Liquidity, Accounting Transparency, and the Cost of Capital: Evidence from Real Estate Investment Trusts

By:

Bartley R. Danielsen
Box 7229, Jenkins Graduate School of Management
North Carolina State University
Raleigh, NC 27695
e-mail: bartley_danielsen@ncsu.edu
phone: (919) 513-0003

David M. Harrison*
Box 42101, Rawls College of Business
Texas Tech University
Lubbock, TX 79409
e-mail: david.m.harrison@ttu.edu
phone: (806) 834-3190

Robert A. Van Ness
329 Holman Hall
School of Business
University of Mississippi
University, MS 38677
e-mail: rvanness@bus.olemiss.edu
phone: (662) 915-6940

and

Richard S. Warr
Box 7229, Jenkins Graduate School of Management
North Carolina State University
Raleigh, NC 27695
e-mail: rswarr@ncsu.edu
phone: (919) 513-4646

April 2013

*Corresponding Author

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Abstract:
We investigate the influence financial transparency, organizational complexity, and the cost of capital exert over financial market liquidity. Given regulatory distribution requirements, REITs are forced to frequently raise capital in the public markets. As a result, they have strong incentives to transparently communicate their financial condition to the marketplace. Within this context, we find strong evidence that firms choosing to "over-invest" in financial transparency are rewarded with enhanced liquidity, as measured by lower bid-ask spreads. These effects are more pronounced for riskier firms and those with greater growth options -- i.e., those with the most to gain from transparency.

Key Words: REITs, Cost of Capital, Transparency, Bid-Ask Spreads, Audit Fees

I. Introduction

A well-defined literature has developed across the finance and accounting disciplines that examines the impact of financial transparency on market outcomes for individual firms. A number of these investigations predict and document that information asymmetries induce frictions between buyers and sellers in the marketplace, and that these frictions can reduce the liquidity of the firm's securities. This reduction in liquidity is problematic for firms with growth ambitions, and in particular for those firms lacking the ability to fund expansion initiatives through profit retention, as they will likely face increased costs when seeking external financing.[1]

If information asymmetries create economic disadvantages for organizations, a key question arises as to why firms do not voluntarily disclose all relevant private information. A variety of answers have been offered to this question, including the notion that some firms find it impossible (or at least economically unattractive) to credibly and publicly communicate more information. For example, firms with private information regarding the current overvaluation of their existing equity have little incentive to communicate this information to the marketplace, as it would destroy value for their existing shareholders. A solution to this information problem is offered in the accounting literature, which demonstrates that the presence of a credible disclosure mechanism, such as an audit, may alleviate information problems by providing certification to the firm's assertions. To the extent that audit quality is correlated with audit fees, firms which anticipate accessing capital markets should be particularly willing to invest in "premium" audit services. These "premium" services should add credibility and certification to the firm's financial disclosures which in turn will enhance the firm's transparency and decrease the firm's cost of external capital.

[1] See, for example, Amihud and Mendelson (1986 and 2000).

The goal of this paper is to explore the potential linkages between transparency, risk, and liquidity by 1) examining whether a firm's voluntary disclosure practices influence its financial market liquidity, and 2) testing whether these relations are materially influenced by a firm's organizational complexity. The focus of our analysis is on the real estate investment trust (REIT) industry. REITs face unique tax, regulatory, and operating environments, which alter their economic incentives in meaningful ways. Of particular import, REITs are able to take advantage of pass-through status and avoid corporate level federal income taxation as long as they distribute at least 90% of their taxable income to shareholders in the form of dividends. These distribution requirements are likely to preclude REITs from retaining sufficient cash to fund capital projects, and thus, REITs with growth ambitions are often forced to become frequent issuers of both debt and equity securities.[2] To the extent the market penalizes financial opacity with higher capital costs, REITs should have strong incentives to strive for financial transparency. Consistent with this notion, Hardin and Hill (2008) find REITs proactively manage the discretionary component of their dividend policy to minimize future financing costs. The current investigation extends this rationale and posits that financial transparency is not limited to dividend policy, but rather encompasses multiple dimensions of firm discretionary behavior including accounting disclosures.

As a preview of our results, we find that REIT financial market transparency is improved for firms that choose to overinvest in audit services and for firms that convey greater financial transparency via the linguistic structure of their annual reports. These effects are more

[2] In practice, large non-cash (e.g., depreciation) expenses for many REITs weaken the binding nature of these distribution requirements. For example, Wang, Erickson, and Gau (1993), Bradley, Capozza, and Seguin (1998),and Kallberg, Liu, and Srinivasan (2003) – among others – all report average REIT payout ratios well in excess of those mandated by regulation, suggesting REITs maintain at least some flexibility with regard to such distributions.

pronounced for firms that have higher costs of capital – and thus a greater incentive to improve financial market transparency.

Our paper proceeds as follows; Section II discusses the literature and develops our hypothesis. Section III presents our method and data. Section IV examines the univariate results. Sections V and VI explore the relation between financial disclosure and liquidity and finally, section VII concludes.

II. Literature Review

To motivate the current investigation, we draw from the literature in the fields of finance, accounting, and real estate. We measure financial market transparency using market microstructure measures of the firm's bid-ask spread, as developed in the finance literature. We operationalize our metrics of firm discretionary disclosure levels, using tools from the accounting and auditing literature. Finally, we consider several complexity and risk measures that are unique to real estate and, more specifically, to REITs, that have been developed in the real estate literature.

Financial Market Transparency

The finance literature recognizes a conceptual linkage between asymmetric information surrounding a firm's value and the firm's financial market liquidity. For example, Glosten and Milgrom (1985) develop a theoretical model that demonstrates asymmetric information can produce trading frictions in non-transparent security markets. They further conclude that spreads increase as informed traders' information improves and as informed trades become more

numerous relative to liquidity trades. Thus, bid-ask spreads may reflect in part, the magnitude of information asymmetries faced by financial market participants.

Within real estate markets, a number of investigations have examined firm characteristics through a microstructure paradigm. While conventional wisdom posits that legal and regulatory requirements within this industry inherently promulgate firm transparency, empirical investigations (e.g., Damadoran and Liu (1993), Below, Kiely, and McIntosh (1995), Wang, Erickson, and Chan (1995), Wang, Erickson, Gau, and Chan (1995), Glascock, Hughes, and Varshney (1998), Danielsen and Harrison (2000 & 2007), Anglin et al. (2011), Chatrath, Christie-David, and Ramchander (2012), and Tidwell et al. (2013)) consistently document informational advantages accruing to REIT insiders which manifest themselves in the form of reduced financial market liquidity. Accordingly, we employ two measures of the firm's bid-ask spread as our primary metrics of the firm's financial market liquidity.

Accounting Function Disclosure Metrics

All publicly traded firms, including REITs, are required to periodically file financial statements in order to disclose their operating and financial positions. To add credibility to these disclosures, public firms employ independent third-party auditors.[3] Although the engagement of an outside auditor is required by regulation, the development of independent audit activities predates these regulatory requirements, and today banks also frequently require non-public companies to have their financial statements audited. Thus, in addition to meeting regulatory

[3] While more than two dozen REIT auditors are active within this arena, the vast majority (86.6%) of sample firms employ high profile, "Big Four" auditors to add credibility to their financial disclosures. Including Arthur Andersen, BDO Seidman, and Grant Thornton in this list increases coverage to 94.4% of sample firm year observations. None of the remaining auditors account for even 1% of sample observations.

requirements, audit activities lubricate the provision of capital in financial markets and may impact the cost of capital for firms.

An extensive literature within accounting describes the determinants of the audit fees paid by individual organizations.[4] These studies conclude that firm size, profitability, and the complexity of the organization's activities are important determinants. A related strand of the literature builds upon this foundation, and suggests that there should be a positive relation between the level of audit fees paid by a firm and the quality of the audit received.[5] To the extent that audit quality is correlated with audit fees, firms that anticipate accessing capital markets should be particularly willing to invest in "premium" audit services in an effort to add credibility and certification to the firm's financial disclosures, as the enhanced transparency should decrease the firm's cost of raising external capital. For example, Beatty (1989) and Firth and Liau-Tan (1998) argue that the certification value of an audit is particularly important for firms conducting an IPO. Indeed, firms at the IPO stage that contract for premium-priced audits appear to enjoy higher offering prices for their stock. Rauterkus and Song (2005) demonstrate that audit quality is also important for firms at the SEO stage.

