

Credit Line Availability and Utilization in REITs

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Abstract

Analysis of real estate investment trust (REIT) credit line availability and use under normal conditions and during the recent financial crisis are provided. Descriptive statistics indicate REIT credit lines represent an important component of capital structure. Credit line availability and utilization increased substantially over the sample period. REITs also maintain precautionary liquidity via credit lines rather than holding cash during the sample period. Multivariate results indicate that credit line availability is directly associated with cash flow uncertainty, dividend distributions, acquisitions, and capital market access and is inversely linked to the market-to-book ratio. Credit line use is unrelated to cash flow volatility and dividends, but is correlated with operating cash flow, acquisitions, and capital market access. Despite finding that line availability is influenced by dividend payments, REITs do not systematically use lines to pay dividends, implying that dividends are paid from operating cash flows.

Although bank lines of credit provide liquidity and alleviate capital market frictions that necessitate cash holdings (Boot, Thakor, and Udell, 1987; Martin and Santomero, 1997; Holmstrom and Tirole, 1998), the vast majority of the liquidity management literature focuses only on cash holdings and ignores credit lines. Jimenez, Lopez, and Suarina (2009), Sufi (2009), and Yun (2009) recognize this limitation and begin to incorporate credit lines, as components of corporate liquidity and capital structure, into the literature. The importance of continued research centered on firm liquidity, capital structure, and credit lines is also highlighted by Campello, Giambona, Graham, and Harvey's (2009) argument that the role of bank credit lines in financial management is substantially understudied, especially given recent illiquidity in the financial markets.

This dearth of analysis on firm liquidity and bank credit lines in the literature is addressed by extending the growing body of real estate investment trust (REIT) specific research on liquidity, capital sources, and firm capital structure. Factors associated with credit line availability and utilization are empirically assessed, broadening existing REIT line of credit and liquidity research by Hardin, Highfield, Hill, and Kelly (2009), Hardin and Wu (2009, 2010), and Riddiough

and Wu (2009).¹ REITs present a distinct opportunity for bank line research because unlike non-REITs, credit line use can neither be explained by the tax-preferred nature of debt nor working capital needs. Although REITs may have positive operating cash flows, it is possible that these firms have insufficient internally-generated capital to develop properties or to fund major property acquisitions due to restrictive dividend requirements, as well as the relative size or magnitude of these activities.² Constraints on capital retention and their impact on financing policies are investigated in Hardin, Highfield, Hill, and Kelly (2009), where REIT cash holdings are shown to be much lower than non-REITs at 2% of assets, and Ott, Riddiough, and Yi (2005), who show that retained earnings account for only 7% of new REIT investment. These studies illustrate the operating environment faced by REITs while highlighting the importance of credit lines for the pursuit of growth strategies and in providing precautionary liquidity due to low cash holdings.³

The off-balance sheet nature of unused credit lines is also important. While equity and debt issuances trigger changes in capital structure, firms maintain committed contingent financing with credit lines and only borrow when needed. By enabling firms to finance new investment, weather unfavorable economic conditions, and avoid or limit tapping public markets at inopportune times, credit lines should reduce capital costs and increase firm value. The degree to which REITs and other firms maintain unused credit line capacity, however, has been relatively unexplored and continued analysis of the topic warranted.⁴

The results extend Hardin and Wu (2010) and Riddiough and Wu (2009) by showing that credit lines represent a substantial component of REIT capital structure and can fund up to 17% of assets. Notwithstanding this capacity, however, credit lines are only used to finance 8% of assets. The data show that REITs have the capacity to substantially recapitalize using credit lines, thereby avoiding equity and long-term debt markets in the short-term. REITs use only 39% of credit line capacity, implying that they have substantial liquidity despite limited cash holdings. The distribution of credit lines available and used over the sample period shows a meaningful increasing trend. Increased credit line availability supports the existing argument in the literature that banks view REITs as having reduced agency problems and informational asymmetries during the modern REIT era.^{5,6} The increase in availability also means that REITs have systematically improved their liquidity over time as the amount of useable credit relative to assets has increased.

Results suggest that credit line availability is directly associated with cash flow uncertainty, dividends, and capital market access (firm size) and is inversely related to informational asymmetries (the market-to-book ratio). Differences between the determinants of REIT and non-REIT credit line availability are noteworthy. Sufi (2009) finds a direct relation between credit line availability and cash flow, while we find weak evidence for REITs. We, however, find a direct correlation between credit line availability and dividends, unlike non-REIT results, which suggests that REIT lenders use dividends as a partial measure of default

risk. REIT dividends are sticky and well-managed REITs should not need to cut dividends under normal circumstances. Although REITs are hesitant to cut dividends, dividends can be cut or suspended and the cash flow can be diverted to service debt during periods of distress. This, in fact, is evident during the recent financial market crisis. Thus, our results may imply that dividends complement cash flow for lender monitoring by serving as a proxy for minimal expected firm cash flow available to service debt. Some evidence that credit line availability is directly related to real estate investment is provided, but the relation is not robust. Finally, even after controlling for other factors, the time indicator variable for 2009 is positive and significant, which indicates that REITs have credit line availability that is roughly 38% greater than the initial sample year (1999).

Factors associated with credit line utilization both as a percentage of net assets and as a percentage of total lines available are also examined and extend the findings from Riddiough and Wu (2009).⁷ We find that REITs with more uncertain cash flows and increased informational asymmetries rely more on cash when managing liquidity. Results also imply that drivers of utilization include capital market access and informational asymmetries. Several robustness checks including alternate dependent variable specifications and accounting for unobserved heterogeneity confirm the findings.

The remainder of the paper is organized as follows. Section 2 outlines the hypothesized relations, while Section 3 describes the sample and presents the model and summary statistics. Section 4 presents the results, and Section 5 concludes the paper.

Recent Literature and Hypotheses

This study investigates the factors associated with credit line availability and utilization. Similar to cash holdings, REIT credit line availability and use should be influenced by operating performance, investment, capital market access, and the cost of external financing.⁸ Related literature and specific hypothesis follow.

Cash Flow

Lenders monitor a borrower's ability to generate cash flow since recurring cash flow is required to service debt.⁹ Positive cash flows are considered prerequisites for credit line availability. This view is supported by Sufi (2009), who shows that line lenders typically enforce cash flow-based financial covenants. Although the general finance literature supports a direct relation between cash flow and credit line availability, such an expectation may be less evident in REITs. REITs are structured to provide an operating cash flow with mandated dividends based on a percentage of net taxable income. This relation, however, is not binding on an operating basis as REIT cash flow should be and typically is much greater than net taxable income and the consequent mandatory dividend. In short, REITs

should have excess operating cash flow and perhaps dividends will provide more of a signal in REITs than for other firms. Given the general reluctance of management to reduce dividends, dividends may proxy management's worst case cash flow estimates. If this is the case, line availability may be less related to cash flow and more related to dividends since dividends have an informational component.

