1986) examined the relationship between pension fund assets and liabilities associated with corporate-sponsored defined benefit pension plans and the market value of shareholder equity. By using theoretical benchmark coefficient values for pension assets and liabilities based on Miller's (1977) model of capital market equilibrium and all December 31 fiscal year-end firms for 1979-1981, Landsman (1986) found evidence consistent with the notion that the firm fully owns the pension fund assets and liabilities. Amir (1993) examined whether investors underestimated the full effect of the post-retirement benefits (PRB) liability on firms' values. Using the post-retirement benefits cash payments to retirees disclosed in the footnotes to the financial statements as required by SFAS 81, he found that during the period 1984-1986 investors, on average, valued each dollar of post-retirement benefits cash payments in any year as a dollar. During the period 1987-1990, with better understanding of rising health care costs, investors translated each dollar of post-retirement benefits cash payment to an average of \$13.75 PRB obligation. Wiedman & Wier (2004) used a Canadian sample with defined benefit pension plans. They found that Canadian investors appeared to view the deficit arising from under-funded plans as a liability of the sponsoring firm but do not appear to view the surplus arising from over-funded plans as an asset of the firm.

Other off-balance sheet items that have been investigated include advertising and R&D expenditures (Hirschey & Weygandt 1985), employee stock options (Aboody 1996), mortgage servicing rights (Pheiffer 1998), start-up costs (Hevas 2005) and disclosed derivative financial instruments (Ahmed, Kilic & Lobo 2006). Hirschey & Weygandt (1985) considered the advertising and R&D expenditures from a market value perspective. Their results show a positive effect of advertising and R&D on the market value of the firm, thereby suggesting that these expenditures should be capitalized and then amortized rather than be treated as an expense when incurred. Aboody (1996) examined whether equity values incorporate the values of the firms' outstanding employee stock options. Aboody used the Ohlson (1995) model that provides a theoretical link between equity values and accounting numbers. He added an instrumental variable estimator for employee stock options to the basic Ohlson (1995) model. He found a negative relationship between equity values and the instrumental variable estimators of outstanding stock options, suggesting that investors view the outstanding stock options as liabilities. Pheiffer (1998) examined the value relevance of originated mortgage servicing rights. His evidence suggested that despite the absence of originated servicing rights in the balance sheet, they were priced by investors. Hevas (2005) tested investors' reaction to capitalized start-up costs, a practice allowed under Greek accounting standards, using a sample of companies listed on the Athens Stock Exchange. The empirical results showed that the capitalized start-up costs were negatively valued by the market. The finding raised questions about the suitability of the practice of the capitalization and subsequent amortization of start-up costs. Ahmed, Kilic & Lobo (2006) examined a sample of banks that simultaneously held recognized and disclosed derivatives prior to SFAS 133 and found that while the valuation coefficients on recognized derivatives are significant but the valuation coefficients on disclosed derivatives are not. Ahmed, Kilic & Lobo (2006)'s findings are consistent with the view that recognition and disclosure are not substitutes.

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Leases, as one of the most significant off-balance sheet items, have been the topic of many prior valuation relevance studies. The extant studies on the value relevance of leases have primarily focused on the association between equity risk and leases. This line of research is based on the finance theory that debt level is positively associated with equity risk. Given that the widely held notion that off-balance sheet leases constitute unrecognized additional debt financing, some researchers wondered if the obligations associated with leases would be positively associated with equity risk, just like debt. Furthermore, if off-balance sheet lease obligations were found to be positively associated with equity risk, then this would support the idea that leases should have the same accounting treatment as debt.

The earliest empirical study on the relationship among lease obligation, debt and equity risk is Bowman (1980). He examined the debt and the present value of disclosed capital leases with the equity risk (measured as the co-variation between the firms' returns and market returns) of 92 U.S. listed firms that had disclosed capital leases under ASR 147. He found the equity risk was positively associated with both debt and the present value of capital leases. This result suggests that capital leases behave similarly to debt in their association with equity risk.

Imhoff, Lipe & Wright (1993) examined the relationship between operating leases, debt and equity risk of 29 airline and 51 grocery firms listed in the U.S. Using the standard deviation in stock returns as a proxy for equity risk, they found that both debt and operating leases were positively associated with the equity risk. Furthermore, they found that the magnitudes of the effects of debt and of operating leases were similar. Their findings suggest that operating lease liabilities behave like debt in their association with equity risk. Ely (1995) and Beattie, Goodacre & Thomson (2000) also examined the relationship between operating lease liabilities, debt and equity risk. Both studies found similar results that both debt and operating lease liability were positively associated with equity risk.