Similarly, Krishnamurthy, Zhou, and Zhou (2006) find that after the Enron scandal in 2001, other clients of Arthur Andersen (Enron's auditor) found raising capital via the SEO market to be more expensive. Danielsen, et al. (2009) note that audit-quality certification should be uniquely important to REITs as they frequently raise external capital. This argument is further supported by the conclusions of both Gokkaya, Hill, and Kelly (2013) who find gross underwriting spreads on REIT SEOs are inversely related to firm liquidity, and Anglin, et al.

[4]See, for example, Simunic (1980), O'Keefe, Simunic, and Stein (1994), Pong and Whittington (1994), and Whisenant, Sankaraguruswamy, and Raghunandan (2003).
[5] Support for this contention may be found in Arnett and Danos (1979), Simunic (1980), and Lennox (1990).

(2011) who conclude enhancing the quality of a REIT's audit committee reduces informational asymmetries, observable bid-ask spreads, and the cost of raising external funds. With the foregoing in mind, we use the abnormal investment in audit services as a measure of a REIT's discretionary disclosures.

The accounting literature has also begun examining whether the linguistic structure and presentation design of firm disclosures provide value-relevant information to the marketplace. Adapting insight from computational linguistics, Pennebaker and King (1999) contend that linguistic style may be used as a reliable psychometric indicator, and deviations from expected word usage patterns may be indicative of a respondent's motivations in supplying requested information. Following this paradigm, Li (2008) documents that profit persistence is related to the readability of a firm's annual reports and that the annual reports of poorly performing firms tend to be more difficult to read. Finally, Dempsey et al. (2012) apply these constructs within the REIT market place and find evidence that firm performance is negatively related to the opacity of firm disclosures. Taken together, these findings suggest the linguistic complexity of firm disclosures may well be value relevant and useful to our analysis.

Asset-Based Complexity Metrics

By law, REITs must generate the vast majority of their operating income from real estate related activities. However, the nature of a REIT's asset holdings should be of importance when assessing the riskiness of the financial market liquidity of the firm. We therefore consider two dimensions of REIT asset structure: property type investment focus and diversification level.

We expect that mortgage and operating REITs may be more difficult to value given the significant managerial effort to continuously and productively redeploy the relatively high

periodic cashflows associated with their operations.[6] Furthermore, while well-informed market analysts certainly exist within each property type segment, firms diversifying across multiple property types may require more effort to analyze and accurately value than their "pure play" counterparts.[7]

Additional Firm Specific Measures of Complexity

We consider several other sources of firm complexity that might impact liquidity. First, regulatory competition across individual states significantly influences both corporate and firm governance practices. While Delaware dominates the incorporation marketplace for most industries, Subramanian (2001) documents that the majority of REITs and other investment companies incorporate in Maryland. Hartzell, Kallberg, and Liu (2008) argue the state's regulatory structure insulates firm management from external pressures. Such policies may foster managerial entrenchment, engender agency conflicts between managers and stockholders, and lead to reduced financial market transparency.

Second, umbrella partnerships or UPREIT structures may exert multiple influences over the relative liquidity of the organization. For example, these structures may add an additional layer of complexity to the firm's operations, engender incentive conflicts and agency problems, and thereby decrease firm transparency. On the other hand, organizing as an UPREIT facilitates REIT acquisition and expansion activities, as the contributions of assets to the partnership can be made (in exchange for ownership units of the partnership) without having to explicitly recognize the capital gains from such a transaction for tax purposes. Sinai and Gyourko (2004)

[6] Danielsen and Harrison (2000 & 2007) provide empirical support for this contention. To the contrary, both Devos, Ong, and Spieler (2007) and Blau, Hill, and Wang (2010) provide evidence suggesting mortgage REITs may well be more transparent than their equity REIT counterparts.

[7] See, for example, Benveniste, Capozza, and Seguin (2001) and Capozza and Sequin (2003).

demonstrate that these expected tax savings are capitalized into the market valuation of UPREIT shares, while Han (2006) argues owners of UPREIT partnership units obtained via property contributions are effectively locked into their holdings (to avoid recognition of taxable gains) and thus possess uniquely strong incentives to monitor the behavior and activities of firm management. To the extent that such enhanced valuation and/or monitoring increases the attractiveness of these firms; the liquidity of UPREITs may be higher than their non-UPREIT counterparts.

Finally, in addition to audit services, auditing firms have historically provided non-trivial consulting and other non-audit services to the firms they audit. In many cases, the revenue generated by such non-audit related activities substantially exceeds the revenue from the auditing function. As such, concerns have been raised over whether such activities create a conflict of interest.[8] Even if non-audit fees do not cloud the auditor's judgment, these fees likely reflect organizational complexities that would be difficult for financial markets to fully understand and may well be associated with reduced financial transparency.[9]

III. Data and Method

As the goal of our paper is to examine relations between a firm's accounting transparency, complexity, and market liquidity, we begin assembling our dataset by defining our liquidity metrics. We focus on market microstructure based measures of transparency; specifically the firm's bid-ask spread, which is an inverse measure of liquidity. We define our two key spread metrics as follows:

[8] See, for example, Frankel, Johnson, and Nelson (2002).
[9] While the Sarbanes-Oxley Act of 2002 dramatically reduced the relative importance of non-audit related fees to auditing firms, REITs continue to contract for such services on a limited basis.

$$Bid\ Ask\ Spread_{it} = Closing\ Ask\ Price_{it} - Closing\ Bid\ Price_{it} \quad (1)$$

$$Percentage\ Spread_{it} = \frac{Bid\ Ask\ Spread_{it}}{Quote\ Midpoint_{it}} \quad (2)$$

Where *Closing Bid Price*$_{it}$ represents the last observable purchase price offered by market makers on security *i*, at time *t*; *Closing Ask Price*$_{it}$ represents the last observable selling price offered by market makers on security *i*, at time *t*; and the *Quote Midpoint*$_{it}$ represents the midpoint of the last observable bid and ask quotations for security *i*, as of time *t*.[10]

As our spread metrics are both based upon binding commitment offers from market makers, they should provide a representation of the liquidity costs incurred by a typical, uninformed trader. Data to calculate these liquidity metrics is obtained from the Center for Research in Security Prices (CRSP) database for the years 2000-2011. To ensure the robustness of our estimated spread metrics, and following the approach of previous microstructure researchers, we ignore observations which: 1) are characterized by negative bid-ask spreads; 2) possess bid-ask spreads of greater than $4 per share; 3) exhibit bid or ask prices less than zero; 4) indicate the closing price or volume for a trading day is zero; 5) report sizable deviations (greater than 10%) from previously reported closing-bid, closing-ask, or closing prices.[11]

To test our hypothesis, we regress average daily closing spreads aggregated by month against firm disclosure and complexity characteristics measured as of the end of the preceding year. We include fixed effect, time (month) dummies across all our empirical

[10] As Cannon and Cole (2011) document little to no discernible impact within REIT markets between using end of day microstructure characteristics and aggregating complete transactions level histories on each security, for simplicity we rely exclusively upon end of day quotations.