With respect to credit utilization, the expectation is again ambiguous. REITs with high cash flow may prefer to make distributions in excess of required dividend payments and use credit lines to fund investments as proposed by Riddiough and Wu (2009). Alternatively, high cash flow REITs may choose not to distribute cash flow in excess of the dividend requirement and use this cash flow as a primary capital source for investment as might be expected from Bradley, Capozza, and Seguin (1998). In this case, maintaining credit line capacity would be used for liquidity purposes.¹⁰ In short, the relation between credit line availability, utilization, and cash flow is ultimately an empirical question. Following the REIT literature, cash flow is proxied using funds from operations (FFO), defined as net income excluding gains or losses from sales of property, plus depreciation and amortization, and after adjustments for unconsolidated partnerships and joint ventures.

Cash Flow Volatility

The existing REIT literature does not address cash flow volatility and short-term debt directly. However, REITs with more uncertain cash flows have a stronger need for access to precautionary liquidity provided by credit lines. Accordingly, we expect a positive direct relation between credit line availability and cash flow volatility. The relation between cash flow volatility and line utilization, however, is expected to be negative. Deviations in expected cash flow should reduce management's reliance on available lines because of potential increases in the cost of acquiring and using credit lines if loan covenants are violated. Hence, REITs with more volatile cash flows should decrease their relative reliance on bank debt as measured by line utilization. REITs with volatile cash flows are expected to increase line availability, but will limit utilization except in periods of substantial stress.

Cash flow volatility is measured cross-sectionally using the standard deviation of funds from operations. To calculate a meaningful volatility measure, each REIT is required to make at least three panel appearances.

Dividends and Property Acquisitions

Capital constraints faced by REITs are due in large measure to mandatory dividend payments and the relative cost of property acquisitions. REIT dividends provide

another monitoring mechanism to lenders as these distributions reduce overall informational asymmetries by forcing firms to acquire capital externally. Concurrently, REIT managements' aversion to dividend cuts suggests that dividends are a further measure of minimal REIT cash flow, which could be diverted to service debt if necessary.¹¹ Accordingly, we expect greater credit line availability to be associated with dividend payments. Dividends may influence line utilization since the liquidity provided by lines enables firms with strong historical distributions to fund expected dividends for periods in which the firm might have a temporary reduction in operating cash flow, thereby avoiding the stock price penalty associated with dividend reductions. Dividends are measured using the sum of common and preferred dividends.

Similar to dividends, property acquisitions further constrain REIT capital accumulation. Optional liquidity from credit lines provides the ability to acquire properties on a timely and cost effective basis. Brown and Riddiough (2003) argue that REITs use credit lines to acquire and finance new properties, essentially as a method of bridge financing.¹² The investment component of REIT credit line access and use is further supported by Elayan, Mayer, and Li (2006), who posit that the positive market reaction to the announcement of bank loan commitments is due to management arranging bank financing to fund new real estate investment. Accordingly, both line of credit availability and utilization are expected to be directly related to investment in real estate. Paralleling our expectation, Brown and Riddiough (2003) and Riddiough and Wu (2009) show a direct relation between property acquisition and bank line use. Investment is measured using net property investment.

Market-to-Book Ratio

Myers and Majluf (1984) show asymmetric information increases the benefit provided from internal slack or capital because external financing is more costly for firms with high informational asymmetries. Firms with higher costs of external capital will avoid public debt markets and security issuance and rely more extensively on internally-generated capital to fund investment. Also, the relative cost of obtaining and using bank credit lines should be greater for firms with increased informational asymmetries. Similar to the existing literature, we use the market-to-book ratio to proxy both informational asymmetries and the cost of external finance. The expectation of an inverse relation between line of credit availability and the market-to-book ratio is supported by Hardin, Highfield, Hill, and Kelly (2009), who show that REITs with greater market-to-book ratios have greater cash holdings.

Concurrently, it can be argued that the calculation of the market-to-book ratio for REITs is problematic and does not measure informational asymmetry. A REIT's portfolio composition and the average tenure of property ownership, along with capital structure will impact the measurement of the ratio of market value to

replacement costs. For example, a REIT may own properties acquired years ago with low book values and high market values. The capital structure associated with these properties could also have changed substantially with property refinancing and the addition of corporate level debt. The market-to-book ratio then would not just proxy informational asymmetry, but also be a reflection of the REIT's portfolio construction. In the present case, the market-to-book ratio should be negatively related to the market-to-book ratio in either situation. A similar relation is expected between the market-to-book ratio and line utilization.

Size

Firms with superior capital market access are better able to access external financing despite frictions in public debt and equity markets. Fazzari and Petersen (1993) show larger firms are less likely to face borrowing constraints than smaller firms because they have better capital market access and have less difficulty in tapping private and public markets for investment capital. This affords larger firms an advantage in borrowing via bond offerings, commercial paper issues, or lines of credit, as noted in Riddiough and Wu (2009). Hardin and Wu (2009) argue that the maintenance of a banking relationship is important in accessing and pricing credit and that larger firms benefit. Line availability and utilization should be directly related to firm size. Consequently, firm size is measured by the natural logarithm of inflation-adjusted market value of equity.

Data, Model, and Descriptive Statistics

Data and Source

The initial sample includes all REITs covered by the SNL REIT Datasource database over the period 1998 to 2009.¹³ Accounting and financial variables are collected from SNL. Non-equity REITs are deleted from the sample and observations missing accounting data further restrict the sample size. Sampled firms are required to make at least three appearances in the panel to calculate a valid cash flow volatility measure. Since this research examines the determinants of credit lines available and used, we drop the small number of firms without access to credit lines.¹⁴ Firms that were acquired, merged, or delisted remain in the sample up to the time of delisting, which reduces the likelihood of survivorship bias. Also, observations are allowed to enter, leave, and then re-enter the sample if the data requirements discussed above are met. Due to the short-term nature of the liquidity management provided by credit lines, quarterly data are used.¹⁵ The usable sample is an unbalanced panel consisting of 3,139 quarterly observations for 151 unique equity REITs over the 1999 to 2009 period. The quarterly observations allow for better matching of operating, investment, and public market actions.

