



The direct costs of raising external equity capital for US REIT IPOs

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Abstract

Purpose – The purpose of this paper is to investigate the total direct costs of raising external equity capital for US real estate investment trust (REIT) initial public offerings (IPOs).

Design/methodology/approach – The study provides recent evidence on total direct costs for a comprehensive dataset of 125 US REIT IPOs from 1996 until June 2010. A multivariate OLS regression is performed to determine significant factors influencing the level of total direct costs and also underwriting fees and non-underwriting direct expenses.

Findings – The study finds economies of scale in total direct costs, underwriting fees and non-underwriting expenses. The equally (value) weighted average total direct costs are 8.33 percent (7.52 percent), consisting of 6.49 percent (6.30 percent) underwriting fees and 1.87 percent (1.22 percent) non-underwriting direct expenses. The study finds a declining trend of total direct costs for post 2000 IPOs which is attributed to the declining trend in both underwriting fees and non-underwriting direct expenses. Offer size is a critical determinant for both total direct costs and their individual components and inversely affects these costs. The total direct costs are found significantly higher for equity REITs than for mortgage REITs and are also significantly higher for offers listed in New York Stock Exchange (NYSE). Underwriting fees appear to be negatively influenced by the offer price, the number of representative underwriters involved in the issue, industry return volatility and the number of potential specific risk factors but positively influenced by prior quarter industry dividend yield and ownership limit identified in the prospectus. After controlling for time trend, the paper finds REIT IPOs incur higher non-underwriting direct expenses in response to higher industry return volatility prior to the offer.

Originality/value – This paper adds to the international REIT IPO literature by exploring a number of new influencing factors behind total direct costs, underwriting fees and non-underwriting direct expenses. The study includes data during the recent GFC period.

Keywords Total direct costs, Underwriting fees, Non-underwriting direct expenses, Global financial crisis, Equity capital, World economy, United States of America, Direct costs

Paper type Research paper



1. Introduction

This study investigates the total direct costs, underwriting costs and non-underwriting direct costs of raising external equity capital by US. Real Estate Investment Trust (REIT) initial public offerings (IPOs) from 1996 until June 2010. REITs, like other firms seeking to list in a stock exchange, are generally initially funded through external equity capital raised by IPOs. IPOs however have substantial total direct costs associated with them, including underwriting fees, legal, accounting, auditing, advertising, printing, listing expenses and, etc. As such, IPO issuers retain only the net proceeds to use in their operations. Dolvin and Pyles (2009) identify that the direct costs are an important consideration for issuers in raising external equity capital. Moreover, REITs,

in comparison to other stocks, are relatively transparent (Buttimer *et al.*, 2005) and hence leave relatively lower money on the table through underpricing. Bairagi and Dimovski (2011) report underpricing of 3.18 percent for REIT IPOs issued during 1996-2010 which is much lower than 39.51 percent underpricing of US industrial IPOs over 1997-2002 (Corwin and Schultz, 2005) and also the cross sectional variation of underwriting fees in REIT IPOs is much more than their industrial counterparts. As REITs have relatively lower indirect costs of underpricing, are comparatively more dependent on initial equity capital for their initial operations and have higher cross sectional variation in underwriting fees, the direct costs of raising their initial equity capital are an important component of their costs of capital and deserve study, particularly the determinants of underwriting fees and non-underwriting direct expenses.

There have been a number of empirical studies covering the total direct costs of raising external equity capital for firms in industries other than REITs (Ritter, 1987; Lee *et al.*, 1996). Most of the previous studies on US REIT IPOs however covered the indirect costs of initial underpricing until Chen and Lu (2006) discussed the direct cost of underwriting. The non-underwriting direct expenses and their determinants however have not yet been reported in the REIT literature even though some of the non-underwriting direct expenses such as legal and accountants' fees are determined by the issue complexities rather than its size and printing and distribution of the issue documents are related to both issue size and method (Gerbich *et al.*, 1995). This study explores both the underwriting and the non-underwriting expenses of raising external equity capital. Chen and Lu (2006) explored US REIT IPO underwriting fees with a dataset up to 1999 and illustrated a downward trend of such fees. Additionally, they argued that underwriting compensation may decrease over time when both underwriters and initial investors become familiar with the REIT product. Our study explores the total direct costs of raising equity capital for US REIT IPOs covering the period of recent global financial crisis (GFC). The inclusion of the GFC is significant for REITs because it was triggered by the sharp downturn of real estate values causing the bankruptcy of many financial institutions (Loapodis, 2009, p. 576). Moreover, our sample includes the REIT IPOs issued after implementation of REIT Modernization Act 1999 which became effective since January 2001 and expected to reduce systematic risk of the issuing firm (Howe and Jain, 2004). Our study explores the trend of underwriting fees over three sub periods, 1996-1999, 2002-2006 and 2007-2010 to see whether the declining trend of underwriting fees continues. Our findings support the declining trend of total direct costs including underwriting fees and non-underwriting direct expenses over the periods.

Confining the study to the US REITs is important because they have been a large-scale investment vehicle for investors intending to invest in income-producing, professionally managed real estate properties and have historically provided portfolio diversification benefits as well as strong and reliable dividend income along with superior long-term risk-adjusted returns, liquidity and transparency of public capital markets with a significant investment opportunity for the investors (Newell *et al.*, 2007). REITs also act as defensive stocks in terms of return and bid-ask spread (Glascock *et al.*, 2004) and provide an inflation hedge investment vehicle (Zhou *et al.*, 2005; Zerbs and Cambon, 1984), provide diversification benefits with a longer-term investment horizon (Mackinnon and Zaman, 2009) and with international investment opportunities in real estate (Lim *et al.*, 2008).