[11] The NYSE and AMEX completed their transition to decimalization on January 29, 2001, while the NASDAQ completed its transition on April 9, 2001. While these conversions took place during our sample period, they do not appear to materially influence our focal results as all Table 3, 4, and 5 results are qualitatively robust to the exclusion of pre-decimal observations. See, Chakravaty, Wood, and Van Ness (2004) and Hardin et al. (2007) for further details on the potential importance of decimalization in REIT and broader financial markets.

specifications.[12]Finally, we restrict our sample to firms whose fiscal year ends in December in order to align information releases of firms roughly equally throughout the year.[13]

We augment our microstructure data with firm specific trading characteristics and accounting information compiled from Audit Analytics, CRSP, Compustat, and SNL Financial. Specifically, we capture additional microstructure information for each firm including: 1) the average number of daily trades for each security, 2) the average daily size of trade, 3) the daily closing stock price, 4) the monthly average of the daily standard deviation of the end-of-day quote mid-point, and 5) the presence of FactSet analysts providing earnings (FFO) estimates for the firm.[14] Our empirical specifications also include controls for four additional market based variables previously found to significantly influence observable bid-ask spreads: 1) a dummy variable for where the firm's securities are traded, 2) the log of the market value of equity, 3) the firm's market to book ratio, and 4) the firm's debt to the market value of assets ratio.[15]

We define three key explanatory disclosure variables. First, we postulate that excess audit fees will be directly related to a firm's financial transparency, and thus will be associated with enhanced market liquidity. We measure this overinvestment in audit fees as the residuals from a traditional regression model of audit fee determinants. Whisenant, Sankaraguruswamy, and Raghunandan (2003) argue audit fees compensate audit providers for both the effort required

[12] Such time controls are necessary to account for improvements in REIT liquidity over time as documented by Bhasin, Cole, and Kiely (1997) and Clayton and MacKinnon (2000), and should also mitigate the impact of regularly scheduled, interim firm disclosures such as quarterly financials (10-Q).
[13] In practice, this is a relatively minor issue, as the large majority of REITs employ December fiscal year ends. Additional robustness checks restricting our analysis to a single calendar month (e.g., January, February, etc.) produce qualitatively similar results.
[14] For insight and discussion on the superiority of FFO as a REIT earnings benchmark see Vincent (1999), Higgins, Ott, and Van Ness (2006), Downs and Guner (2006), and Ben-Shahar, Sulganik, and Tsang (2011), among others.
[15] Within the REIT literature, firm size has been used as both a scale metric and as a proxy for geographic diversification. To the extent such size considerations lower a REIT's exposure to idiosyncratic risk, broader holdings may increase the firm's market liquidity. For further information on the relation between idiosyncratic risk and firm size in REITs see Chaudhry, Maheshwari, and Webb (2004) and Ooi, Wang, and Webb (2009).

to certify the firm's financial statements, and the risks associated with audit failure. However, firms with more complex, risky, or opaque assets and operations should be charged higher fees. Danielsen et al. (2009) apply this line of reasoning to REIT markets, and conclude that payments to auditors in excess of those predicted by the operational characteristics of the organization are correlated with market liquidity. Therefore, to measure a firm's overinvestment in audit services, we capture the residuals from the following OLS regression model:[16]

$$\begin{aligned} ln[Audit\ Fee] = {} & \beta_0 + \beta_1 ln[Assets] + \beta_2 ln[Employees] + \beta_3 Leverage + \beta_4 Liquidity \\ & + \beta_5 Invrec + \beta_6 ROA + \beta_7 Initial + \beta_8 Foreign\_ops + \beta_9 Loss \\ & + \beta_{10} Sales\_growth + \beta_{11} Qualified\_opinion + \beta_{12} Employee\_plans \\ & + \beta_{13} Book\text{-}to\text{-}market + \beta_{14} Disc\_ops + \beta_{15} Restates + \beta_{16\text{-}25} Prop\_types \\ & + \beta_{26} E\_REIT + \beta_{27} MTG\_REIT + \varepsilon \end{aligned} \quad (3)$$

where the expected determinants of REIT audit fees are:

Assets = Total Book Value of Assets,
Employees = Number of Full-Time Equivalent Employees,
Leverage = Total Debt/Total Assets,
Liquidity = Total Current Assets/ Total Current Liabilities,
Invrec = [Inventories + Accounts Receivable]/Total Book Value of Assets,
ROA = Net Income/Total Book Value of Assets,
Initial = 1 if the auditor is in the first or second year of audit engagement with the firm, 0 otherwise,
Foreign_ops = 1 if the firm reports foreign operations, 0 otherwise,
Loss = 1 if the firm reported negative net income in either of the previous two fiscal years, 0 otherwise,
Sales_growth = Growth rate in total revenues over the previous fiscal year,
Qualified_opinion = 1 if the firm received a qualified opinion in either the current or previous fiscal year, 0 otherwise,
Employee_plans = 1 if the company has an employee pension plan, 0 otherwise,
Book-to-market = the firm's book to market ratio as of the end of the fiscal year,
Disc_ops = 1 if the company reported extraordinary items or discontinued operations during the fiscal year, 0 otherwise,
Restates = 1 if the firm restated net income or assets for reasons other than an accounting rule change or adoption of a new method, 0 otherwise,

[16] Our empirical results are qualitatively robust to more parsimonious model specifications focusing exclusively on size, growth, profitability, and property type investment focus. While these alternative models are perhaps more directly relevant to REIT markets, to maintain consistency with the existing literature we employ the residuals from this fully specified audit fee model throughout all tabulated model specifications which follow.

Prop_Types = 1 if the REIT operates in a given property type sector, 0 otherwise,
E_REIT = 1 if the firm was an equity REIT, 0 otherwise,
MTG_REIT = 1 if the firm was a mortgage REIT, 0 otherwise.

Higher residuals from this model reflect excess investment in audit services, which should enhance financial transparency and liquidity, and thus result in lower bid-ask spreads.

Our next two measures of accounting disclosure transparency involve the content analysis of the firm's annual report. To capture the impact of linguistic style and composition on financial transparency and liquidity, we include both the Flesch Reading Ease Index and the length of the firm's annual report as explanatory variables in our bid-ask spread regressions.[17] The Flesch Reading Ease Index is calculated as 206.835 – (1.015**ASL*) – (84.6**ASW*). Where *ASL* equals the average sentence length (in words) across the entire document and *ASW* equals the average syllables per word. Flesch Reading Ease Index values range from 0 to 100, with higher scores considered more accessible and easier to read. Index values of less than 30 are equivalent to college level text or above. In general, corporate annual reports are written at a relatively complex level. For example, Schroeder and Gibson (1992) find that the average corporate annual report is written at a grade level index of 14.7, while Dempsey et al. (2012) find substantive increases in the average reading grade level competency required to successfully access and interpret REIT annual reports over time. Although higher-grade level indices are often indicative of lower readability, more technical disclosures (i.e., those written at higher levels) may well be more informative to the marketplace. Given that disclosure quality has probably improved over time, the finding that grade level accessibility scores have risen in recent years suggests that high disclosure levels require (or at least accompany) sophisticated

[17] For a complete description of the Flesch Reading Ease Index and its development, see Flesch (1948) and Kincaid, et al. (1975). Unreported regression results which employ the Flesch-Kincaid Grade Level Index produce qualitatively identical results.

disclosure language. Similarly, we also include the natural log of the number of words contained in the annual report as an additional computational linguistic measure. Once again, the enhanced disclosure contained in the longer reports may well enhance the transparency of the firm's technical operations to interested market participants. As with the Flesch Reading Ease Index, Dempsey et al. (2012) report a dramatic increase in the length of REIT annual reports over time.

Finally, we include several metrics intended to capture alternative dimensions of firm complexity and risk. As outlined above, REITs focusing their investment activities within a single property segment are likely easier to value, and will have lower levels of information asymmetry. We therefore create a dummy variable (PUREPLAY) identifying those firms focusing their investment activities within a single property type sector. Similarly, as financial and intangible assets may be uniquely difficult to value, we also create a dummy variable identifying those sample firms which focus their business activities on operating and managing existing properties, as opposed to those taking direct equity positions in the underlying real asset or holding a mix of claims. We also include dummies for Maryland incorporation and the UPREIT organizational form.

Our final firm-specific complexity metric relates to consulting fees paid to auditors. To the extent that consulting relationships may cloud auditor objectivity, we expect excess payments of non-audit fees to increase a firm's informational opacity. Similar to our abnormal audit fee metric above, and following the approach of Danielsen et al. (2009), we measure abnormal non-audit fees as the residual of the following OLS regression:

$$ln[\text{Non-Audit Fees}] = \beta_0 + \beta_1 ln[\text{Assets}] + \beta_2 ln[\text{Industry\_Assets}] + \beta_3 ln[\text{Industry\_Non-Audit\_Fees}] + \varepsilon \quad (4)$$

where:

Non-Audit Fees = the auditee's non-audit fees paid to the auditor,
Assets = the total book value of assets for the auditee,
Industry_Assets = the average total asset level for all sample REITs operating within the same property type segment as the auditee, and
Industry_Non-Audit_Fee = the average non-audit fees paid by all sample REITs operating within the same property type segment as the auditee.

We expect the payment of abnormally large non-audit fees to be associated with decreased informational transparency, and thus higher bid-ask spreads.