Model

Using a sample of publicly traded equity REITs, the determinants of credit lines available and used are assessed using the following general model.

$$Y_{i,t} = \beta_0 + \beta_1 FFO_{i,t} + \beta_2 FFOVOL_{i,t} + \beta_3 DIV_{i,t} + \beta_4 REINV_{i,t} + \beta_5 M/B_{i,t} + \beta_6 Size_{i,t} + \beta_7 Control\ Variables_{j,t} + \varepsilon_{i,t} \quad (1)$$

Multiple dependent variables are used since this study examines the factors associated with both line availability and utilization. To examine the supply of debt provided by lines, we use a traditional ratio approach and specify the dependent variable as total credit lines available scaled by net assets, total assets minus cash.¹⁶ As a robustness check, we use a logarithmic transformation and specify the natural logarithm of inflation-adjusted total credit lines available as the dependent variable. A similar approach is followed for regressions used to test for factors associated with credit line utilization. We specify models using the credit lines used to net assets ratio and the natural logarithm of inflation-adjusted draws from credit lines. We further examine the intensity of REIT credit line utilization via the ratio of credit lines used divided by credit lines available. Last, the extent to which lines are used for overall liquidity management is examined via the ratio of credit lines used to the sum of credit lines available and cash.

The independent variables consist of those discussed in the hypothesis section. *FFO* is defined as funds from operations scaled by net assets. Cash flow volatility (*FFOVOL*) is the ratio of the standard deviation of cash flow to net assets. *DIV* is the sum of common and preferred dividends paid divided by net assets. Net investment in real estate, *REINV*, is defined as the sum of net property investments, total non-depreciable properties, real estate loans and leases, and investment in partnerships, and adjustments for total allowances, scaled by net assets. The market-to-book ratio, *M/B*, equals market capitalization plus total liabilities and preferred equity minus amount drawn from credit lines scaled by net assets. *Size* is the natural logarithm of inflation-adjusted market value of equity.

Control variables include indicator variables for property focus and time. Property focus could influence REIT line availability and use as the structure and length of property leases vary by property type and affect underlying cash flows. Seven property categories are established after combining property focus classifications with similar leasing structures. REITs classified as *Retail* have property focus types of mall, retail, or shopping. *Residential* REITs are firms with property focus types of multi-family or manufactured homes. REITs classified as *Other* have property focus types of diversified, health care, or specialty. The remaining property focus categories include *Hotel*, *Industrial*, *Office*, and *Storage*.¹⁷ Annual time period dummy variables account for macroeconomic factors influencing credit lines.

Exhibit 1 | Descriptive Statistics

Variables	Mean	Std. Dev.	Median
<i>AvailRatio</i>	0.174	0.137	0.153
<i>DrawnRatio</i>	0.078	0.093	0.055
<i>LOCUse</i>	0.392	0.298	0.395
<i>LOCUse*</i>	0.363	0.280	0.360
<i>FFO</i>	0.015	0.010	0.015
<i>FFOVOL</i>	0.008	0.015	0.004
<i>REINV</i>	0.941	0.050	0.952
<i>DIV</i>	0.011	0.010	0.010
<i>M/B</i>	1.183	0.350	1.132
<i>MKTCAP</i>	1,682.598	2,561.093	796.529

Notes: The table shows the sample characteristics of the 3,139 quarterly observations for 151 unique equity REITs over the period 1999 to 2009. All variables other than *LOCUse*, *LOCUse**, and *MKTCAP* are scaled by net assets, total assets minus cash. Variables other than *MKTCAP* are reported in decimal form. *AvailRatio* is credit lines available. *DrawnRatio* is amounts drawn from credit lines. *LOCUse* is amounts drawn from credit lines divided by credit lines available. *LOCUse** is amounts drawn from credit lines divided by the sum of credit lines available and cash. *FFO* is quarterly funds from operations, defined as net income excluding gains or losses from the sale of properties, plus depreciation and after adjustments for unconsolidated partnerships and joint ventures. *FFOVOL* is the standard deviation of funds from operations. *REINV* is net investment in real estate. *DIV* is the sum of common and preferred dividends. *M/B* is the sum of market capitalization, preferred equity, and total liabilities minus amount drawn from credit lines to net assets. *MKTCAP* is inflation-adjusted market value of equity (millions).

Descriptive Statistics

The descriptive statistics for the equity REIT sample are presented in Exhibit 1. Several summary measures are reported to quantify the importance of credit lines to REITs. The variables *AvailRatio* and *DrawnRatio* represent total credit lines available and used, respectively, scaled by net assets. On average, total credit lines available represent roughly 17% of net assets while amounts drawn are roughly 8% of net assets. This highlights that credit lines are a substantial component of REIT capital structure as sample firms have the ability to fund up to 17% of overall assets with credit lines when one accounts for untapped credit lines. Comparisons of the mean and median values for *AvailRatio* and *DrawnRatio* indicate positive skewness, suggesting some REITs have substantially greater credit line availability and use relative to net assets in place.

The average credit lines used divided by total credit lines available ratio (*LOCUse*) is 39%, indicating that REITs maintain a liquidity cushion equal to 61% of total

credit lines available. Since Hardin, Highfield, Hill, and Kelly (2009) show that REITs hold little cash, this result implies that these firms actively manage liquidity via credit lines, likely because of exogenous capital constraints. The mean ratio of credit lines used scaled by the sum of credit lines available and cash (*LOCUse**) is approximately 36%, suggesting cash represents a small component of REIT liquidity. Overall, these statistics suggest that despite restrictions mitigating the ability to accumulate internally-generated capital, REITs maintain some degree of financial flexibility, primarily via unused credit lines. Descriptive statistics for the remaining variables are similar to those presented in the prior REIT literature. Exceptions include markedly smaller values for *FFO*, which is due to the use of quarterly data for this flow variable.

Panels A and B of Exhibit 2 show the distribution of the sample across time and property focus, respectively. The distribution of the observations over time is relatively even with the exception of observations in 2009, which is due to data constraints.¹⁸ Although line availability initially decreased over the early portion of the sample period (1999–2002), line of credit access increased dramatically thereafter. Over the eleven year period 1999–2009, funds available to REITs via credit lines increased by 69%, an economically significant change. Interestingly, relative to earlier parts of the sample period, REITs had greater line of credit availability during the tight credit market period of 2007 to 2009. REITs increasingly used credit lines as shown by the time distribution of *Drawn*. The amounts drawn as a percentage of total available lines variable (*Drawn*) increased during the 2007–2009 period, but remained below results from the initial years of the sample. This is interesting in light of Diamond's (1984, 1991) view that an extension of a line of credit to a firm provides positive information about the firm's projects as private bank debt is more effective than external financing in reducing informational asymmetries and agency problems since banks have a comparative advantage in collecting information and monitoring a firm's projects. Increased credit line availability and use over the sample period suggest a validation of the REIT operating structure, likely due to a reduction in agency problems and asymmetric information.