Limiting the study to REITs reduces the inherent confounding cross-industry effects of non-real estate firms. It also reduces the cross-exchange effect because most of the REITs in our sample are listed in the New York Stock Exchange (NYSE) (82 percent) and after 2004 all REITs are listed only on the NYSE.

The remainder of the paper is organized as follows. Section 2 contains a review of relevant literature, while Section 3 outlines the data and methodological design of the study. Section 4 deals with some summary statistics, the main empirical results. Finally, Section 5 summarizes the findings and concludes with some implications.

2. Related literature

This section is divided into two parts. The first part reports some relevant industrial company literature while the second reviews relevant REIT literature.

2.1 Industrial company direct costs

Work by both Ritter (1987) and Lee *et al.* (1996) on US IPOs and Chen and Wu (2002) on Hong Kong IPOs document economies of scale in total direct costs while Kaserer and Kraft (2003) with German IPOs did not detect any economies of scale. Ritter (1987) documents 14.03 percent and 17.74 percent direct cash expenses consisting of underwriting commission and other direct expenses for 664 firm commitment and 364 best efforts US IPOs, respectively, over 1977-1982. Lee *et al.* (1996) find total direct costs to average around 11.0 percent of gross proceeds in their dataset of 1,767 industrial company IPOs during the period of 1990-1994. Their direct costs ranged from 16.96 percent for proceeds of less than \$10 million to 5.72 percent for proceeds of \$500 million and above. Chen and Wu (2002) find direct costs to average 10.44 percent of gross proceeds over the period from 1991 to 1996 on their sample of 281 IPOs in Hong Kong. Their direct costs ranged from 4.97 to 17.65 percent of gross proceeds demonstrating a declining trend in direct costs as gross proceeds increased. Kooli and Suret (2002) document 14.39 and 19.19 percent for 114 firm commitment and 104 best effort Canadian IPOs and 10.44 and 6.22 percent for 1,148 firm commitment and 40 best effort US IPOs.

Ritter (1987) reports 8.67 percent and 10.26 percent underwriting commissions for 664 firm commitment and 364 best efforts US IPOs, respectively, over 1977-1982. Barry *et al.* (1991) report 8.73 percent for 723 firm commitment industrial IPOs over 1983-1987. The underwriting spread of Lee *et al.* (1996) averaged 7.31 percent of gross proceeds ranging from 9.05 percent for proceeds of less than \$10 million to 5.21 percent for proceeds of \$500 million and above. Their findings suggest economies of scale for underwriting spreads. Chen and Wu (2002) indirectly calculated the direct costs of issuing IPOs because Hong Kong IPO issuers did not disclose the underwriting spread separately in their prospectuses during their sample period.

Underwriting spread as documented by Chen and Ritter (2000) in the US is 7 percent in more than 90 percent of the offerings, Torstila (2001) in European capital markets documents an average of 4 percent, Kaserer and Kraft (2003) in Germany of 5.01 percent, and Corwin and Schultz (2005) in another US study, of exactly 7 percent in 76.7 percent of their 1,638 IPOs over 1997-2002. A number of other studies also support the economies of scale in underwriting fees[1]. But it may also follow a U-shaped pattern as documented in Kaserer and Kraft (2003) due to the effects of diminishing returns, bearing higher-risk (Hansen and Torregrosa, 1992) and economies of scale for large offers.

Non-underwriting direct expenses appear proportionally large for small offerings[2]. These expenses (Ritter, 1987; Lee *et al.*, 1996) are directly incurred by the issuer to pay for registration to the Securities and Exchange Commission (SEC), listing fees to the exchange, hiring of accountants and auditors, printing, engraving, advertising, legal and due diligence, and some out-of-pocket expenses which are considered essential to the offer.

Ritter (1987) finds such expenses to average 5.36 and 7.48 percent for the firm commitment and best efforts IPOs, respectively. Barry *et al.* (1991) report such expenses to average 6.31 and 2.98 percent for offers with warrants and without warrants, respectively. Lee *et al.* (1996) document these expenses to average around 3.69 percent with some evidence of economies of scale. Kooli and Suret (2002) report 3.33 percent and 2.66 percent for 1,148 firm commitment and 40 best-effort US IPOs, respectively, over 1997-1999. Kaserer and Kraft (2003) report 2.76 percent and also report offer size and offering complexities as significant in influencing expenses.

Underwriters in the syndicate perform the function of distributing shares to the potential investors. A large number of underwriters in the syndicate helps the managing underwriter in efficiently performing the distribution function and thereby reduces the risk of distribution but at the same time leads to other problems such as selling their portion to speculators or flippers and returning to the managing underwriter. Carter and Dark (1990) include the number of underwriters in the syndicate to control for factors involved in distribution in the expectation that this variable reduces the underwriting fees because a large number of underwriters is expected to reduce the risk of a successful distribution. Their findings report a statistically significant negative effect on underwriting fees. The total number of underwriters in the underwriting syndicate could also be expected to reduce promotional costs in non-underwriting direct expenses.

Michaely and Shaw (1994) suggest that underwriters may consider it more risky for issuers with higher ownership restrictions and hence might demand higher underwriting fees. The Internal Revenue Code of 1986 imposes restrictions on the concentration of REIT ownership. To maintain REIT status, fewer than five individuals cannot hold more than 50 percent in value of a REIT's outstanding stock, directly or indirectly. To comply with this Code, REIT charters usually prohibit any person from acquiring or holding, directly or indirectly, stock in excess of a certain percentage of the aggregate outstanding shares. Such ownership restriction for single individual shareholders limits the number of large shareholders and hence the trading activity in the market.