Ely (1995) also examined the contingent portion of operating lease payments, the portion that is not included in minimum lease payments that are typically used to estimate lease liabilities. Ely found that lease contingent payments were not associated with equity risk, indicating that the liabilities associated with lease contingent payments do not behave similarly to debt in their relationship with equity risk. Ely attributed the difference between debt and lease contingent payments to the fact that the former represents a fixed-price financing arrangement and later a form of participation by the lessor in the residual earnings of the lessee.

Dhaliwal, Lee & Neamtiu (2011) used the cost-of-equity measures to assess the risk relevance of off-balance sheet operating leases. They found that a firm's cost-of-equity capital is positively associated with the adjustment in its financial leverage and operating leverage resulting from capitalizing operating leases. They also found that this positive association between cost-of-equity capital and the adjustment in the financial leverage and operating leverage due to capitalizing operating leases weakened in the period after the SEC's issuance of its staff report on lease accounting in 2005. They interpreted this finding as evidence that market participants were able to take into

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account the improved and more accurate operating lease transaction information provided in a lessee's financial statements in their equity risk assessment.

Callahan & Spencer (2010) compared the valuation relevance of synthetic lease liabilities that are recognized within the body of financial statements and that are disclosed within the associated notes of a sample of 125 U.S. synthetic leasing firms and found that the market places greater weight on recognized leases liabilities than disclosed leases liabilities. Callahan & Spencer (2010) found evidence supporting the view that the differential market valuation of lease obligations was due in part to the perceived differences in measurement reliability. Schipper (2007) notes that "items that meet the definitions of financial statement elements but fail one or more of the recognition criteria should be disclosed, and the most likely criterion to matter for this distinction is reliability". Supporting this notion, Libby, Nelson & Hunton (2006) found evidence in their experimental study that auditors tend to permit more misstatement in disclosed, as opposed to recognized, amounts. Bratten, Choudhary & Schipper (2011) examined a sample of firms with both capital and operating leases that obtained external debt financing between 1980 and 2008. They found evidence that the lease obligations imputed from disclosures are reliable. Further, they found creditors impound these imputed values from operating lease obligations into loan-pricing decisions in the same way they impound recognized information about capital-lease obligations. Their results provide evidence that disclosed items are not processed differently from recognized items when the disclosures are reliable.

In summary, studies on the relationship between equity valuation and off-balance sheet obligations generally established that market participants place some value on the off-balance sheet items; however, they do not always value them to the same extent as the on-balance sheet items. The differential valuation relevance of recognized versus disclosed amounts can be attributed in part to the different reliability of the two types of information. The increased awareness and better understanding could affect market participants' assessment of the value relevance of some off-balance sheet items.

3. Hypotheses

One of the primary concerns that motivated the overhaul of the current lease accounting practice is that, as a loophole for off-balance sheet financing, it allows companies to construct lease contracts in such a fashion that the liabilities associated with certain leases can be kept off-balance sheet if so desired. The objective of the joint Exposure Draft on leases is to ensure that transactions with similar economic essence are reported consistently. The recommendation of the "right-of-use" model and the measurements that include the lease contingent payments and renewal options reflect the Boards' attempt to ensure that the obligations associated with all leases be reported fully.

The supporters of the ED's proposal to include lease contingent payments in the estimates of lease liabilities argue that including lease contingent payments provides investors with the best estimates of the lease obligations and the likely cash outflows. Excluding contingent payments and renewal options, they believe, will understate the

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assets being used to generate income as well as understate the amount of leverage being utilized. On a practical note, not including contingent payments and renewal options could result in new loopholes for off-balance sheet financing. For instance, a lease can be structured with very small contractual payments but large, virtually guaranteed contingent payments and/or a very short initial term but with many renewal options. Without the requirement of including contingent payments and renewal options, such leases will largely remain off-balance sheet (McConnell 2010).

The opponents of the ED's proposal to include lease contingent payments and renewal options in the estimates of lease liabilities are concerned with the additional uncertainty and estimation error introduced by these methods. To compute the expected lease payments requires an entity to estimate the probability of each outcome. Although the ED offers some guidelines on the factors to be considered in assessing the probabilities, it nevertheless involves subjective and judgmental decisions.