The temporal decrease in *LOCUse* indicates REITs have larger strategic liquidity cushions during the latter part of the sample period. These liquidity cushions position REITs to take advantage of investment or other funding needs if accessing long-term capital markets is too costly. This is a vital point given the recent dysfunction in financial markets. The decreasing trend in *LOCUse* does not mean that REITs have reduced their reliance on private bank debt. Over the period studied, increases in available credit lines (*Avail*) has outpaced increases in amounts drawn (*Drawn*) and is more reflective of a relative increase in credit availability. Finally, it is also noted that while *LOCUse* increases during the market liquidity crisis in 2008 and 2009, as might be expected, it remains below the rates found through 2002.

The sample is distributed across property type in a pattern reflective of the values of the underlying properties as components of the asset class. Variation in the

Exhibit 2 | Time and Property Focus Distribution of Sample of REITs

Year	Observations	Avail (\$M)	Drawn (\$M)	LOCUse
Panel A: Time Distribution of Sample				
1999	323	284.832	149.378	0.518
2000	330	276.129	135.977	0.512
2001	305	272.853	112.050	0.448
2002	308	279.920	115.698	0.423
2003	270	317.836	120.773	0.359
2004	292	340.651	120.789	0.307
2005	320	350.185	155.323	0.346
2006	307	393.042	153.531	0.303
2007	272	463.099	166.017	0.300
2008	266	499.587	199.702	0.362
2009	146	495.443	193.628	0.396
Total	3,139			
Focus	Observations	Avail (\$M)	Drawn (\$M)	LOCUse (%)
Panel B: Property Focus Distribution of Sample				
Hotel	243	292.791	80.878	0.298
Industrial	186	650.898	344.471	0.472
Office	432	410.304	172.085	0.428
Other	763	291.852	86.532	0.321
Residential	508	494.026	223.842	0.402
Retail	878	266.096	122.224	0.441
Other	129	193.858	70.397	0.365
Total	3,139			

Notes: Panels A and B present the distribution of the sample across time and property focus for the sample of REITs with credit line access. The sample consists of 3,139 quarterly observations for 151 unique publicly traded equity REITs over the 1999 to 2009 period. REITs are categorized on the basis of property focus (taken from SNL), and seven categories are used: hotel, industrial, office, other (diversified, health care, and specialty), residential (multi-family and manufactured homes), retail (retail, regional mall, shopping center), and other. *Avail* and *Drawn* are inflation-adjusted and are in millions. *LOCUse*, reported in decimal form, is amounts drawn from credit lines scaled by total credit lines available.

availability and use of credit lines is evident as *Industrial* and *Residential* REITs have greater credit line availability and use. Further inferences are made using the multivariate results as the sampled *Industrial* and *Residential* REITs may simply be larger firms, thus explaining their greater credit line availability and use.

Multivariate Results

Line of Credit Availability

Multivariate results of the determinants of credit line availability are presented in Exhibit 3. Equation (1) is estimated using OLS and random effects are presented in odd and even numbered columns, respectively. The random effects methodology accounts for unobserved heterogeneity that may jointly correlate with REIT credit line availability and the independent variables. Standard errors are robust to heteroscedasticity and account for firm level clustering, as recommended by Petersen (2009).

Results in columns 1 and 2 of Exhibit 3 specify the natural logarithm of the credit line availability ratio (*AvailRatio*) and results in columns 3 and 4 specify inflation-adjusted credit lines available ($LN(Avail)$) as the dependent variables. The results are generally consistent, although a few findings appear to be somewhat sensitive to dependent variable specification.

The results provide only very weak support for the postulate that operating cash flow influences REIT credit line availability. Only the initial OLS model with *AvailRatio* as the dependent variable shows a statistically significant relation. This result is a departure from the highly positive relation between line availability and cash flow in the literature for non-REITs and suggests that operating cash flow, when included in a model with dividends, is not the primary determinant of REIT credit line availability. This is likely due to required REIT dividend payments, made from operating cash flow, conveying more information, relative to cash flow.

The results suggest that credit line availability is directly and statistically significantly associated with cash flow volatility. Results presented in columns 1 to 3 in Exhibit 3 show positive and statistically significant coefficients for *FFO_VOL*. REITs with more FFO volatility need to have greater line availability to support their investment activities and improve precautionary liquidity and are willing to pay banks for this additional capacity.¹⁹

As might be expected, the results indicate that line availability is associated with dividend payments. Dividends reduce informational asymmetries and reduce agency costs, as REITs must consistently tap public and private capital markets to fund growth strategies. Concurrently, dividends proxy a worst case operational cash flow scenario given the substantial reluctance of REIT managers to cut dividends. The positive and statistically significant correlation between credit line availability and the dividend variables might explain the lack of significance for

Exhibit 3 | Determinants of REIT Credit Line Availability

Independent Variables	<i>AvailRatio_t</i>	<i>AvailRatio_t</i>	<i>LN(Avail_t)</i>	<i>LN(Avail_t)</i>
Intercept	-0.117 (0.770)	-0.341* (1.810)	-0.391 (0.400)	4.161*** (3.070)
<i>FFO_t</i>	1.713** (2.160)	0.339 (1.150)	1.579 (0.400)	1.733 (0.730)
<i>FFO_VOL_t</i>	3.058** (2.210)	2.163*** (2.870)	6.010*** (2.700)	-0.083 (0.050)
<i>DIV_t</i>	2.059* (1.950)	0.557*** (3.640)	7.863** (2.330)	2.437*** (3.390)
<i>REINV_t</i>	0.397*** (3.140)	0.155 (1.410)	2.048*** (3.060)	1.027 (1.590)
<i>M/B_t</i>	-0.051 (-1.360)	-0.096** (-2.330)	-1.220*** (6.140)	-1.172*** (5.890)
<i>Size_t</i>	-0.005 (0.680)	0.023*** (2.800)	0.928*** (19.560)	0.748*** (9.220)
<i>Hotel</i>	-0.047 (1.630)	-0.034 (0.830)	-0.180 (1.210)	-0.170 (1.060)
<i>Industrial</i>	0.004 (0.180)	-0.005 (0.200)	-0.084 (0.430)	-0.016 (0.080)
<i>Office</i>	0.009 (0.350)	-0.027 (1.080)	-0.050 (0.310)	-0.074 (0.440)
<i>Other</i>	0.024 (1.100)	0.090** (1.970)	-0.156 (1.250)	-0.132 (1.000)
<i>Residential</i>	0.022 (0.560)	-0.003 (0.080)	-0.210 (1.060)	-0.253 (1.160)
<i>Storage</i>	-0.069* (1.960)	-0.080** (2.520)	-0.808*** (2.610)	-0.542** (2.510)
R ²	0.171	0.066	0.755	0.744
Method	OLS	Random Effects	OLS	Random Effects