Simunic and Stein (1987), Beatty and Welch (1996), Bhabra and Pettway (2003) and Leone *et al.* (2007) discuss the number of risk factors listed in the IPO prospectus. The number of risk factors listed in the IPO prospectus can be used as proxy for information asymmetry, reduced underwriters' liability (Beatty and Welch, 1996) and disclosure-related costs (Verrecchia, 2001, p. 164). Based on this argument, it can be expected that the number of risk factors in the prospectus can signal lower information asymmetry and underwriters' liability and hence is expected to negatively affect underwriting fees and also non-underwriting direct expenses through lowering promotional costs.

2.2 REIT direct costs

Before Chen and Lu (2006, p. 106) little was explored about the direct costs of raising REIT equity capital because all previous studies covered only indirect costs in terms of underpricing (or initial returns to subscribers) as a cost of going public, ignoring the magnitude of the direct costs incurred by the issuers in raising external equity capital.

They report equally (value) weighted underwriting gross spreads of 6.78 percent (6.56 percent) for 197 US REIT IPOs during 1980-1999 with 7.19 percent (6.91 percent) and 6.65 percent (6.49 percent) during 1980-1989 and 1990-1999 for a sample of 49 and 148, respectively. They argued that underwriters and investors were not well familiar with the REIT product (compared to industrial company IPOs) during their sample period.

Underwriters consider the industry volatility prior to the IPO as a signal of risk to investors and for this they associate industry volatility with underwriting spreads. Chen and Lu (2006) used standard deviation of monthly National Association of Real Estate Investment Trust (NAREIT) index returns over 12 months prior to IPO as a proxy for volatility in the REIT industry and find a positive effect on gross underwriting spreads. Chen and Lu (2006) also used the dichotomous variable of UPREIT for a REIT with umbrella partnership structure and argued that UPREIT affects liquidity, attracts more investors and hence underwriters charge lower underwriting fees. Taubman Centers adopted the first UPREIT structure in its IPO in 1992. It is a dual ownership structure owned by sponsor owners transferring the property to the UPREIT and general shareholders. UPREIT enables the transferring owners of the property to defer the taxes on capital gains of the property and also participate in management and hence they can positively contribute to firm value by their positive monitoring (Han, 2006).

Interestingly, Hartzell *et al.* (2005, p. 42) argued that low dividend yields in the immediate past lead to higher demand by issuers to raise new equity by IPO. This induces firms to supply more REIT IPOs in the market and hence underwriters may charge lower underwriting fees during the lower dividend yield period and vice versa.

In Australia, Dimovski (2006) and Dimovski and Brooks (2007) have worked on reporting some of the direct costs of equity capital raised by Australian REIT IPOs during 1994-2004. Briefly, they report average underwriting fees of 3.3 percent and find economies of scale in direct costs.

3. Data and method

This study is primarily based on data stated in the prospectuses of all REIT IPOs listed and priced in the NYSE, AMEX and NASDAQ exchanges as reported in the NAREIT's historical offering records over the period from January 1996 until June 2010. The initial sampling period starts January 1996 to capture the effect of widespread subprime real estate mortgage lending which starts in mid-1990s (Sanders, 2008). The year-by-year offerings of REIT IPOs have been tabulated from the NAREIT's historical offerings archives until June 2010. The name and ticker symbol of the REITs have been compiled from the SNL list of REITs, and NAREIT's historical offerings archives. The total number of REIT IPOs issued during the sample period is 125. The US SEC has mandated that all US publicly traded and listed companies electronically submit all filings including IPO prospectuses with the SEC. All REIT IPO prospectuses have been sourced from Electronic Data Gathering Analysis and Retrieval (EDGAR) which automatically collects, validates with indexing, accepts, and forwards the submissions by the companies and other entities mandated by the SEC law to file forms with the SEC[3].

Underwriting fees and non-underwriting expenses, lead and representative underwriters, number of representative and total underwriters, ownership limit, number of risk factors and name of the auditors who audited the financial statements in the prospectuses have been hand collected and compiled from respective IPO prospectuses. NAREIT index is taken from NAREIT website.

The reciprocal reimbursement of non-underwriting direct IPO expenses which sometimes takes place between underwriters and issuers has been taken into consideration and adjusted in calculating both the net underwriting and non-underwriting expenses incurred by the issuing firm[4]. The direct underwriting fees and non-underwriting expenses have been scaled by the total proceeds raised to derive a percentage of gross proceeds raised.

Reputation rank for lead and representative underwriters have been compiled as per Carter and Manaster (1990) as updated in Ritter's homepage (<http://bear.cba.ufl.edu/ritter/Rank.xcl>).

The auditor who has audited the largest dollar volume of offerings during the sample period is considered as a "differentiated auditor" in the REIT industry. Following Wang and Wilkins (2007) this variable of differentiated auditor has been incorporated as a control variable to capture any effect of the certifying role of such an auditor on direct costs. In identifying the differentiated or leading auditor, offer proceeds have been expressed with 2009 purchasing power using the US GDP price deflator.

The GFC after August of 2007 (Valentine and Gordon, 2009) occurred during our sample period. To investigate the effect of the GFC, we use the dummy variable POSTGFC with value of one for offers that occurred after August 2007 and 0 otherwise.