Another concern of the opponents of the ED is that lease contingent payments do not meet the criteria of a typical liability. According to the conceptual framework, liabilities are probable future sacrifices of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events. It is argued that neither contingent rentals nor renewal options meet the definition of a liability. Contingent rentals are dependent on a future event and renewal options are dependent on future decisions. Since the future event and decision have not yet taken place and may or may not take place in the future, it would not be correct to record a liability for an obligation which is not present due to the absence of a past event.

This study treats the question of whether market participants consider lease contingent payments relevant to equity valuation as an empirical question. In order to assess the empirical findings of this study in the context of the extant research on the relationships between value relevance of operating leases and as a test of the soundness of the valuation model used in this study, the valuation relevance of off-balance sheet operating leases is also tested. Therefore, the first two hypotheses of this study are:

H₁: *Market participants consider the liabilities associated with operating leases value relevant and value relevant to the same extent as the reported liabilities.*

H₂: *Market participants consider the liabilities associated with lease contingent payments value relevant and value relevant to the same extent as the reported liabilities.*

Previous studies have shown that whether and to what extent an off-balance sheet item is valued by investors can change as the investors gain a better understanding of the valuation implications of the item in question. During the financial crisis of recent years, off-balance sheet items in general, and leasing in particular, have drawn intensified public and regulatory scrutiny. The SEC issued lease accounting interpretation letters in 2005 to reiterate existing standards and to clarify the regulators' view on some

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controversial lease accounting issues. Shortly after that, the FASB and the IASB announced in 2006 the launch of their joint project on leasing. This study examines whether the increased public and regulatory scrutiny on lease accounting has had an impact on the value relevance of the off-balance sheet lease obligations. The next two hypotheses are:

H₃: *There has been a change in the value relevance of the liabilities associated with operating leases in recent years.*

H₄: *There has been a change in the value relevance of the liabilities associated with lease contingent payments in recent years.*

4. Research Design

4.1 Estimating Operating Lease Liability & Lease Contingent Payment Liability

To estimate the assets and liabilities associated with operating leases the constructive capitalization method, first formulated by Imhoff, Lipe & Wright (1991) and subsequently modified by Graham, Lemmon & Schallheim (1998) and Dhaliwal, Lee & Neamtiu (2011), is used. The capitalized operating lease liabilities are computed as the sum of the current year rental expenses and the discounted rental commitment amounts due in the next five years. Here the current year rental expenses are used as an approximation of the discounted rental commitment amounts due after year five. Imhoff, Lipe & Wright (1991) assumed that assets leased under operating leases would be depreciated using the straight-line method, like most capital assets. They found that the asset percentage to be mainly between 60 percent and 80 percent based on different combinations of total lease life, interest rate and proportion of total lease life expired. Following (Imhoff, Lipe & Wright 1993, Graham, Lemmon & Schallheim 1998, and Dhaliwal, Lee & Neatium 2011), a cross-sectional constant discount rate of 10 percent is assumed and the related un-depreciated lease asset is estimated as 70 percent of the lease liabilities, implying an average total life of 25 years with 15 years remaining. A constant effective tax rate of 40 percent is used to determine the tax effect of capitalizing operating leases.

To estimate the assets and liabilities associated with lease contingent payments the procedure is first to estimate the lease contingent payment of the current year. Following Ely (1995), the lease contingent payment, or contingent rent, is estimated as the difference between the rent expense of the current period and the expected minimum operating lease payments due in the current period. Next, the ratio of the current period lease contingent payment versus the expected operating lease payment is computed. Finally, this ratio is applied to the estimated operating lease liabilities to arrive at the estimated liabilities associated with the lease contingent payments. For instance, if the ratio of lease contingent payment versus the expected operating lease payment is 60 percent, then the estimated liabilities associated with the contingent lease payments are estimated to be 60 percent of the operating lease liabilities. Using the same assumptions for estimating operating leased assets, the assets associated with lease contingent payments are estimated to be 70 percent of the lease contingent liabilities.