IV. Univariate Results

Table 1 provides descriptive statistics of market microstructure, trading, and other characteristics for the firms in our sample. The table aggregates all 14,173 firm-month observations, from 129 unique REITs, for each variable employed in our subsequent multivariate analysis.[18]

Beginning with our market microstructure variables, sample firms face an average bid-ask spread of 10.8 cents, while percentage spreads average 0.628%. We observe considerable variation across firm trading volumes, with some firms averaging less than 1 million shares traded per month and others averaging over 1 million shares traded per day. Similarly, 6.6% of sample firms have no analyst following, while others report more than 50 analyst estimates of expected future funds from operations (FFO). We also note that the vast majority (92.9%) of our sample REITs are traded on the New York Stock Exchange (NYSE). The market capitalization of our sample firms averages slightly more than $2.1 billion, ranging from less than $2.5 million for both InnSuites Hospitality Trust in 2003 and HMG/Courtland Properties, Inc. in 2009 to more than $28.8 billion for Simon Property Group in 2010. Consistent with previous REIT

[18] Audit fee information was only available for 12,291 firm-month observations.

capital structure research, sample firms also exhibit relatively high leverage relative to their non-REIT peers, with debt ratios averaging slightly over 50% of total assets.[19]

Turning to our accounting disclosure metrics, the typical REIT in our sample spent more than $900,000 annually on audit fees, with actual fees for services ranging from $6,700 paid by Roberts Realty Investors, Inc. to Arthur Andersen LLP in 2002, to more than $15.5 million paid by Weyerhaeuser Co. to KPMG LLP in 2006.Figure 1 provides further information regarding the temporal distribution of these fees, both on an aggregate and excess basis. Not surprisingly, we see a sharp increase in the payment of both audit and abnormal audit fees surrounding the passage and implementation of the Sarbanes-Oxley Act of 2002. Raw fees have continued to trend slightly higher since that time, while the unexplained component of these fees has moderated in recent years. Returning to Table 1, consistent with prior findings, the annual reports in our sample are written at a relatively complex, collegiate grade level with Flesch Reading Ease Index scores averaging in the low 20s. The length of REIT 10-k's range from only 7,293 words (Ceder Realty Trust, Inc. – 2003/2004) to 363,433 words (Strategic Hotels and Resorts, Inc. – 2006), with an average of 57,021 words.

Finally, with respect to firm complexity issues, many firms historically paid large fees to their auditors for non-auditing (often consulting) services. While many sample firms did not purchase any non-audit services, ten sample firms spent more than $2 million in a single year on these activities, with three of those spending more than $5 million. At the extreme, Apartment Investment & Management Co. paid $20.9 million to Ernst & Young for non-audit related services in fiscal year 2000. Continuing, 87.2% of sample firms focus exclusively on investments of a single property type, while only 2.8% are classified as operating REITs.

[19] See, for example, Feng, Ghosh, and Sirmans (2007) and Harrison, Panasian, and Seiler (2011).

Consistent with the findings of Hartzell, Kallberg, and Liu (2008), over two-thirds of our sample firms are incorporated in Maryland, while roughly three quarters (77.4%) are UPREITs.

V. Accounting Transparency as a Determinant of Financial Market Liquidity

To evaluate the influence of audit fees on firm liquidity, we estimate standard OLS regression models of the following general form:

$$[\text{Bid-Ask Spread}] = \beta_0 + \beta_1[\text{Volume}] + \beta_2\text{Price} + \beta_3[\text{Standard Deviation of Quote Midpoint}] + \beta_4[\text{Analyst Coverage}] + \beta_5[\text{Exchange=NYSE}] + \beta_6 ln[\text{MVE}] + \beta_7[\text{Market-to-Book Ratio}] + \beta_8[\text{Leverage}] + \beta_9[\text{Abnormal Audit Fees}] + \beta_{10}[\text{Flesch Reading Ease Index}] + \beta_{11}[\text{Annual Report Length}] + \beta_{12}[\text{Abnormal Non-Audit Fees}] + \beta_{13}[\text{Pureplay Dummy}] + \beta_{14}[\text{Operating REIT Dummy}] + \beta_{15}[\text{Maryland Dummy}] + \beta_{16}[\text{UPREIT Dummy}] + \varepsilon \quad (5)$$

Focusing on our accounting function disclosure metrics, we posit that accounting transparency should be rewarded with reduced bid-ask spreads. As such, we expect over-investment in audit services (β_9) to lower spreads. Our linguistic measures are more complicated. While high Flesch Reading Ease Index values and short prose denote greater readability, greater disclosure may require more sophisticated language and longer reports. Thus, while we anticipate a positive sign on β_{10} and a negative sign on β_{11}, we acknowledge that longer, more complicated prose might facilitate managerial obfuscation or confuse readers.

The payment of non-audit related fees (β_{12}) to company auditors may create potential liquidity-reducing agency problems, or they may simply signal that the firm engages in complex operations or transactions. Either way, β_{12} would be positive. Firms focusing their investment activities within a single property type sector (β_{13}) should be relatively easy to value, characterized by relatively low information asymmetries, and thus exhibit lower bid-ask spreads. Likewise, to the extent operating REITs generate cashflows from relatively opaque leasing and

management activities, these firms may well be harder to value and carry higher spreads (β_{14} positive). Alternatively, to the extent operating REITs have a well-established client/tenant base, which generates stable and secure cashflows, these firms should be relatively easy to value and exhibit reduced spreads (β_{14} negative). Given Maryland's management friendly environment the Maryland REIT Dummy (β_{15}) is expected to capture potential agency problems and carry a positive sign, while UPREIT status (β_{16}) may well induce higher or lower spreads depending upon the relative importance of complexity, growth options, and monitoring.

Table 2 presents the results for various versions of this empirical specification. Model I regresses bid-ask spreads against our microstructure attributes, asset and structural complexity metrics, and employs abnormal audit fees as our measure of accounting disclosure transparency. In general, the results conform well to our expectations. Higher closing prices are associated with increased spreads, consistent with the notion that higher prices expose market makers to increased inventory holding risk associated with providing immediacy to the marketplace.[20] Similarly, the presence of analyst coverage for the firm appears to reduce informational asymmetries and reduce spreads. NYSE firms have larger bid-ask spreads, a result which is attributable to the higher stock prices of NYSE firms relative to their NASDAQ counterparts. This result is reversed when relative spreads (i.e., spreads standardized by the bid and ask quote mid-point) are considered.

As expected, larger firms have fewer information concerns and are associated with reduced spreads, while firms with greater growth options (as measured by higher Market-to-Book ratios) are characterized by larger spreads. Firm leverage exhibits a negative sign,

[20] Bertin et al. (1995) find the costs of providing immediacy to be 7% higher for REITs than for non-REITs.

consistent with the disciplinary role of debt. However, we note that this relation is reversed when percentage spreads are considered.

Examining firm complexity metrics, our results generally conform to expectations. For example, the payment of excessive non-audit fees to the company's auditor reduces financial market transparency, while more focused "pure play" firms are rewarded with lower spreads. Operating REITs exhibit lower spreads, while our Maryland REIT indicator exhibits an unexpected (though insignificant) negative sign. Consistent with the arguments of Sinai and Gyourko (2004) and Han (2006) that UPREITs are uniquely attractive to investors, our UPREIT flag also exhibits a negative sign indicative of enhanced liquidity for these firms. As our other model specifications that follow report similar findings for these microstructure and complexity metrics, for brevity, we limit our discussion of these variables throughout the remaining text.

Turning now to our accounting transparency measures, in Model I abnormal audit fees are associated with reduced bid-ask spreads. More specifically, a $1,000,000 increase in the level of auditing expenses is associated with an approximate $0.02 per share decline in raw spreads. This is entirely consistent with our underlying hypothesis that enhanced disclosure certification improves financial transparency. Further, these effects manifest themselves in the form of improved market liquidity through reduced bid-ask spreads. Model II alters the disclosure proxy and employs the Flesch Reading Ease Index. As expected, firms with easy to read, simplistic annual reports exhibit higher spreads. This result is consistent with the notion that more technical and complete disclosures, which are likely more dense and difficult to read/access by the lay public, are rewarded by the market with enhanced liquidity and lower bid-ask spreads.

Model III again alters the accounting transparency metric, this time to examine the natural log of the length (in words) of each firm's annual report. Consistent with both expectations and the results from model II, longer and more complete disclosures are associated with increased informational transparency and lower spreads in the marketplace. Finally, Model IV presents the results from our fully specified model including all three accounting disclosure metrics simultaneously. Under this specification, all three accounting disclosure metrics continue to be associated with reduced spreads, with all three measures retaining their strong statistical significance.[21] Taken together, the results presented in Table 2 are strongly supportive of our hypothesis that increased accounting disclosure enhances a REIT's market liquidity.