We used the ordinary least squares (OLS) regression specifications for direct costs, underwriting fees and non-underwriting direct expenses as percentage of offer proceeds as dependent variables to investigate their respective determinants. The OLS regression is recommended (Beatty and Welch, 1996, p. 576) and performed using EViews. The OLS specifications used in this study are as follows:

$$\begin{aligned} \text{DIRECTCOSTS} = & \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{UNDRANK} + \beta_3 \text{INDVOL} \\ & + \beta_4 \text{QINDYIELD} + \beta_5 \text{NUMTOTUND} \\ & + \beta_6 \text{NUMRISKFACT} + \beta_7 \text{BIG4TOP} + \beta_8 \text{REITTYPE} \\ & + \beta_9 \text{POSTGFC} + \beta_{10} \text{NYSE} + \beta_{11} \text{UPREIT} + \varepsilon \end{aligned} \quad (1)$$

$$\begin{aligned} \text{UNDFEES} = & \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{UNDRANK} + \beta_3 \text{INDVOL} \\ & + \beta_4 \text{QINDYIELD} + \beta_5 \text{OFFPRICE} + \beta_6 \text{OWNLIM} \\ & + \beta_7 \text{NUMREPUND} + \beta_8 \text{NUMRISKFACT} + \beta_9 \text{BIG4TOP} \\ & + \beta_{10} \text{UPREIT} + \beta_{11} \text{REITTYPE} + \beta_{12} \text{POSTGFC} + \varepsilon \end{aligned} \quad (2)$$

$$\begin{aligned} \text{DIRIPOEXP} = & \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{INDVOL} + \beta_3 \text{QINDYIELD} \\ & + \beta_4 \text{NUMTOTUND} + \beta_5 \text{NUMRISKFACT} + \beta_6 \text{BIG4TOP} \\ & + \beta_7 \text{REITTYPE} + \beta_8 \text{PYNUMIPO} + \beta_9 \text{NYSE} + \beta_{10} \text{UPREIT} + \varepsilon \end{aligned} \quad (3)$$

Where DIRECTCOSTS (Ritter, 1987; Lee *et al.*, 1996; Chen and Wu, 2002) are the total direct costs consisting of underwriting fees and non-underwriting direct expenses as a percentage of gross proceeds raised, UNDFEES are the underwriting fees paid directly to the underwriters as a percentage of proceeds raised (Chen and Lu, 2006); and DIRIPOEXP are the non-underwriting direct expenses as a percentage of total proceeds raised (Lee *et al.*, 1996). Table I defines all other controlling variables used in these specifications.

Variable	Exp. sign.	Definition and references
LNPROCEED	-	Natural logarithm of gross proceeds (Barry <i>et al.</i> , 1991; Ibbotson <i>et al.</i> , 1994; Ling and Ryngaert, 1997; Chen and Lu, 2006)
UNDRANK	-	Reputation rank of lead underwriters as per Carter and Manaster (1990) which is also sourced from Ritter's homepage (Dunbar, 1995)
INDVOL	+	Standard deviation of monthly returns over 12 months prior to the offer (Chen and Lu, 2006)
QINDYIELD	+	Mean monthly REIT industry yield over three-month prior to the IPO (Hartzell <i>et al.</i> , 2005)
OFFPRICE	-	Dollar offer price per share (Bradley <i>et al.</i> , 2006; Kutsuna <i>et al.</i> , 2008)
OWNLIM	+	Ownership restriction for an individual investor for owning maximum percentage of outstanding equity (Michaely and Shaw, 1994)
NUMREPUND	-	Number of representative underwriters in the underwriting syndicate
NUMTOTUND	-	Number of total underwriters in the underwriting syndicate (Carter and Dark, 1990)
NUMRISKFACT	-	Number of risk factors specifically listed in the offer prospectus (Simunic and Stein, 1987; Beatty and Welch, 1996; Bhabra and Pettway, 2003; Leone <i>et al.</i> , 2007)
BIG4TOP	-	Dummy variable representing unity for auditor differentiated with the highest market share in the industry during the sample period and 0 otherwise (Beatty and Welch, 1996, p. 578; Wang and Wilkins, 2007)
PYNUMIPO	±	Number of total IPOs completed during the year immediately prior to the offer (Benveniste <i>et al.</i> , 2003; Ellul and Pagano, 2006)
REITTYPE	+	Dummy variable representing unity for equity REIT and 0 otherwise (Chen and Lu, 2006; Dolvin and Pyles, 2009)
POSTGFC	±	Dummy variable representing unity for offers issued after August 2007 and 0 otherwise (Valentine and Gordon, 2009)
NYSE	+	Dummy variable representing unity for offers listed in NYSE and 0 otherwise (Corwin and Harris, 1999; Kooli and Suret, 2002)
UPREIT	-	Dummy variable representing unity for Umbrella Partnership REIT and 0 otherwise (Ling and Ryngaert, 1997; Chen and Lu, 2006; Dolvin and Pyles, 2009)

Table I.
Definition of variables
used in the above
specifications

The β 's are unknown parameters to be estimated and ε is assumed $\sim N(0, \sigma^2)$. A White (1980) test for heteroskedasticity, a Jarque-Bera test for normality and a Ramsey RESET test for omitted variables are run on the data and the results are reported.

To further test the robustness of factors influencing total direct costs, underwriting fees and non-underwriting direct expenses, we conduct a Chow structural breakpoint test for post 2000 IPOs. This structural break is justified because REIT and other IPOs dried up during 2000 and 2001 in the aftermath of the dot.com bubble burst in 2000. Additionally, the S&P500 stock index began incorporating some REITs in its index in 2001 (Laopodis, 2009) and also REIT Modernization Act 1999 became effective in 2001 (Howe and Jain, 2004).