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4.2 The Valuation Framework

To assess the valuation relevance of off-balance sheet lease obligations, the cross-sectional equity valuation framework of Landsman (1986) was adopted. Landsman's valuation framework has been widely accepted in valuation relevance research (e.g., Barth 1991, Choi, Collins & Johnson 1997, Davis-Friday et al. 1999, and Callahan & Spencer 2010). This framework is based on the notion that a firm's market value of equity (MV_{it}) is the difference between the market values of its total assets and liabilities ($MVTA_{it}$ and $MVTL_{it}$, respectively):

$$MV_{it} = MVTA_{it} - MVTL_{it} \quad (1)$$

The $MVTA_{it}$ and $MVTL_{it}$ in Equation (1) include all assets and liabilities that are priced by the market regardless of whether they are recognized on the firm's balance sheet or not. The subscript i and t denote a specific firm at the end of a specific period. Since the market values of total assets and total liabilities are unobservable, they are substituted with the "book values" obtained from the firms' accounting balance sheets and accompanying disclosure notes in Equation (2). Note, for the sake of simplicity, the firm subscript i and the time period subscript t are omitted from here on. ε is the error term.

$$MV = \alpha_0 + \alpha_1 BVTA + \alpha_2 BVTL + \varepsilon \quad (2)$$

Since the focus of this study is the assets and liabilities associated with off-balance sheet leases, $BVTA$ in the above Equation (2) is the sum of the total assets recognized in the balance sheet and the assets associated with operating leases and lease contingent payments that are disclosed or implied in the footnotes. Similarly, $BVTL$ in the above Equation (2) includes all the claims against the assets by parties other than the common shareholders recognized in the balance sheet and the obligations associated with operating leases and lease contingent payments that are not on the balance sheet. To test whether the off-balance sheet lease obligations have the same value relevance as recognized liabilities, different coefficients are allowed for the liabilities associated with operating leases and the liabilities associated with lease contingent payments in Equation (3) below.

$$MV = \alpha_0 + \alpha_1 BVTA + \alpha_2 TL + \alpha_3 OLL + \alpha_4 XLL + \varepsilon \quad (3)$$

$BVTL$ in Equation (2) was replaced with total liabilities as reported on the balance sheet (TL), estimated off-balance sheet operating lease liability (OLL) and estimated off-balance sheet contingent lease payment liability (XLL). Hypotheses H_1 and H_2 predict the regression coefficients for operating lease liabilities (α_3) and lease contingent payment liability (α_4) to be negative and statistically significant. In addition, H_1 and H_2 predict that the regression coefficients for operating lease liabilities and lease contingent payment liabilities are not significantly different from that of reported liability (α_2), indicating that operating lease liabilities and lease contingent payment liabilities are value relevant to the same extent as the reported liabilities.

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In order to test whether the increased regulatory and investor scrutiny on lease accounting in recent years affects the valuation relevance of operating lease liabilities and lease contingent payment liabilities, a time-period dummy variable, D , was used. D takes the value of 1 for years since 2006 and 0 for years prior to 2006. Two interaction terms, $D*OLL$ and $D*XLL$, were added to Equation (3) to form Equation (4) below. Two major events occurred around 2006 that brought heightened scrutiny to the controversy of lease accounting. First, the SEC staff issued an analysis report in June 2005 pursuant to Section 401(c) of the Sarbanes-Oxley Act of 2002 on U.S. generally accepted accounting principles and disclosure rules on off-balance sheet arrangements, special purpose entities and related issues. Second, the FASB, working together with the IASB, launched a joint project on leasing in 2006, which eventually led to the release of the ED in 2010.

$$MV = \alpha_0 + BVTA + \alpha_2 TL + \alpha_3 OLL + \alpha_4 XLL + \alpha_5 D*OLL + \alpha_6 D*XLL + \varepsilon \quad (4)$$

The sign and the magnitude of the regression coefficient for the interactive terms, α_5 and α_6 , will indicate whether and how the public scrutiny affected the value relevance of operating leases and lease contingent payments. H_3 and H_4 predict that the regression coefficients for the two interaction terms are negative.

5. Results

5.1 The Sample and the Summary Statistics

The sample of this study initially includes all of the U. S. firm-years in CMPUSTAT North American North American active and research datasets for the period of 2001 to 2010, inclusive. Following Dhaliwal, Lee & Neamtia (2011), the companies in the financial service industry are excluded. After excluding the observations with missing variables, the final sample includes 23,285 observations covering 5,108 firms.

Table 1: Summary Statistics (in million dollars)

Number of observations: 23,285					
	Mean	Std. Dev.	25 Percentile	Median	75 Percentile
MV	179.77	226.14	18.26	78.46	259.38
TA	203.86	242.97	22.73	95.48	305.85
TL	104.16	154.97	8.47	32.92	133.26
OLL	24.49	67.17	1.49	5.42	18.84
XLL	16.85	451.82	0.00	0.51	3.80

Variable Definitions: MV is the market value of the equity three months after fiscal year end; TA is the total assets at the end of the fiscal year as reported; TL is reported total liabilities at the end of the fiscal year; OLL is the estimated operating lease liabilities at the end of the fiscal year; and XLL is the estimated lease contingent payment liabilities at the end of the year.