Table 3 alters the unit of analysis to examine each firm's percentage spread, while retaining the same general format and expectations as in the preceding analysis. Examining the classic microstructure attributes, most of the variable coefficients carry the anticipated sign and exhibit high levels of statistical significance. For example, higher share prices continue to be associated with higher spreads, while analyst coverage serves to reduce informational opacity and enhances firm liquidity. Similarly, larger firms and those listed on the New York Stock Exchange are both characterized by reduced bid-ask spreads on a relative basis. Additionally, and consistent with the aforementioned arguments on financial transparency and the capital constrained nature of REITs, the coefficient estimate on our market-to-book variable is significantly negative. Finally, while our positive coefficient estimates on our leverage ratios

[21]Untabulated results examining the level of auditing expenses rather than excess auditing expenses provide qualitatively identical results. Similarly, unreported models employing changes in bid-ask spreads associated with changes in discretionary disclosure metrics provide qualitatively similar, but statistically less robust findings. Finally, we also note our focal results are robust to the exclusion of micro-REITs across multiple thresholds (e.g., $10M, $20M, and $50M).

across all four models are reversed from those reported in Table 2, they are consistent with the notion of leverage increasing the volatility of the residual cash flows accruing to equity holders.

We find that the payment of fees to auditors for non-audit related activities is viewed with great suspicion by the marketplace and increases relative bid-ask spreads. As with raw spreads, pure play REITs and operating REITs appear to be associated with enhanced informational transparency and reduced spreads. On the other hand, REITs incorporated in Maryland and those organized as umbrella partnerships both continue to exhibit negative associations with spreads quoted by market makers.

Examining our disclosure metrics, in Model 1 we observe firms increasing their investment in audit services are rewarded with reduced relative bid-ask spreads. Consistent with the results of Table 2, a $1,000,000 increase in abnormal audit fees is associated with an approximately 0.1 percentage point ($0.03 per share) reduction in spreads. In addition, the linguistic disclosure metrics employed in models II and III are both significant. Specifically, more technical and complete corporate disclosures (i.e., those with either lower Flesch Reading Ease Index values or longer report lengths) are rewarded with enhanced market liquidity and lower bid-ask spreads. Model IV reveals all of these metrics are robust to the simultaneous inclusion of each alternative metric. In sum, we view these results as strongly supportive of the thesis that greater accounting transparency is rewarded with increased market liquidity.

VI. High Cost-of Capital Firms

To this point the central thesis of this study has been that REIT managers who invest in additional disclosure are rewarded with improved corporate transparency and liquidity. One implication of this hypothesis is that managers of high-quality firms, who otherwise face a high

cost of capital, have a strong incentive to signal their type by improving accounting function transparency. As such, markets should be particularly sensitive to accounting transparency when the cost of capital for a firm is high, or when the firm is likely to need external funding to finance growth opportunities.

In order to test this hypothesis, we first compute the implied cost of capital for each stock, on an annual basis, using a modified version of the approach presented in Lee, Myers, and Swaminathan (1999) and Gebhardt, Lee, and Swaminathan (2000). This technique employs the residual income valuation model which has a long history in the accounting literature.[22] The model itself equates the value of the firm's stock price to the current book value plus the present value of residual income or abnormal earnings (i.e. earnings above the required dollar return on capital).[23] The basic setup of the residual income model is as follows:

$$\begin{aligned} P_t &= B_t + \sum_{i=1}^{\infty} \frac{E_t\left[NI_{t+i} - r_e B_{t+i-1}\right]}{(1+r_e)^i} \\ &= B_t + \sum_{i=1}^{\infty} \frac{E_t\left[(ROE_{t+i} - r_e) B_{t+i-1}\right]}{(1+r_e)^i} \end{aligned} \tag{6}$$

where:

P_t=stock price at time t
B_t=book value at time t
$E_t[.]$ = expectation based on information available at time t
NI_{t+i} = Net Income for period t+i
r_e=cost of equity
ROE_{t+i}=after tax return on book equity for period t+i

As with economic value added, the model presumes that abnormal earnings (i.e. NI > r_eB) cannot persist indefinitely. Rather, it is presumed that firms with positive abnormal

[22] For examples of early use of the residual income model, see Ohlson (1995) and Feltham and Ohlson (1995). See Bernard (1995) for an examination of the strengths and weaknesses of such residual income approaches to firm valuation applications.

[23] With the assumption of clean surplus accounting, the residual income model is equivalent to the dividend discount model. Clean surplus accounting merely states that current book equity equals last year's book equity plus earnings less dividends.

earnings will see their competitive advantage erode through time, while conversely firms with negative abnormal earnings are presumed to see performance improvements as management (or new management) takes corrective actions. In practice, these presumptions must be operationalized. Consistent with the previous literature, we adopt a relatively simplistic approach that presumes the firm will eventually produce annual income as a level perpetuity and fade the terminal abnormal earnings at the inflation rate. Practical estimation of equation 6 requires that we generate known inputs for all variables except r_e, the implied cost of equity capital, which we estimate by iteration. Since equation 6 is an infinite series, we use explicit earnings forecasts for the first 2 years and treat the third year forecast as a terminal perpetuity. Our basic implementation of the model is as follows:

$$P_0 = B_0 + \frac{(ROE_1 - r_e)B_0}{(1+r_e)^1} + \frac{(ROE_2 - r_e)B_1}{(1+r_e)^2} + \frac{(ROE_3 - r_e)B_2}{r_e(1+r_e)^2} \quad (7)$$

For both simplicity and to ensure complete coverage across all sample observations, we compute ROE using actual realized earnings. This perfect foresight approach is equivalent to assuming zero analyst forecast error. Where third year earnings are unavailable, we apply the forecasted long-term growth rate to the second year forecast. When there is no long term growth rate, we use the second year growth rate to proxy for the third year forecast.

Book equity is forecasted for each year using the clean surplus relation:

$$B_t = B_{t-1} + NI_t - DIV_t . \quad (8)$$

where DIV_t is the forecasted dividend for year t. Given that REITs are required to pay out at least 90% of taxable income as dividends, we assume that for positive earnings firms DIV_t =

$0.85*FFO_t$.[24] Price, the left hand side variable, is the CRSP stock price at the end of each month in the forecast. The implied cost of capital, r_e, is found through solving equation 7 by iteration.

Using the forgoing method, we estimate the cost of capital for each firm in each year. The implied forward-looking cost of equity capital averages13.2% across the sample firms. These estimates seem reasonable to us, particularly given both the real asset nature of many REIT investment holdings and the inclusion of micro-REITs within our sample. That said, we also note that the accuracy of these point estimates is of little relative importance. Rather, the cross-sectional rank ordering of each firm's cost of capital is what matters, and we assume that a reasonable mean signifies a reasonable cross-sectional rank-ordering.

The remainder of this section interacts the cost of capital measurewe have created with our array of accounting disclosure metrics in the following general specification:

$$\begin{aligned}
&[\text{Percentage Bid-Ask Spread}] = \beta_0 + \beta_1[\text{Volume}] + \beta_2\text{Price} \\
&+ \beta_3[\text{Standard Deviation of Quote Midpoint}] + \beta_4[\text{Analyst Coverage}] \\
&+ \beta_5[\text{Exchange=NYSE}] + \beta_6 ln[\text{MVE}] + \beta_7[\text{Market-to-Book Ratio}] + \beta_8[\text{Leverage}] + \beta_9 \\
&[\text{Abnormal Audit Fees}] + \beta_{10}[\text{Flesch Reading Ease Index}] + \beta_{11}[\text{Annual Report Length}] \\
&+ \beta_{12}[\text{Abnormal Non-Audit Fees}] + \beta_{13}[\text{Pureplay Dummy}] \\
&+ \beta_{14}[\text{Operating REIT Dummy}] + \beta_{15}[\text{Maryland Dummy}] \\
&+ \beta_{16}[\text{UPREIT Dummy}] + \beta_{17}[\text{Implied Cost of Capital}] \\
&+ \beta_{18}[\text{Abnormal Audit Fees} * \text{Implied Cost of Capital}] \\
&+ \beta_{19}[\text{Flesch Reading Ease Index} * \text{Implied Cost of Capital}] \\
&+ \beta_{20}[\text{Annual Report Length} * \text{Implied Cost of Capital}] + \varepsilon \qquad (9)
\end{aligned}$$