4. Results

Table II presents longitudinal and categorical distribution of different level of costs for the US REIT IPOs over January 1996 until June 2010. The data includes the average

Year	No. of IPOs	Average proceeds raised	Price per share	NAREIT index volatility (%)	Gross underwriting fees (%)	Other direct expenses (%)	Total direct costs (%)
1996	4	248.89	19.44	1.88	6.44	1.94	8.38
1997	27	203.05	17.19	3.36	6.70	2.05	8.75
1998	15	130.86	15.17	3.21	6.36	2.24	8.60
1999	3	102.33	9.67	4.51	7.71	2.98	9.54
2002	4	202.05	15.00	3.29	6.94	2.44	9.38
2003	7	282.03	13.36	3.12	6.97	1.67	8.64
2004	29	222.59	13.09	5.07	6.53	2.05	8.57
2005	11	296.93	14.68	4.66	6.23	1.78	8.01
2006	6	366.23	17.15	3.60	6.08	2.05	8.13
2007	4	403.89	16.50	4.43	6.31	0.75	7.05
2008	2	220.00	22.00	5.43	6.63	0.53	7.16
2009	9	288.90	18.44	16.53	5.68	1.25	6.93
2010	5	171.80	17.70	10.67	6.45	1.18	7.63
1996-1999	49	175.00	16.29	3.26	6.64	2.14	8.71
2002-2006	56	261.64	14.43	4.49	6.51	1.92	8.43
2007-2010	20	275.73	18.00	11.54	6.09	1.06	7.15
Equity	73	250.36	15.97		6.53	2.23	8.76
Mortgage	50	205.22	15.17		6.35	1.33	7.68
NYSE	100	255.99	16.15		6.40	1.84	8.23
Nasdaq	15	181.23	13.98		6.74	1.41	8.15
AMEX	8	47.76	12.38		6.64	3.07	9.71
All	125	230.00	15.54		6.49	1.87	8.33

Table II.
Time series and
categorical distribution of
125 US REIT IPOs over
January 1996 until
June 2010

proceeds raised, average offer or issue price, NAREIT Index volatility, underwriting fees, other direct expenses and the yearly equally weighted average direct issuing costs.

The average gross proceeds are in million dollars. Two issues (Apple Suite and G. REIT) are not yet priced, identified as equity or mortgage and listed in any trading exchanges but due to availability of their cost data, they are taken into sample. The no. of IPOs is the total number of IPOs issued during the year, three sub periods, REIT type wise and listing exchange wise. Next five columns present the figures on average. The last row labeled as All presents overall average except number of IPOs which is the total number of IPOs during the sample period.

The column of total direct costs is not the simple sum of the columns of gross underwriting spreads and other non-underwriting direct expenses rather it is the average of these costs in each of the partitions examined. The total sample period is divided into three sub periods to grasp the periodical differences in the direct costs because Chen and Lu (2006) argue that both underwriters and investors will be familiar with the REITs over time resulting in lower valuation uncertainty and issuing costs. The first period includes 49 offers from 1996 to 1999, the second period includes 60 issues from 2002 to 2006 and the third period includes 20 issues from 2007 until June 2010. The average direct costs during these three periods were 8.71, 8.43 and 7.15 percent, respectively. The issues during the third sub period experience the lowest total direct costs of offering (7.15 percent) in spite of the rising industry return volatility (NAREIT index) over the periods.

The sample is also divided into equity (73) and mortgage (50) REIT types to capture any difference of costs due to the structural difference since equity REITs invest in and operate income-producing properties whereas mortgage REITs purchase only mortgage obligations (Ling and Ryngaert, 1997). It is evident from this table that the total direct costs for equity REITs (8.76 percent) is higher than that for mortgage REITs (7.68 percent). The higher total direct costs for equity REITs are due to higher costs of both underwriting fees and non-underwriting direct expenses. These higher costs for equity REITs are attributed to more uncertainty associated with assessing operating properties of the equity REITs because the cash flows in mortgage obligations are more certain than that of operating properties. In terms of the listing and trading exchange, the sample is also categorized into 100 for NYSE, 15 for Nasdaq and eight for AMEX with average total direct costs of 8.23 percent, 8.15 percent and 9.71 percent, respectively. Examining both underwriting fees and non-underwriting direct expenses, it is clearly evident that NYSE experiences the lowest average underwriting fees and AMEX experiences the highest non-underwriting direct expenses. These lowest underwriting fees might be one of the motivating factors for REIT issuers behind choosing only NYSE after 2004 as the listing exchange. IPOs in 1999 incurred the highest underwriting fees (gross spread) and non-underwriting direct expenses and the lowest offer price per share during the sample period (Kutsuna *et al.*, 2008).

Table II also reports that the underwriting fees followed a declining trend over the three sub periods which is consistent with the declining trend of Chen and Lu (2006) who report 7.19 percent in 1980s and 6.65 percent in 1990s. This supports the notion of Chen and Lu (2006) that REIT IPOs have become more familiar among both investors and investment bankers. Moreover, they also report the underwriting costs of 755 matching industrial IPOs and conclude that REIT IPOs paid comparatively higher costs to underwriters. We find in our dataset 66 percent of IPOs (83/125) to pay below 7 percent, 29 percent (36/125) to pay exactly 7 percent underwriting fees against 31 percent in Chen and Lu (2006) whereas it is 76.7 percent in Corwin and Schultz's (2005) study of industrial IPOs. This implies that the cross-sectional variation in underwriting fees of REIT IPOs is much more than in industrial IPOs.

Figure 1 shows the trend of average direct costs consisting of underwriting fees and non-underwriting direct expenses of issuing US REIT IPOs over 1996 until June 2010. The figure reveals a declining trend of direct costs during 1999-2007.