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The summary statistics of both the dependent and independent variables in the valuations models are presented in Table 1. The mean estimated operating lease liabilities and lease contingent payment liabilities are \$24.49 million and \$16.85 million, respectively. Together, the mean estimated off-balance sheet lease obligations are nearly 40 percent of the mean of the reported total liabilities at \$104.16 million.

A comparison of the means and medians of the variables in Table 1 indicates that the distributions of the variables are skewed to the right. To ensure the validity of the use of the linear regression model used in this study, the normalcy of the regression variables was tested and the test results were presented in Table 2. As shown in Table 2, none of the results of the three tests: Kolmogorov-Smirnov, Cramer von-Mises, and Anderson-Darling, rejects the assumption that the regression variables are normally distributed.

Table 2: Test of Variable Normality

	Kolmogorov-Smirnov		Cramer-von Mises		Anderson-Darling	
	Statistic D	P value	Statistic W-Squared	P Value	Statistic A-Squared	P Value
MV	0.213325	<0.0100	390.4	<0.0050	2,171.6	<0.0050
BVTA	0.286981	<0.0100	444.6	<0.0050	2,420.8	<0.0050
TL	0.250756	<0.0100	638.8	<0.0050	3,356.2	<0.0050
OLL	0.357572	<0.0100	1,069.9	<0.0050	5,248.2	<0.0050
XLL	0.485125	<0.0100	5,248.2	<0.0050	9,646.5	<0.0050

Variable Definitions: MV is the market value of the equity three months after fiscal year end. BVTA is the total assets at the end of the fiscal year, adjusted for the estimated amortized operating lease assets and the estimated amortized lease contingent payment assets; TL is reported total liabilities at the end of the fiscal year; OLL is the estimated operating lease liabilities at the end of the fiscal year; and XLL is the estimated lease contingent payment liabilities at the end of the year.

5.2 The Results of Hypotheses Testing

Table 3 presents the results of two regressions. For Equations (3), the adjusted R-squared is 0.5573. The intercept is 50.651. The regression coefficient the adjusted total assets (α_1) is 1.264, positive and statistically significant at one percent. The regression coefficient of reported liabilities (α_2) is -0.943, negative and also statistically significant at one percent. These results are as expected and are consistent with the results of prior studies.

The regression coefficient of the estimated liabilities of operating leases (α_3) is -0.921, negative and statistically significant at one percent. This result supports the prediction of Hypothesis 1 that operating leases are value relevant. The test of coefficients rejects the assumption that there is significant difference between the regression coefficient of the reported liabilities and that of estimated operating lease liabilities at a conventional degree of confidence, indicating that operating lease liabilities are value relevant to the similar extent of the reported liabilities. This finding is consistent with that of Bratten, Choudhary & Schipper (2011) that, given the extended disclosure on operating leases,

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the estimates of operating lease liabilities are reliable enough that they showed valuation relevance that is not different from recognized lease liabilities.

The regression coefficient of the estimated liabilities of lease contingent payment (α_4) is -0.892, negative and statistically significant at one percent. This result indicates that the liabilities associated with lease contingent payments are value relevant as well. However, the test of the coefficients shows that there is a significant difference between the regression coefficient of the reported liabilities and that of the lease contingent payment liabilities, indicating that the lease contingent payments are not valued to the same extent as the reported liabilities. A possible explanation is that there is little direct disclosure about lease contingent payments to rely on to estimate lease contingent payment liabilities reliably.

Table 3: Results of Valuation Relevance Tests

Dependent Variable: MV				
Independent Variable	Co-efficient	Predicted Sign	Equation (3)	Equation (4)
Intercept	α_0	?	50.651 ^{***}	50.500 ^{***}
BVTA	α_1	+	1.264 ^{***}	1.266 ^{***}
TL	α_2	-	-0.943 ^{***}	-0.944 ^{***}
OLL	α_3	-	-0.921 ^{***}	-0.807 ^{***}
XLL	α_4	-	-0.892 ^{***}	-0.907 ^{***}
D*OLL	α_5	-		-0.231 ^{***}
D*XLL	α_6	-		0.015
Adjusted R ²			0.5573	0.5684
Test of Coefficients			F- Value	F- Value
$\alpha_2 = \alpha_3$			1.01	19.72 ^{***}
$\alpha_2 = \alpha_3 + \alpha_5$				12.55 ^{***}
$\alpha_2 = \alpha_4$			27.59 ^{***}	10.70 ^{***}
$\alpha_2 = \alpha_4 + \alpha_6$				29.60 ^{***}

Note: *** indicates the coefficient estimate is significant at the 1 percent level of confidence in two-tailed tests.