Notes: The table presents regression results assessing REIT line of credit availability. The sample consists of 3,139 quarterly observations for 151 unique equity REITs over the period 1999 to 2009. Two dependent variables specifications are presented: the ratio of credit lines available-to-net assets and the natural logarithm of inflation-adjusted credit lines available. Odd (Even) columns are OLS (Random Effects). Only *Size* and property dummies are not scaled by net assets, total assets minus cash. *FFO* is funds from operations. *FFO_VOL* is the standard deviation of funds from operations. *DIV* is total dividends, common dividends plus preferred dividends. *REINV* is net investment in real estate. *M/B* is the sum of market capitalization, preferred equity, and total liabilities minus amounts drawn from credit lines. *Size* is the natural logarithm of inflation-adjusted market value of equity. The property focus variables are identified in Exhibit 2. *Retail* is the reference case. *T*-statistics (absolute values in parentheses) are calculated using heteroscedasticity-robust standard errors that cluster at the firm level.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

FFO. Results suggest that dividends provide the monitoring mechanism for REIT credit line access, and not cash flow, which is an important departure from the existing non-REIT literature. REITs with greater dividends may also actively seek larger lines as these firms will have reduced internally-generated funds available for acquisitions and property development. So, while the payment of dividends reduces information asymmetry and risk by setting management's estimate of a base cash flow that could be made available to make interest payments, it also reduces available net cash flow.²⁰

Limited evidence (OLS results) suggests credit line availability is directly associated with net real estate investment. This result supports the notion of private lenders monitoring firms' investments and granting larger credit lines to firms with strong prospects, as suggested by Howe and Shilling (1988) and Elayan, Meyer, and Li (2006). However, the result is not robust once we account for unobserved heterogeneity (columns 2 and 4).

For three of the four models, credit line availability is inversely and statistically significantly related to the market-to-book ratio. Taking the market-to-book ratio as a proxy for asymmetric information and the cost of obtaining credit lines, the result suggests REITs with fewer informational asymmetries have greater line availability, similar to non-REITs, and as might be expected from Riddiough and Wu (2009). These reduced lines may be due to lender reluctance or to greater costs associated with obtaining the line. This result is related to those presented by Hardin, Highfield, Hill, and Kelly (2009), who report a direct relation between cash holdings and the market-to-book ratio, where cash is a less costly financing alternative than external capital.

The results largely show that firm size is positively associated with credit line availability. Large REITs benefit from greater capital market support including access to public debt and equity markets. Larger REITs are in an improved position to use the off-balance sheet nature of credit lines to augment liquidity and capital structure. Fazzari and Petersen (1993) argue that larger firms should have less difficulty tapping markets for external financing. Our results suggest that the size effect also holds for REITs in terms of credit line availability. Further rationalization for the direct availability-size relation is that larger firms are likely to have longer and stronger banking relationships, as implied by Hardin and Wu (2009).

Also, although unreported in the exhibits, the annual time dummies have important implications as the sample of REITs has credit line availability that is 38% greater in 2009 than in 1999. This is a non-trivial result given that we control for other important factors influencing credit line availability. This result implies an upward trend in REIT line availability in the current tight credit period. The implication is that even with the liquidity crisis of 2008–2009, REITs have stronger credit line availability than at any point in the modern REIT era. In terms of the property focus variables, the consistent finding is that REITs classified as *Storage* have significantly reduced credit line availability, relative to the base case (*Retail*).

Line of Credit Utilization

To examine the determinants of REIT credit line use, dependent variables in Exhibit 4 consist of the ratio of credit lines used to net assets and the natural logarithm of inflation-adjusted amounts drawn from credit lines. As before, OLS and random effects results with robust standard errors accounting for firm-level clustering are presented.²¹

Inferences drawn from results presented in Exhibit 4 are generally consistent across the four models. We find evidence of a direct association between credit line utilization and cash flow, which may imply that REITs with high cash flow substitute line borrowings for internal cash flow. Also, firms with greater cash flow can support more debt including line borrowings. However, we find no evidence of a significant relation between credit line borrowings and cash flow uncertainty. These results coupled with those in Exhibit 3 indicate that cash flow volatility influences the size of credit line sought, but does not significantly affect credit line use. REITs seek larger credit lines as a precautionary measure, but these contingencies do not appear to influence use.²²

The results show no significant correlations between line use and the dividend variables. This lack of association suggests REITs systematically pay dividends with internally-generated cash flow and not with credit line borrowings. This lack of statistical significance for the line use to dividend relation further supports the monitoring role that dividends play in terms of credit line availability. The lack of significance also implies that the financial markets are attentive to REIT cash flows since dividends should not be paid from line usage. We find a positive and statistically significant relation between credit line use and real estate investment in three of four models.

Similar to credit line availability results, credit line use results suggest credit line use is negatively related to informational asymmetries proxied by the market-to-book ratio. The coefficients on the market-to-book ratio are statistically significant and negative at the 1% level across all models. Results also show that larger firms are more likely to draw down credit lines, consistent with larger firms having stronger capital market access, which reduces risk of repayment and possibly provides more favorable borrowing terms. *Size* is statistically significant for three of the four models.

With respect to property focus, we find little variation in credit line use across property classifications. The strongest finding indicates that REITs classified as *Hotel* and *Other* utilize credit lines much less actively than firms classified as *Retail*, as might be expected given the higher operating leverage of many hotels and increased bank monitoring and potential loan covenants. The unreported time dummies suggest that REITs utilized credit lines to a lesser extent during the 2001 to 2003 period. However, REIT credit line borrowing during the 2007–2009 period does not systematically vary from the base year (1999). These results further validate that credit lines represent optional liquidity and are used for precautionary purposes.