Figure 2 shows the scatter diagram of underwriting fees in percentage of proceeds and natural logarithm of proceeds to graphically depict the effect of increasing offer size on underwriting fees along with the trend line. The figure shows the downward sloping trend line. Chen and Lu (2006) document the U-shape pattern in underwriting fees but our results do not support the U-shape pattern. Figure 3 shows the scatter diagram of non-underwriting direct expenses in percentage of proceeds and natural logarithm of proceeds to graphically depict the effect of increasing offer size on non-underwriting direct expenses along with the trend line. The figure also shows the downward trend line and supports the economies of scale in such expenses.

Table III presents the descriptive statistics for variables used in our analysis and shows that the average IPO proceeds during the sample period averaged to \$230 million. The direct costs consisting of 6.49 percent average underwriting fees and 1.87 percent average non-underwriting direct expenses averaged 8.33 percent and these are positively skewed and leptokurtic in magnitude. The weighted average reputation rank

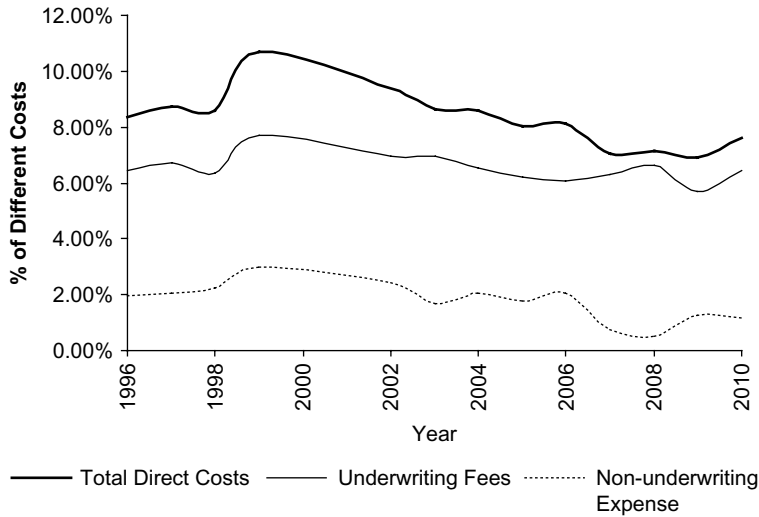


Figure 1.
Year wise diagram of average direct costs, underwriting fees and non-underwriting direct expenses of US REIT IPOs over 1996 until June 2010

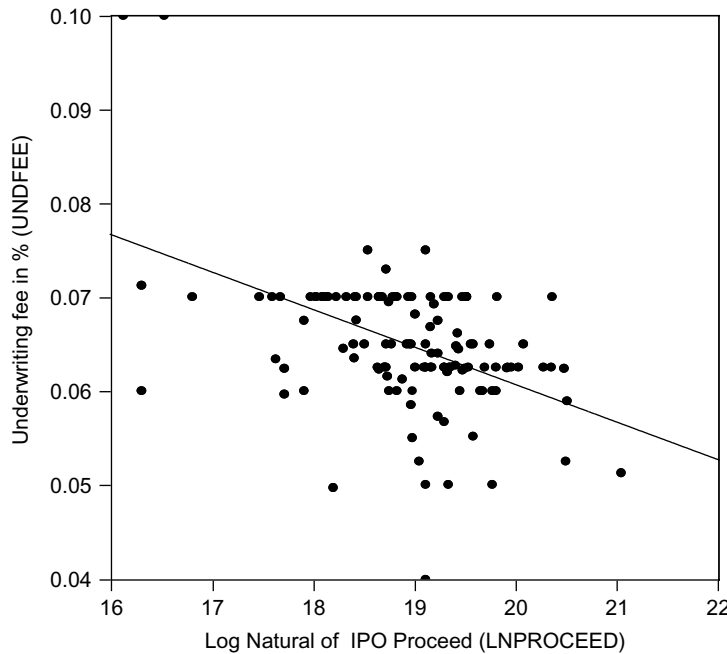
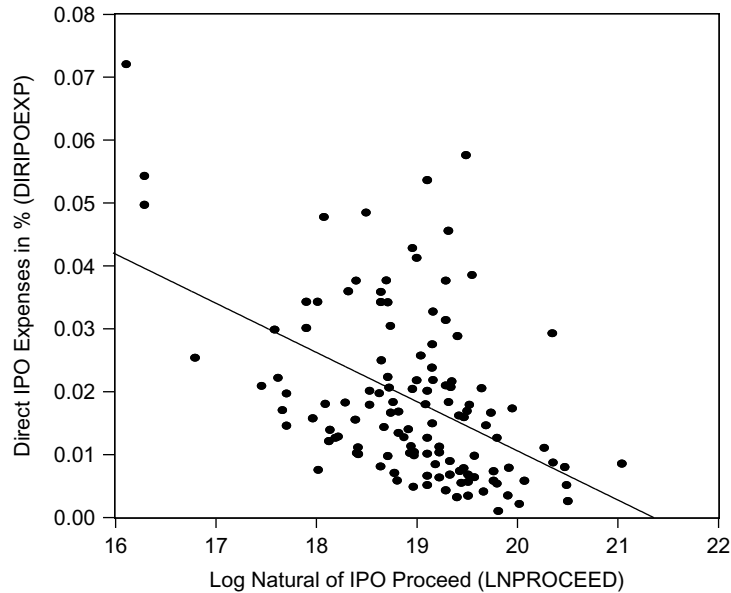