The variables associated with $\beta_0$throughβ_{16}inequation 9 are identical to those found in equation 5. The new coefficients with which we are primarily concerned are β_{17} throughβ_{20}.Ex-ante, we expect firms with high implied costs of capital to exhibit wider spreads (β_{17} positive), but of greater interest is whether financial markets are more sensitive to accounting transparency for

[24] Our empirical results are qualitatively robust to the selection of alternative expected dividend models which vary either the expected payout ratio (80% - 95%) or the earnings benchmark from FFO to net income or net operating income.

firms that have the most at stake in making disclosure decisions. This test rests on the simple assertion that as the cost of capital rises, accounting disclosure efforts are of greater importance to firms, so financial markets should respond by becoming more sensitive to the level of disclosure. The tests of this hypothesis are captured by the coefficients on the interaction terms (β_{18}- β_{20}). If these coefficients follow anticipated sign patterns (β_{18} = negative, β_{19} = positive, and β_{20} = negative), they signify that spreads decline more in response to improved disclosure if the firm otherwise faces a high cost of capital.

Table 4 presents the results of this cost of capital based contingent analysis. Employing the fully specified Model IV in Table 3 as a starting point, each column in Table 4 augments the base case by incorporating the estimated forward-looking cost of equity capital, as well as one or more interaction terms designed to measure the differential impact of accounting transparency for high cost of capital firms. The first three models each add a single interaction between one accounting based disclosure transparency metric and the firm's implied cost of external equity capital. The fourth column includes all three interaction terms simultaneously.

Examining these results, the classic microstructure attributes remain broadly significant and retain their anticipated and/or previously reported directionality across all four model specifications. Similarly, our complexity metrics also consistently exhibit the same sign and significance patterns found previously. Focusing on the coefficients on the interaction terms, we find that all three accounting based disclosure transparency metric interaction terms exhibit both strong statistical significance and carry the hypothesized signs. More directly, as the cost of capital rises, over-investment in audit services and more detailed, technical annual report

disclosures serve to reduce informational opacity and enhance financial market liquidity.[25] We interpret these results as evidence that market responses to disclosure signals are more pronounced when the costs and benefits of sending credible signals are greatest for the signalers.

The tests in Table 5 incorporate information about the firm's growth prospects. Given that liquidity and transparency are most strongly linked for firms with high implied costs of external financing, it follows that the link should be even more pronounced when firms face both high external capital costs andthe likely need to raise capital. Sample REITs exhibitconsiderable variation in their apparent growth options, as proxied by market-to-book ratios. Accordingly, we posit that firms with both high market-to-book ratios and high equity capital costs have the most to gain through enhancing their disclosure transparency.[26]

Table 5 investigates this hypothesis by replacing our simple two-way interactions with three-way interaction terms linking transparency, capital costs, and growth options.The format of Table 5 mirrors that of Table 4. Because nothing of interest substantively changes across our microstructure and complexity metrics, we will not discuss these further. Likewise, the presence of the interaction terms again clouds the interpretation of the un-interacted accounting variable coefficients. This brings us to the interaction terms that motivate this test. We find all three transparency interactions across Models I, II, and III exhibit significantly negative coefficients. These results for Models I and III support the hypothesis that accounting transparency is most valuable to those firms with both high growth prospects and high capital costs. Interestingly, the negative coefficient on the three-way Flesch Reading Ease Index *

[25] We note that the coefficient estimate on the interaction term between abnormal audit fees and the implied cost of equity capital is no longer statistically significant in the fully specified Model IV.

[26] Given the mandatory distribution requirements for REITs, MTB may well be a relatively noisy growth proxy for sample firms. For example, mark-to-market accounting rules, depreciation schedules, and portfolio composition may well materially influence REIT net asset values and MTB ratios in manners not frequently observed for non-REIT entities. Nonetheless, MTB remains a frequently used growth proxy within this market sector.

Implied Cost of Equity Capital * Market-to-Book Ratio interaction provides exactly the opposite interpretation. Fortunately, auditors should be comforted to observe that when all three disclosure transparency interaction terms enter the model simultaneously, all three focal interaction terms exhibit robust statistical significance, and are broadly consistent with the notion that more technical, detailed, and complete accounting disclosures enhance financial transparency. This relation is particularly true for high growth firms with high anticipated capital costs (i.e., those with the most to gain from improved disclosure).

VII. Summary and Conclusions

This study investigates potential relations between accounting transparency, firm complexity, and financial market liquidity. Because REITs are required to distribute most of their income to retain pass-through tax treatment, they have a limited ability to fund growth via the retention of internally generated profits. Instead, REITs must access capital markets on a frequent basis. Thus, REITs are strongly incentivized to engage in activities that facilitate raising capital efficiently.

Audits may be one such mechanism andmay be viewed as a tool by which investors obtain a better understanding of a company's activities and risks. Companies wishing to credibly signal the quality of their accounting disclosures may rationally choose to "over-invest" in the accounting function. Likewise, while a firm's financial statements must conform to minimum disclosure standards, firms may choose to voluntarily convey additional information in their annual filings.

Consistent with our *a priori* expectations, we documentsignificant relations between measures of accounting disclosure transparency and the subsequent financial market liquidity of

REITs. Specifically, we find that REITs which choose to over invest in audit services generate financial disclosures (annual reports) which are viewed as more credible by the marketplace, and are rewarded with enhanced liquidity in the form of reduced bid-ask spreads on both an absolute and percentage basis. Similar results are also found using alternative accounting disclosure transparency metrics borrowed from the field of computational linguistics. Specifically, both the Flesch Reading Ease Index level at which the firm's annual report is written, and the length of the firm's annual report, are related to both absolute and percentage spreads.These findings suggest increased disclosure enhances financial transparency and increases (decreases) firm liquidity (bid-ask spreads).

The final stage of our analysis centers on how the ex-ante cost of equity capital faced by the firm influences the degree to which financial markets incorporate enhanced accounting disclosure efforts into the bid-ask spread. The managers of high-quality firms, who otherwise face a high cost of capital, have a strong incentive to signal their type by improving transparency. Since market participants know that good-quality, high cost-of-capital firms have strong incentives to avoid a pooling equilibrium, markets should be particularly sensitive to accounting transparency when the cost of capital for a firm is high, or when the firm is likely to need external funding to finance growth opportunities. Consistent with this hypothesis, we find strong evidence that the benefits of enhanced accounting transparency accrue more strongly to REITs that otherwise face a high cost of raising capital. Furthermore, these effects are even stronger amongst firms that both possess high growth potential (as measured by MTB ratios) and face high forward-lookingequity capital costs.Taken together, the results of this investigation provide substantive empirical evidence that accounting transparency reduces information asymmetries, and thereby enhances the financial market liquidity of sample REITs.

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Acknowledgements: We would like to thank Mark Moore, Ko Wang, and two anonymous referees for their helpful and insightful comments on previous versions of this manuscript. Any remaining errors are, as always, our own.