Exhibit 4 | Determinants of REIT Credit Line Utilization

Independent Variables	$DrawnRatio_t$	$DrawnRatio_t$	$LN(Drawn_t)$	$LN(Drawn_t)$
Intercept	0.079 (0.770)	-0.145 (1.120)	-7.407 (1.020)	-6.468 (1.010)
FFO_t	1.300** (2.490)	0.583** (2.320)	44.632 (1.350)	44.752** (2.230)
FFO_VOL_t	0.758 (1.260)	0.592 (1.110)	7.613 (0.560)	3.936 (0.460)
DIV_t	1.029 (1.580)	0.199 (1.130)	37.819 (1.070)	-6.121 (0.380)
$REINV_t$	0.139* (1.920)	0.178** (2.270)	9.883* (1.720)	9.318** (1.970)
M/B_t	-0.096*** (-3.510)	-0.162*** (-4.890)	-6.421*** (4.120)	-9.189*** (6.760)
$Size_t$	-0.002 (0.530)	0.012** (2.140)	1.034*** (2.990)	1.177*** (2.990)
<i>Hotel</i>	-0.035** (2.310)	-0.033 (1.450)	-4.378*** (2.690)	-5.022*** (3.110)
<i>Industrial</i>	0.007 (0.440)	-0.001 (0.050)	0.848 (0.830)	-0.117 (0.090)
<i>Office</i>	-0.009 (0.480)	-0.038** (2.160)	-0.213 (0.210)	-1.831* (1.860)
<i>Other</i>	-0.000 (0.030)	0.023 (1.170)	-2.605** (2.130)	-2.640** (2.740)
<i>Residential</i>	0.018 (0.570)	0.005 (0.190)	-0.637 (0.660)	-0.898 (1.020)
<i>Storage</i>	-0.017 (0.670)	-0.034* (1.670)	-5.602* (1.680)	-5.042** (1.990)
R ²	0.144	0.158	0.147	0.130
Method	OLS	Random Effects	OLS	Random Effects

Notes: Exhibit 4 presents regression results assessing REIT line of credit use. The sample consists of 3,139 quarterly observations for 151 unique equity REITs over the period 1999 to 2009. Two dependent variables specifications are presented: the ratio of credit lines drawn-to-net assets and the natural logarithm of inflation-adjusted credit lines drawn. Odd (Even) columns are OLS (Random Effects). Only *Size* and property dummies are not scaled by net assets, total assets minus cash. *FFO* is funds from operations. *FFO_VOL* is the standard deviation of funds from operations. *DIV* is total dividends, common dividends plus preferred dividends. *REINV* is net investment in real estate. *M/B* is the sum of market capitalization, preferred equity, and total liabilities minus amounts drawn from credit lines. *Size* is the natural logarithm of inflation-adjusted market value of equity. The property focus variables are identified in Exhibit 2. *Retail* is the reference case. T-statistics (absolute values in parentheses) are calculated using heteroscedasticity-robust standard errors that cluster at the firm level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

Finally, in Exhibit 5 dummy variables that control for public market equity and debt issuance are included. These variables are added as a robustness test as Brown and Riddiough (2003) discuss the interaction between credit lines use and security issuance. *EqIss_DV* is used as an indicator variable set equal to 1 if the firm issued equity in a given quarter, zero otherwise, and *DebtIss_DV* is used as an indicator variable set equal to 1 if the firm issued long-term debt in a given quarter, zero otherwise. Of note is the statistically significant inverse relation between line of credit utilization and secondary equity offerings, indicating seasoned equity offerings are used to reduce bank debt. Results in column 3 have economic significance as the coefficient estimate suggests equity issuance reduces *LOCUse* by 8.4%. This negative correlation implies that REITs access the public equity market to readjust capital structure by reducing private bank debt, which supports Brown and Riddiough's (2003) descriptive evidence, as well as findings reported by Riddiough and Wu (2009).²³ The emphasis on equity over debt implies that REIT capital structure is ultimately dependent on new equity. The magnitude and statistical significance of the initial variables are qualitatively the same as in prior regressions.

Intensity of Line of Credit Utilization

Next, we examine the factors associated with the intensity that REITs rely on credit lines using the dependent variable *LOCUse*, calculated as amounts drawn from credit lines scaled by total credit lines available. As a robustness check, we re-estimate the results using an alternate dependent variable specification, *LOCUse**, defined as amounts drawn from credit lines divided by the sum of credit lines available and cash. *LOCUse** allows us to determine the propensity with which REITs choose between lines and cash when managing liquidity. The results are presented in Exhibit 6.

The results across each model suggest that the intensity of REIT line use is positive and statistically significantly related to *FFO*. Again, greater cash flow is associated with greater use as cash flow is available for debt service. There is no association between dividends and utilization, implying that line usage is not used to support dividend payments and is used for liquidity management. Utilization is also positively related to real estate investment in two of the four models (random effects models), similar to the findings presented in Exhibits 4 and 5 and by Riddiough and Wu (2009). The relationship between line utilization and the market-to-book ratio is inverse as before, while the *Size* variable is insignificant. The most noteworthy result is the consistent negative relationship between *FFO_VOL* and utilization. This inverse relation suggests REITs with greater cash flow uncertainty rely more heavily on internally-generated capital for liquidity purposes, which supports the view that firms with more variable cash flows will avoid the cash flow-based financial covenants associated with bank debt when possible. Meanwhile, results presented earlier indicate firms with increased cash flow uncertainty have greater credit lines available. Thus, the combination of these results suggest that while REITs with more uncertain cash flows obtain large lines

Exhibit 5 | REIT Credit Line Utilization and Financial Market Actions

Independent Variables	$DrawnRatio_t$	$LN(Drawn_t)$	$LOCUse_t$
Intercept	0.028 (0.270)	-15.050** (2.040)	0.403 (1.370)
FFO_t	1.262** (2.290)	50.551 (1.330)	2.213* (1.770)
FFO_VOL_t	0.772 (1.280)	10.018 (0.760)	-0.950 (1.630)
DIV_t	0.914 (1.590)	36.264 (1.090)	1.541 (1.500)
$REINV_t$	0.151** (2.030)	14.169** (2.280)	0.285** (1.400)
M/B_t	-0.098*** (-3.610)	-6.199*** (4.110)	-3.130*** (5.290)
$Size_t$	-0.000 (0.080)	1.194*** (3.570)	0.003*** (0.270)
<i>Hotel</i>	-0.037** (2.430)	-5.004*** (2.960)	-1.630*** (3.180)
<i>Industrial</i>	0.015 (3.180)	1.151 (1.230)	0.069 (1.030)
<i>Office</i>	-0.005 (0.240)	-0.181 (0.170)	-0.028* (0.530)
<i>Other</i>	0.005 (0.040)	-2.477** (2.060)	-0.067*** (1.550)
<i>Residential</i>	0.015 (0.500)	-0.621 (0.680)	-0.033 (0.660)
<i>Storage</i>	-0.013 (0.440)	-5.577 (1.590)	-0.045** (0.360)
$EqIss_DV_t$	-0.017* (1.970)	-2.082*** (3.110)	-0.084*** (3.480)
$DebtIss_DV_t$	-0.010 (0.900)	0.658 (0.820)	-0.045 (1.230)
R^2	0.156	0.175	0.202