Figure 2.
Diagram of underwriting fees in percent (UNDFEE) and Log natural of IPO proceed (LNPROCEED) for US REIT IPOs over 1996 until June 2010

for lead underwriters is 7.35 which is less than 8.06 in Ghosh *et al.* (2000) with maximum 9 and minimum 2. The average gross underwriting fees are 6.49 percent ranging from 4 to 10 percent. The average number of total underwriters in the syndicate is 14.06 during the period and is higher than that of 3.62 noted in Ghosh *et al.* (2000) (with maximum 45 and minimum 1 with our data). The average number of representative

Figure 3.
Diagram of non-underwriting direct expenses (DIRIPOEXP) and Log natural of IPO proceed (LNPROCEED) for US REIT IPOs over 1996 until June 2010



underwriters is 2.98 with maximum 9 and minimum 1. The number of risk factors averaged 49.22. Monthly industry return volatility prior to the offer is 5.14 percent and quarterly industry dividend yield three-month prior to the offer is 5.87 percent. The ownership limit for an individual investor averaged 9.27 percent of outstanding equity and negatively skewed. The number of IPOs issued during the prior year (PYNUMIPO) averaged 10.74 whereas equity type REITs, REITs listed in NYSE and UPREIT averaged 59 percent, 81 percent and 55 percent, respectively, in our sample IPOs.

Determinants of total direct costs

Table IV presents the OLS regression results of factors influencing the direct costs of raising external equity capital for US REIT IPOs from January 1996 until June 2010. Table IV consists of three specifications with total direct costs as a percentage of gross proceeds as the dependent variable. Specification 1 is with the maximum complete observations of 120. To test the robustness of specification 1, specification 2 excludes one outlier of the dependent variable beyond $\text{mean} \pm 3$ standard deviations. Specification 3 excludes major insignificant variables of specification 2. After excluding an outlier and adjusting for the missing data of some control variables in the concerned IPO prospectuses, the complete adjusted observations in specifications 2 and 3 become 119. To control for any time trend of dependent variable, year dummies have been used in all specifications, although their coefficients and p -values are not specifically reported. Only 1998 appeared significant and negative but not across all specifications. To check the consistency of the independent variables, we performed a Chow structural breakpoint test of before and after 2000. One of the Chow test statistics, the Wald statistic, is reported with its p -value.

The results show that the offer size (LNPROCEED) and the number of total underwriters (NUMTOTUND) in the underwriting syndicate have statistically

	Mean	Median	Minimum	Maximum	SD	SK	Kurt	Sample
PROCEED (m\$)	230.00	196.00	10.00	1,390.00	192.00	2.63	13.53	125
DIRECTCOSTS	8.33	8.02	4.50	17.19	1.68	1.47	8.19	124
UNDFEES	6.49	6.48	4.00	10.00	0.73	1.10	10.66	125
DIRIPOEXP	1.87	1.57	0.09	7.19	1.36	1.30	4.61	124
OFFPRICE	15.54	15.00	5.00	26.00	4.54	-0.00	2.36	125
UNDRANK	7.35	7.67	2.00	9.00	1.41	-0.98	3.24	121
INDVOL	5.14	3.89	1.62	17.37	3.69	2.27	7.48	125
QINDYIELD	5.87	5.78	3.94	7.91	0.80	0.43	3.37	125
NUMREPUND	2.98	3.00	1.00	9.00	1.76	1.02	3.68	121
NUMTOTUND	14.06	9.00	1.00	45.00	10.67	1.10	3.31	121
NUMRISKFACT	49.22	46.00	14.00	112.00	18.31	0.80	3.71	125
OWNLIM	9.27	9.80	4.10	9.90	1.25	-2.43	8.02	111
PYNUMIPO	10.74	8.00	0.00	29.00	9.01	1.11	2.73	125
REITTYPE	0.59				0.49	-0.38	1.15	123
NYSE	0.81				0.39	-1.61	3.58	123
UPREIT	0.55				0.50	-0.21	1.05	123

Notes: PROCEED – gross proceeds as scaled in million dollars; DIRECTCOSTS – total direct costs consisting of underwriting fees and non-underwriting expenses; UNDFEES – fees directly paid to the underwriters as a percentage of total proceeds; DIRIPOEXP – percentage of direct IPO related expenses scaled by gross proceed; OFFPRICE – dollar offer price per share; UNDRANK – average reputation rank for lead underwriters; INDVOL – standard deviation of monthly returns over 12 months prior to the offer; QINDYIELD – mean monthly REIT industry yield over three-month prior to IPO; NUMREPUND – number of representative underwriters in the underwriting syndicate; NUMTOTUND – total number of underwriters in the syndicate; NUMRISKFACT – the number of risk factors specifically listed in the prospectus; OWNLIM – ownership restriction for an individual investor defined as the maximum limit of owning in percentage of outstanding equity; PYNUMIPO – number of IPOs in the year prior to the offer; REITTYPE – dummy variable with value of 1 for equity REIT and 0 for mortgage REIT; NYSE – dummy variable with value of 1 for REIT listed in NYSE and 0 for otherwise; and UPREIT – dummy variable with value of 1 for Umbrella partnership REIT and 0 for traditional REIT

Table III.
Descriptive statistics of variables used for direct costs of raising equity by 125 US REIT IPOs over 1996 until June 2010

significant negative influence on total direct costs. Whereas, quarterly industry dividend yields (QINDYIELD), equity REIT (REITTYPE) and listing exchange (NYSE) significantly positively affect such costs.