Table 1
Descriptive Statistics

Panel A: Market Microstructure Characteristics of Sample Firms				
	Mean	***Std Deviation***	***Min***	***Max***
Raw Spread	0.108	0.195	0.010	3.090
Percentage Spread (%)	0.628	1.232	0.012	16.333
Volume (000s)	691.01	1,399.72	0.630	34,900
Closing Price	28.84	18.76	0.57	99.77
S.D. Of Quote Midpoint	0.823	0.892	0	21.37
Analysts Coverage	0.934	0.248	0	1
Exchange = NYSE	0.929	0.257	0	1
Market Cap. (000's)	2,162.77	3,132.26	2.476	28,800
Log of Market Value of Equity (000's)	13.742	1.486	7.814	17.177
Market-to-Book Ratio	0.633	0.372	0.006	3.174
Leverage	0.516	0.170	0	1.335

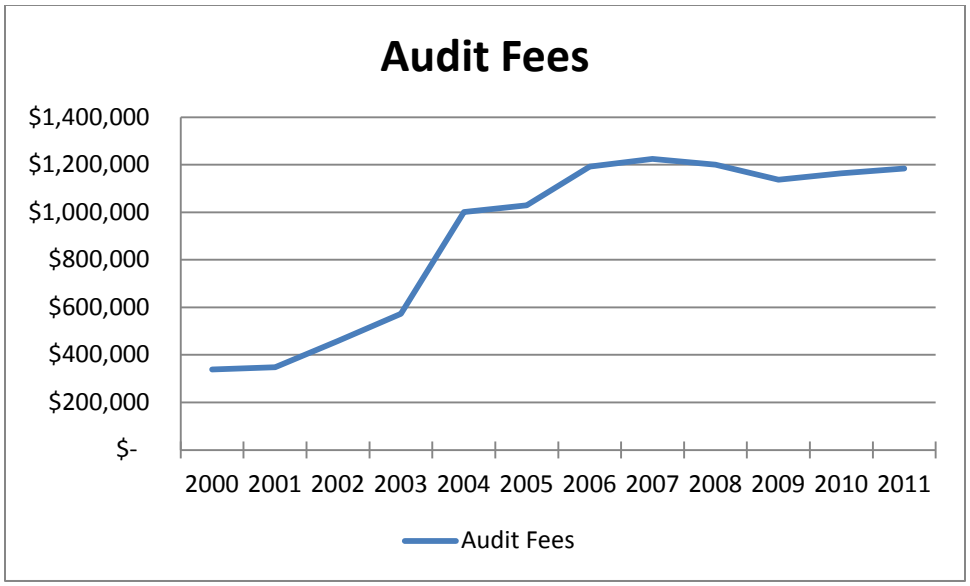
Panel B: Accounting Disclosure Characteristics				
	Mean	***Std Deviation***	***Min***	***Max***
Audit Fees	922,907	1,234,740	6,700	15,600,000
Flesch Reading Ease	21.686	5.789	0	51.2
10-K Length (words)	57,021	41,391	7,293	363,433
Non-Audit Fees	480,737	1,092,759	1,050	20,900,000

Panel C: Asset and Structural Complexity Characteristics				
	Mean	***Std Deviation***	***Min***	***Max***
PUREPLAY REIT	0.872	0.334	0	1
Operating REIT	0.028	0.164	0	1
Maryland REIT	0.682	0.466	0	1
UPREIT	0.774	0.418	0	1
Cost of Capital	0.132	0.087	0.003	0.498

Notes: Panel A reports microstructure and trading characteristics of sample firms employed to investigate the financial market liquidity of REITs. Panel B reports information on the accounting based disclosures of sample firms for the fiscal year immediately preceding our microstructure observations. Panel C presents information on additional firm specific characteristics which may influence a firm's informational transparency.

Figure #1
The Temporal Distribution of REIT Audit Fees

Mean Audit Fees by Year



Mean Abnormal Audit Fees by Year

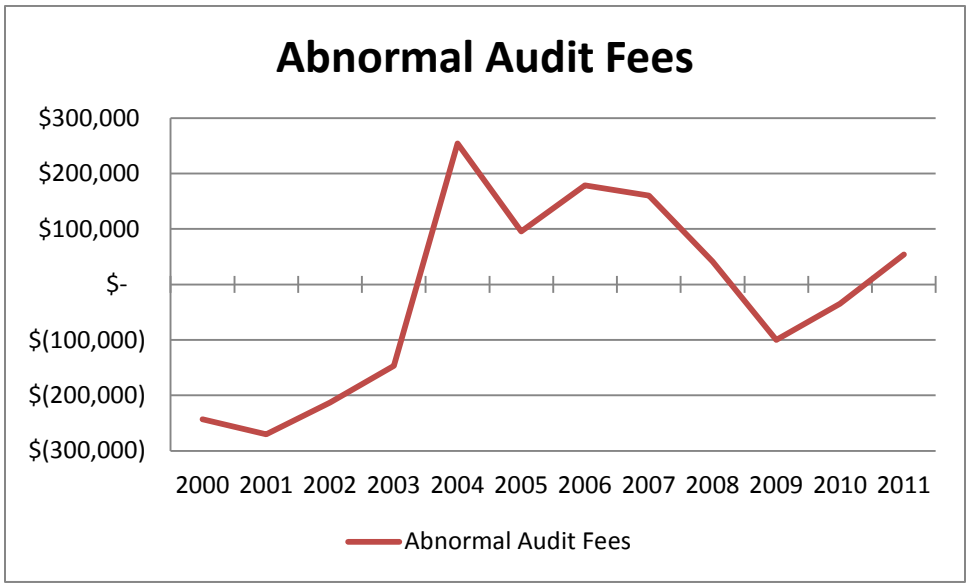


Table 2
Determinants of REIT Market Liquidity
Raw Spreads

Variable	Model I	Model II	Model III	Model IV
Intercept	0.800	0.624	0.986	0.882
	(19.58***)	(16.50***)	(19.69***)	(16.48***)
Microstructure Attributes				
Volume	-0.001	-0.003	-0.003	-0.002
	(-0.87)	(-2.42**)	(-2.89***)	(-1.41)
Price	0.002	0.002	0.002	0.002
	(10.09***)	(12.33***)	(11.55***)	(10.24***)
SD of Quote Midpoint	0.002	0.001	0.000	0.003
	(0.72)	(0.23)	(0.17)	(0.84)
Analyst Coverage	-0.170	-0.103	-0.103	-0.174
	(-7.80***)	(-7.45***)	(-7.46***)	(-8.03***)
Exchange=NYSE	0.027	-0.028	-0.027	0.021
	(4.67***)	(-3.43***)	(-3.25***)	(3.58***)
ln[MVE]	-0.037	-0.032	-0.030	-0.034
	(-14.97***)	(-15.55***)	(-14.49***)	(-13.17***)
Market-to-Book Ratio	0.043	0.002	-0.000	0.052
	(3.61***)	(0.64)	(-0.19)	(4.40***)
Leverage	-0.040	-0.029	-0.030	-0.020
	(-3.38***)	(-2.90***)	(-3.02***)	(-1.75*)
Accounting Disclosure Metrics				
Abnormal Audit Fees	-0.020	-----	-----	-0.017
	(-7.32***)			(-6.47***)
Flesch Reading Ease Index	-----	0.004	-----	0.004
		(12.35***)		(11.51***)
Log (Annual Report Length)	-----	-----	-0.026	-0.021
			(-6.21***)	(-5.10***)
Asset and Structural Complexity Metrics				
Abnormal Non-Audit Fees	0.018	0.016	0.017	0.016
	(16.36***)	(15.26***)	(15.91***)	(15.36***)
Pureplay REIT	-0.080	-0.063	-0.065	-0.097
	(-8.73***)	(-6.83***)	(-7.51***)	(-10.52***)
Operating REIT	-0.104	-0.120	-0.122	-0.107
	(-4.31***)	(-7.54***)	(-7.65***)	(-4.44***)
Maryland REIT	-0.005	-0.006	-0.007	-0.003
	(-1.14)	(-1.80*)	(-1.96**)	(-0.67)
UPREIT	-0.050	-0.044	-0.049	-0.040
	(-10.27***)	(-8.57***)	(-9.37***)	(-8.10***)
N	12,291	14,173	14,173	12,291
Property Type Controls	Yes	Yes	Yes	Yes
Time Controls	Yes	Yes	Yes	Yes
Adjusted R^2	0.1794	0.1622	0.1504	0.1950
F(35/35/35/37, n-k-1)	46.42	45.27	45.95	47.75
Prob. > F	0.0000	0.0000	0.0000	0.0000