Variable Definitions: MV is the market value of the equity three months after fiscal year end. BVTA is the sum of total recognized assets and the estimated amortized assets associated with operating leases and lease contingent payments at the end of the fiscal year; TL is reported total liabilities at the end of the fiscal year; OLL is the estimated operating lease liabilities at the end of the fiscal year; and XLL is the estimated lease contingent payment liabilities at the end of the year. D is a time period dummy variable with value of 1 for the period after 2005 and 0 for the period of 2005 and before.

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The regression results of Equation (4) are presented in the last column of Table 3. The adjusted R-squared is 0.5684. Similar to the results of that of Equation (3), the regression coefficient of the adjusted total assets (α_1) is 1.266, positive and significant. The regression coefficient of the reported liabilities (α_2) is -0.945, negative and significant. The regression coefficients for the estimated liabilities of both operating leases (α_3) and the lease contingent payments (α_4) are at -0.828 and -0.918, respectively, both negative and significant. The tests of coefficients show that α_3 and α_4 are significantly different from α_2 , indicating that operating leases and lease contingent payments are value relevant but to a lesser degree than the reported liabilities in the period of 2001 through 2005.

The regression coefficient of the interaction term of operating lease liabilities and the time dummy variable (α_5) is -0.222, negative and statistically significant, indicating that there is a change in the level of the value relevance of the operating leases and that the operating leases are valued more since 2006. The regression coefficient of the interaction term of the lease contingent payment liabilities and the time dummy variable (α_6) is not statistically significant, indicating that there has not been a significant change in the level of value relevance of the lease contingent payments. The difference in the impact of heightened public and regulatory scrutiny on the changes in value relevance of operating leases versus lease contingent payments could possibly be caused by the difference in the information available to estimate the associated liabilities reliably. The required disclosure about operating leases makes reliable estimates of operating lease liabilities possible. With increased awareness, operating lease liabilities became more value relevant to the extent that investors do not view them differently from the recognized liabilities overall. Whereas the lack of information about lease contingent payments means uncertainty in estimating the liabilities associated with these payments and, thus, impedes their value relevance.

6. Test of Robustness and Limitations

One of the weaknesses of the research design is the use of an arbitrarily assumed constant discount rate, 10 percent, the expected useful life of the leased assets, 25 years and the useful life remaining, 15 years, and the effective income tax rate, 40 percent. Some prior studies have used more refined methods with firm specific estimates of the discount rate, expected life of the leased assets, the remaining useful life and the effective tax rates. However, the refined approaches are impractical for this study because of the very large sample. The author believes that the validity of using these simple assumptions can be justified based on the fact that prior studies that used more refined estimating methods yielded results that are consistent the studies that used more simplified and general assumptions. The analysis was re-run using various combinations of alternative assumptions of discount rates: 6 percent, 8 percent and 12 percent; expected useful life of the leased assets, 15, 20, 30 years; the useful life remaining, 10 and 20 years and the effective income tax rate, 30 percent and 35 percent. The results remain qualitatively unchanged.

7. Conclusions

This study empirically examines the valuation implications of operating leases and lease contingent payments. The findings of the study suggest the following. 1) The liabilities associated with both operating leases and lease contingent payments have an impact on equity valuation. 2) Overall, estimated operating lease liabilities are value relevant to the same extent as the reported liabilities. The estimated lease contingent payment liabilities are value relevant to a lesser extent than the reported liabilities. 3) The valuation relevance of the liabilities associated with operating leases changed as the result of the increased public and regulatory scrutiny on leases in recent years. However, no temporal change in value relevance of lease contingent payment liabilities was found.

The evidence of this study supports the IASB's and FASB's joint Exposure Draft on leases that requires the capitalization of all leases and the inclusion of lease contingent payments in the estimate of lease liabilities. This study is also relevant to the recognition and measurement of assets and liabilities in general. In the process of revisiting the financial reporting conceptual framework, the IASB and the FASB have shown a shift towards a balance sheet focused approach, i.e., letting the changes in assets and liabilities drive the income measurement. In such a context, the recognition and the measurement of assets and liabilities become more important.

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