Notes: Exhibit 5 presents OLS regression results assessing REIT line of credit use. The sample consists of equity REITs over the period 1999 to 2007. There are 2,842 observations. Three dependent variables specifications are presented: the ratio of credit lines drawn to net assets, the natural logarithm of inflation-adjusted credit lines drawn, and the ratio of credit lines drawn to credit lines available. Only *Size* and property dummies are not scaled by net assets, total assets minus cash. *FFO* is funds from operations. *FFO_VOL* is the standard deviation of funds from operations. *DIV* is total dividends, common dividends plus preferred dividends. *REINV* is net investment in real estate. *M/B* is the sum of market capitalization, preferred equity, and total liabilities minus amounts drawn from credit lines. *Size* is the natural logarithm of inflation-adjusted

Exhibit 5 | (continued)

REIT Credit Line Utilization and Financial Market Actions

market value of equity. The property focus variables are identified in Exhibit 2. *Retail* is the reference case. *EqIss_DV* is an indicator variable set equal to 1 if the firm issued equity in a given quarter, zero otherwise. *DebtIss_DV* is an indicator variable set equal to 1 if the firm issued long-term debt in a given quarter, zero otherwise. *T*-statistics (absolute values in parentheses) are calculated using heteroscedasticity-robust standard errors that cluster at the firm level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

for precautionary purposes, they prefer to use internally-generated cash flow and/or cash when managing short-term uncertainty.

The unreported time dummies show patterns similar to those in Exhibit 2. Specifically, the results suggest that REITs systematically use a reduced portion of their credit lines over time, implying increased liquidity. For the period, REITs acquire increased liquidity for potential strategic investments and to weather uncertainty in the commercial real estate market. Results for the property controls are similar to those presented in Exhibits 4 and 5.

Robustness Checks

Additional unreported robustness tests are conducted.²⁴ The OLS models are re-estimated using Newey-West (1987) standard errors that account for heteroscedasticity and autocorrelation. This methodology is beneficial for the present study since line activity may be serially correlated over time. The results using Newey-West standard errors are quantitatively and qualitatively similar to the findings presented. Next, we assess the sensitivity of the results with respect to the sample by dropping REITs classified as *Other*. Line activity for non-traditional REITs may not generalize across the larger property classifications, leading to spurious results. This restriction reduces the number of observations by 175. Despite the smaller sample size, no significant differences in statistical inferences are found. Due to the importance of the limited evidence of the influence of cash flow on credit lines, we re-define cash flow as funds from operations minus the mandatory dividend, as discussed in Hardin and Hill (2008). The intuition is that lenders may only be concerned with cash flow in excess of the mandatory dividend, implying that the effect of discretionary cash flow on line activity is clouded by the cash flow component destined for distribution. The results are robust to this alternate cash flow measure. Finally, we re-estimate the results using annual data and find similarly weak evidence of a relation between

Exhibit 6 | Determinants of REIT Credit Line Use: Overall Liquidity Management

Independent Variables	$LOCUse_t$	$LOCUse_t$	$LOCUse_t^*$	$LOCUse_t^*$
Intercept	0.742** (2.700)	0.507 (1.630)	0.543** (2.020)	0.264 (0.880)
FFO_t	2.304** (2.140)	1.902*** (3.190)	2.592** (2.440)	1.863*** (3.110)
FFO_VOL_t	-1.045* (1.780)	-1.196*** (2.980)	-0.995* (1.690)	-0.956** (2.280)
DIV_t	1.601 (1.440)	0.337 (0.620)	1.896 (1.540)	0.438 (0.770)
$REINV_t$	0.193 (0.970)	0.526*** (2.760)	0.242 (1.230)	0.456** (2.120)
M/B_t	-0.323*** (5.550)	-0.444*** (7.380)	-0.321*** (5.560)	-0.441*** (7.120)
$Size_t$	-0.006 (0.450)	-0.002 (0.130)	-0.000 (0.030)	0.011 (0.760)
<i>Hotel</i>	-0.148*** (2.960)	-0.165*** (2.930)	-0.140** (2.920)	-0.160*** (3.080)
<i>Industrial</i>	0.053 (0.980)	0.010 (0.150)	0.049 (0.880)	0.015 (0.210)
<i>Office</i>	-0.046 (0.850)	-0.132*** (2.780)	-0.030 (0.560)	-0.115** (2.500)
<i>Other</i>	-0.081* (1.790)	-0.065 (1.500)	-0.078* (1.820)	-0.064 (1.610)
<i>Residential</i>	-0.040 (0.760)	-0.053 (1.070)	-0.035 (0.650)	-0.043 (0.860)
<i>Storage</i>	-0.048 (0.440)	-0.075 (1.030)	-0.046 (0.410)	-0.066 (0.840)
R^2	0.188	0.168	0.198	0.176
Method	OLS	Random Effects	OLS	Random Effects

Notes: Exhibit 5 presents regression results assessing REIT line of credit use. The sample consists of 3,139 quarterly observations for 151 unique equity REITs over the period 1999 to 2009. Two dependent variable specifications are presented: $LOCUse_t$, which is credit lines drawn scaled by credit lines available and $LOCUse_t^*$, defined as credit lines drawn divided by the sum of credit lines available and cash. Odd (Even) columns are OLS (Random Effects). Only $Size$ and property dummies are not scaled by net assets, total assets minus cash. FFO is funds from operations. FFO_VOL is the standard deviation of funds from operations. DIV is total dividends, common dividends plus preferred dividends. $REINV$ is net investment in real estate. M/B is the sum of market capitalization, preferred equity, and total liabilities minus amounts drawn from credit lines. $Size$ is the natural logarithm of inflation-adjusted market value of equity. The property focus variables are identified in Exhibit 2. *Retail* is the reference case. T -statistics (absolute values in parentheses) are calculated using heteroscedasticity-robust standard errors that cluster at the firm level.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

credit line availability and discretionary cash flow, which supports earlier inferences.

Conclusion

REIT credit line availability and utilization are investigated. We find that REITs have substantially increased liquidity using line availability over the period 1999 to 2009. Total lines available could support 17% of net REIT assets in 2009. REITs retain substantial overall liquidity by using less than 40% of line availability even at the peak of the financial crisis in 2009. The results show that while available lines have increased substantially over the time period studied, relative use has declined. Implications of this trend are an overall improvement in industry liquidity for the period, increased monitoring by bank lenders, and a possible reduction in overall industry-related agency costs.

Total line of credit availability is associated with REITs having strong track records of dividend payments, making real estate investments, and having capital market access. The positive line availability to dividend relation is important as it suggests the substitutability of dividends for cash flow when assessing default risk. REIT management is loath to cut dividends, so lenders can use dividends as a proxy for high certainty cash flow that can be used to service debt in a worst case scenario. This appears to be a departure from non-REITs, wherein lenders primarily focus on earnings or operating cash flow when setting line limits. REITs with more cash flow volatility obtain larger lines for precautionary use in liquidity management. Firms with lower cash flow volatility do not seek high lines, which entail additional fees, since fees are related to total line commitments and not just use.