Table 3
Determinants of REIT Market Liquidity
Percentage Spreads

Variable	Model I	Model II	Model III	Model IV
Intercept	0.076	0.070	0.090	0.086
	(39.87***)	(37.89***)	(31.51***)	(28.40***)
Microstructure Attributes				
Volume	0.015	0.029	0.024	0.010
	(2.95***)	(5.56***)	(4.65***)	(2.10**)
Price	0.003	0.003	0.002	0.003
	(5.29***)	(5.35***)	(4.37***)	(5.34***)
SD of Quote Midpoint	-0.008	-0.011	-0.011	-0.007
	(-1.10)	(-1.54)	(-1.56)	(-0.94)
Analyst Coverage	-0.017	-0.011	-0.011	-0.017
	(-14.68***)	(-14.62***)	(-14.72***)	(-14.84***)
Exchange=NYSE	-0.004	-0.006	-0.006	-0.005
	(-6.78***)	(-10.13***)	(-10.19***)	(-7.41***)
ln[MVE]	-0.003	-0.004	-0.004	-0.003
	(-28.30***)	(-29.69***)	(-28.93***)	(-26.93***)
Market-to-Book Ratio	-0.003	-0.001	-0.001	-0.002
	(-8.19***)	(-13.82***)	(-14.35***)	(-7.25***)
Leverage	0.002	0.003	0.004	0.003
	(3.29***)	(6.19***)	(6.35***)	(4.48***)
Accounting Disclosure Metrics				
Abnormal Audit Fees	-0.012	-----	-----	-0.011
	(-12.48***)			(-10.87***)
Flesch Reading Ease Index	-----	0.016	-----	0.013
		(9.83***)		(8.10***)
Log (Annual Report Length)	-----	-----	-0.002	-0.001
			(-7.69***)	(-6.35***)
Asset and Structural Complexity Metrics				
Abnormal Non-Audit Fees	0.001	0.001	0.001	0.001
	(13.92***)	(13.73***)	(14.35***)	(13.16***)
Pureplay REIT	-0.001	-0.003	-0.003	-0.001
	(-2.12**)	(-5.68***)	(-6.76***)	(-4.01***)
Operating REIT	-0.010	-0.010	-0.010	-0.010
	(-6.60***)	(-12.27***)	(-12.45***)	(-6.62***)
Maryland REIT	-0.002	-0.002	-0.002	-0.001
	(-8.33***)	(-8.99***)	(-8.85***)	(-8.14***)
UPREIT	-0.001	-0.001	-0.001	-0.000
	(-2.81***)	(-4.54***)	(-5.14***)	(-1.17)
N	12,291	14,173	14,173	12,291
Property Type Controls	Yes	Yes	Yes	Yes
Time Controls	Yes	Yes	Yes	Yes
Adjusted R^2	0.4697	0.4279	0.4258	0.4747
F(35/35/35/37, n-k-1)	310.15	302.08	299.53	299.32
Prob. > F	0.0000	0.0000	0.0000	0.0000

Table 4
Interactive Effects of Disclosure and Opacity on REIT Market Liquidity
High Cost of Capital Firms

Variable	Model I	Model II	Model III	Model IV
Intercept	0.080	0.084	0.049	0.051
	(27.17***)	(28.55***)	(11.75***)	(12.59***)
Microstructure Attributes				
Volume	0.009	0.008	0.006	0.006
	(1.71*)	(1.71*)	(1.18)	(1.25)
Price	0.003	0.003	0.003	0.003
	(5.20***)	(4.95***)	(4.76***)	(4.45***)
SD of Quote Midpoint	-0.013	-0.016	-0.011	-0.013
	(-1.76*)	(-2.03**)	(-1.43)	(-1.70*)
Analyst Coverage	-0.017	-0.017	-0.017	-0.017
	(-14.80***)	(-14.83***)	(-14.93***)	(-14.96***)
Exchange=NYSE	-0.005	-0.005	-0.005	-0.005
	(-7.91***)	(-8.17***)	(-7.77***)	(-7.93***)
ln[MVE]	-0.003	-0.003	-0.003	-0.003
	(-26.56***)	(-26.01***)	(-26.27***)	(-25.75***)
Market-to-Book Ratio	-0.002	-0.002	-0.002	-0.002
	(-5.51***)	(-5.29***)	(-5.33***)	(-4.93***)
Leverage	0.003	0.003	0.003	0.004
	(4.66***)	(5.03***)	(5.03***)	(5.41***)
Asset and Structural Complexity Metrics				
Abnormal Non-Audit Fees	0.001	0.001	0.001	0.001
	(12.44***)	(12.73***)	(12.66***)	(12.95***)
Pureplay REIT	-0.001	-0.001	-0.001	-0.001
	(-3.14***)	(-2.85***)	(-2.06**)	(-1.78*)
Operating REIT	-0.010	-0.009	-0.010	-0.009
	(-6.36***)	(-6.22***)	(-6.36***)	(-6.26***)
Maryland REIT	-0.001	-0.001	-0.001	-0.001
	(-7.72***)	(-7.42***)	(-7.86***)	(-7.66***)
UPREIT	-0.000	-0.000	-0.000	-0.000
	(-0.92)	(-1.08)	(-1.15)	(-1.29)
Implied Cost of Capital	0.012	-0.015	0.240	0.217
	(9.02***)	(-3.98***)	(7.90***)	(7.15***)
Interaction Terms				
Ab. Audit Fees * Cost of Capital	-0.070	-----	-----	0.021
	(-5.58***)			(1.26)
Flesch-Index * Cost of Capital	-----	0.129	-----	0.130
		(6.84***)		(6.80***)
Log (10-K Length) * Cost of Capital	-----	-----	-0.021	-0.022
			(-7.62***)	(-7.91***)
N	12,291	12,291	12,291	12,291
Time &Property Type Controls	Yes	Yes	Yes	Yes
Disclosure Main Effect Controls	Yes	Yes	Yes	Yes
Adjusted R^2	0.4820	0.4845	0.4868	0.4904
F(39/39/39/41, n-k-1)	292.29***	295.23***	297.91***	287.46***

Table 5
Interactive Effects of Disclosure and Opacity on REIT Market Liquidity
High Cost of Capital and High Growth Firms

Variable	Model I	Model II	Model III	Model IV
Intercept	0.081	0.080	0.079	0.078
	(27.42***)	(27.56***)	(27.26***)	(26.62***)
Microstructure Attributes				
Volume	0.007	0.009	0.010	0.008
	(1.38)	(1.87*)	(1.96**)	(1.58)
Price	0.003	0.003	0.003	0.003
	(4.70***)	(5.19***)	(5.19***)	(4.94***)
SD of Quote Midpoint	-0.011	-0.014	-0.015	-0.015
	(-1.47)	(-1.80*)	(-1.97**)	(-1.94*)
Analyst Coverage	-0.018	-0.018	-0.018	-0.018
	(-15.12***)	(-14.91***)	(-15.18***)	(-15.11***)
Exchange=NYSE	-0.005	-0.005	-0.005	-0.005
	(-7.67***)	(-8.08***)	(-8.14***)	(-7.91***)
ln[MVE]	-0.003	-0.003	-0.003	-0.003
	(-26.85***)	(-26.52***)	(-26.55***)	(-26.41***)
Market-to-Book Ratio	-0.001	-0.002	0.001	0.000
	(-4.35***)	(-0.36)	(1.79*)	(0.54)
Leverage	0.003	0.003	0.003	0.003
	(4.77***)	(4.52***)	(4.56***)	(4.90***)
Asset and Structural Complexity Metrics				
Abnormal Non-Audit Fees	0.001	0.001	0.001	0.001
	(12.19***)	(12.37***)	(12.40***)	(12.34***)
Pureplay REIT	-0.001	-0.001	-0.001	-0.001
	(-4.28***)	(-3.45***)	(-3.44***)	(-3.81***)
Operating REIT	-0.010	-0.010	-0.010	-0.010
	(-6.65***)	(-6.59***)	(-6.75***)	(-6.67***)
Maryland REIT	-0.001	-0.001	-0.001	-0.001
	(-7.67***)	(-7.72***)	(-8.00***)	(-8.27***)
UPREIT	-0.000	-0.000	-0.000	-0.000
	(-1.22)	(-0.86)	(-0.79)	(-0.99)
Implied Cost of Capital	0.014	0.018	0.023	0.022
	(10.59***)	(8.36***)	(9.57***)	(8.98***)
Interaction Terms				
Ab. Audit Fees * C. of Cap. * MTB	-0.019	-----	-----	-0.012
	(-8.09***)			(-6.21***)
Flesch-Index * C. of Cap. * MTB	-----	-0.058	-----	0.001
		(-3.59***)		(4.73***)
Log (10-K Length) * C. of Cap. * MTB	-----	-----	-0.002	-0.004
			(-5.73***)	(-7.08***)
N	12,291	12,291	12,291	12,291
Time &Property Type Controls	Yes	Yes	Yes	Yes
Disclosure Main Effect Controls	Yes	Yes	Yes	Yes
Adjusted R^2	0.4828	0.4807	0.4827	0.4857
F(39/39/39/41, n-k-1)	295.20***	292.66***	295.08***	284.09***