Line utilization is directly related to cash flow as firms with greater cash flow can support more debt including line borrowings. There is little evidence of a relation between credit line borrowings and cash flow volatility, implying that REITs seek larger credit lines as a precautionary measure. There is a positive and significant relation between line use and real estate investment. The inverse relationship between additional equity offerings and line of credit use highlights the importance of additional equity in rebalancing REIT capital structure and its use in the repayment of short-term line indebtedness. Results associated with the inclusion of cash holdings into liquidity management framework generally provide similar results.

Our results provide further important contributions to the literature since they suggest differences between the determinants of credit line availability and use for REIT and non-REITs. Also, we provide the first analysis of corporate credit line availability and use during the recent financial crisis (2008–2009). Results showing strong credit line access for REITs during the financial crisis imply that markets recognize the efficiencies of the REIT corporate form and that the REIT industry was adequately liquid during this period based on this bank credit availability.

Finally, while it is evident that REITs use credit lines and cash holdings to manage liquidity and that capital drawn from lines has become a permanent source of capital for the general REIT class, much additional investigation is required. One important question is whether markets reward REITs for the way they manage liquidity, especially given the importance of liquidity for capital constrained firms. Furthermore, the integration of lines of credit into the REIT capital structure highlights the need to assess REIT liquidity and REIT capital acquisition strategies. Operating performance differentiation, likelihood of default on all debt obligations, and investment performance are all related topics that can benefit from future research.

Endnotes

- ¹ Much of the non-REIT assessment of credit lines has used hand-collected data over relatively short time periods and on an annual basis. SNL REIT Datasource database compiles line of credit availability and use data, which facilitates the study of liquidity management and line of credit issues. This provides a richer environment to assess the impact of private bank debt.
- ² REITs are required to distribute at least 90% of taxable income. Wang, Erickson, and Gau (1993) are the first to quantify that the mandatory REIT dividend provision may not be constraining due to depreciation charges. Subsequently, Bradley, Capozza, and Seguin (1998), Feng, Ghosh, and Sirmans (2007), Ghosh and Sirmans (2006), and Hardin and Hill (2008) show that REIT distributions are typically much greater than the minimum requirement. Specifically, Hardin and Hill (2008) discuss that REITs have some control over discretionary dividends. Thus, the payment of mandatory and excess dividends leaves REITs with a weakened ability to fund meaningful property acquisition with internally-generated cash. REITs generate positive and substantial operating cash flows, but are constrained with respect to property acquisitions. Also, although REITs can use their UPREIT structure to facilitate acquisitions (Pierzak, 2001), property purchase typically require some level of cash.
- ³ The argument is made that REITs are not constrained on an operating basis, but are constrained in making investments.
- ⁴ A related area of interest is the impact of real estate lending on bank performance. For example, Igan and Pinheiro (2010) evaluate bank performance and real estate exposure.
- ⁵ Lines of credit and revolvers offered by commercial banks are typically done through a narrow, specific channel within the banking community so issues related to origination channels and loan brokerage as discussed in LaCour-Little (2009) are less relevant.
- ⁶ Ambrose and Linneman (2001) argue that the REIT structure benefits from agency cost reductions and Hardin, Hopper, and Hill (2009) show that this may be correct, at least when looking at the operating performance of REIT owned multifamily properties.
- ⁷ Line of credit use is measured using line outstandings as a percentage of net assets whereas utilization refers to line use as a percentage of either total lines or total lines plus cash holdings.
- ⁸ In a related area of study, Howe and Shilling (1988) and Elayan, Mayer, and Li (2006) find a positive market reaction to the announcement of line of credit indicating that this type of credit is important.

- ⁹ Abraham (1996) goes so far as to argue that commercial real estate needs a NOI or cash flow measure (index) as cash flow is needed to service debt notwithstanding property value.
- ¹⁰ Hardin, Highfield, Hill, and Kelly (2008) suggest that cash holdings and bank lines may be liquidity substitutes.
- ¹¹ Given the financial market constraints and concerns over commercial real estate at the end of 2008 and 2009, a number of REITs cut or suspended dividends. Analysts highlighted a need to improve liquidity and conserve cash.
- ¹² Hardin and Wu (2009) and Riddiough and Wu (2009) make similar arguments for credit line use.
- ¹³ To our knowledge, this is the first analysis of credit line availability and use during the recent (2008–2009) financial crisis.
- ¹⁴ Dropping observations without credit line access is not costly as more than 95% of REITs have credit line access. Due to this lack of variation in REIT credit line access, we do not present results for factors differentiating between REITs with and without credit line access. However, in an earlier version of this paper we examined this issue using logistical regressions. The statistical inferences are similar to those presented in Exhibit 3 and are available upon request.
- ¹⁵ Presently, we have quarterly data through the second quarter of 2009.
- ¹⁶ The scale factor for many of the variables is assets net of cash. Cash holdings and line of credit access and use could be simultaneously determined as increased cash holdings can imply a reduced need to acquire and use bank debt. Sufi (2009) discusses that this could cause a mechanical negative correlation between dependent and independent variables.
- ¹⁷ Retail is used as the base case.
- ¹⁸ Presently, we have quarterly data through the second quarter of 2009.
- ¹⁹ This study is not focused on line pricing. It is common practice for borrowers to pay fees based on total availability. They also may be required to additional non-usage fees as well. In any case, these lines are not costless and there is a cost associated with the acquisition of these credit facilities. Research on pricing REIT debt includes Hardin and Wu (2009) and Highfield, Roskelley, and Zhao (2007).
- ²⁰ This is not to say that cash flow is not important in the larger context of firm performance, especially since it is needed to pay dividends. Dividends do, however, proxy a worst case scenario cash flow and in the event of substantial stress this cash flow can be diverted from dividends to debt service. This has been the case during the recent dysfunctional period in financial markets.
- ²¹ The regression results presented do not include variables for debt and equity issuances given the focus on firm operations. When these variables are included, the results are similar to those presented in Exhibits 4 and 5, in addition to a statistically significant negative coefficient for the equity issuance variable. The implication is that secondary equity issuances are used to reduce line of credit outstandings, consistent with Brown and Riddiough (2003) and Riddiough and Wu (2009).
- ²² Possibly, the contingencies do not materialize or are not as severe as initially feared.
- ²³ Our use of quarterly data allows better matching of public market access and private market (bank) actions, which may provide a stronger test for the relation between credit line use and security issuance.
- ²⁴ These results are available upon request.

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