The significant negative coefficient of offer size supports the economies of scale in total direct costs. The positive coefficient of industry return volatility (specification 2 is marginally negative) is consistent with Chen and Lu (2006) who associate this with higher perceived industry risk by the underwriters. The significant negative coefficient of the number of total underwriters (NUMTOTUND) in the underwriting syndicate supports the distributional efficiency of larger underwriting syndicate (Carter and Dark, 1990). The negative coefficient of the number of risk factors corroborates with the hypothesis of Beatty and Welch (1996, p. 555) that the number of risk factors specified in the prospectus reduces information asymmetry and the liability of the underwriters for any litigation risk. The reduced information asymmetry might motivate the optimism among subscribing investors. This favorable optimism among investors and the reduced litigation risk of underwriters might motivate them to charge lower underwriting fees and issuers might need lower direct expenses to promote the issue.

	1	2	3
Constant	0.205 0.000 ***	0.181 0.000 ***	0.174 0.000 ***
LNPROCEED	-0.009 0.000 ***	-0.007 0.000 ***	-0.008 0.000 ***
UNDRANK	-0.002 0.185	-0.001 0.647	
INDVOL	0.013 0.879	-0.001 0.987	
QINDYIELD	0.009 0.005 ***	0.008 0.009 ***	0.008 0.000 ***
NUMTOTUND	-0.001 0.016 **	-0.001 0.032 **	-0.001 0.021 **
NUMRISKFACT	-0.001 0.22	-0.001 0.103	-0.001 0.123
BIG4TOP	-0.002 0.574	-0.003 0.333	
REITTYPE	0.011 0.016 **	0.007 0.037 **	0.009 0.000 ***
POSTGFC	-0.005 0.562	-0.006 0.433	
NYSE	0.006 0.062 *	0.007 0.035 **	0.006 0.044 **
UPREIT	0.001 0.818	0.003 0.347	
Time trend	Yes	Yes	Yes
R ²	0.58	0.54	0.53
Adj. R ²	0.48	0.43	0.45
White test	16.66	10.27	7.81
(p-value)	0.826	0.992	0.981
Jarque-Bera	70.64	55.82	55.02
(p-value)	0	0	0
Ramsey stability	12.34	2.59	0.25
(p-value)	0.081	0.718	0.974
Wald statistic	12.97	12	14.42
(p-value)	0.296	0.363	0.044
Sample size (n)	120	119	119

Notes: Significant at: *10 percent, **5 percent, ***1 percent levels; this table reports OLS results of factors influencing the total direct costs incurred by the issuers of US REIT IPOs over the period from January 1996 until June 2010 along with both R² and adjusted R² and standard regression diagnostics; the number of complete observations (n) is presented at the last row; dependent variable is the direct costs as a percentage of total proceeds raised and averaged 8.33 percent; sample size becomes 119 in specifications 2 and 3 after adjusting missing data of variables used in the regressions and after excluding outlier beyond mean ± 3 standard deviations of the total direct costs; the results in the table are based on the following equation:

$$\text{DIRECTCOSTS} = \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{UNDRANK} + \beta_3 \text{INDVOL} + \beta_4 \text{QINDYIELD} + \beta_5 \text{NUMTOTUND} + \beta_6 \text{NUMRISKFACT} + \beta_7 \text{BIG4TOP} + \beta_8 \text{REITTYPE} + \beta_9 \text{POSTGFC} + \beta_{10} \text{NYSE} + \beta_{11} \text{UPREIT} + \varepsilon \quad (1)$$

Table IV.

Regression results of factors influencing total direct costs of raising external equity capital for US REIT IPOs from 1996 until June 2010

The other variables are as defined in Table I; White (1980) heteroskedasticity consistent coefficients and p-values (beneath) are reported; White's cross terms are excluded due to insufficient observations with year dummies; the regression diagnostic of Jarque-Bera is reported to delineate whether the regression residuals are normally distributed and Ramsey (1969) (regression specification error test or RESET) stability statistic is reported to assess any model misspecification due to omitted variables

As a result, specifically elaborating the potential risk factors are expected to negatively affect the total direct costs of issuing IPOs.

The significant positive coefficient of quarterly industry yield (QINDYIELD) prior to the offer supports the notion that the higher NAREIT dividend yield reduces the demand for REITs to go to IPO (Hartzell *et al.*, 2005, p. 42). The significant positive coefficient of REIT TYPE is in accordance with the expectation that due to the higher level of uncertainty involved in equity REITs; they require more direct costs than that for mortgage REITs. Issues listed in NYSE are expected to incur more total direct costs due to the higher listing fees and other procedural expenses which support the significant positive coefficient of NYSE.

The sign of the insignificant variables are according to our expectations except the sign of UPREIT. The positive sign of UPREIT is attributed to the positive sign of non-underwriting direct expenses. The sign of the insignificant UNDRANK supports the notion that reputation rank of underwriters affects the underwriting fees and also offer size which in turn influences non-underwriting direct expenses. The certifying role of one of the big 4 auditors (Ernst & Young) dominating the industry in terms of the IPO market share (nearly 32 percent of dollar adjusted market share) is expected to reduce the total direct costs due to the higher reliability of their audited statements (Wang and Wilkins, 2007). Our negative sign of the BIG4TOP is consistent with this expectation. After incorporating the year dummies, the coefficient of POSTGFC (IPOs issued during and after busting of GFC) is negative but insignificant. The coefficients of all year dummies are insignificant. The Wald statistic of Chow test in specifications 1 and 2 fails to reject the null hypothesis of no structural break after 2000 but after excluding insignificant variables in specification 3 it rejects the null hypothesis at 5 percent level of significance. The Wald statistic supports that the specifications 1 and 2 are consistent over the sample period. The inconsistent relationship in specification 3 might be attributed to the changed relationship between underwriting fees and its determinants for post 2000 IPOs (Table V). The Jarque-Bera statistic shows that the regression residuals are not normally distributed with the implication that the regression coefficients may suffer from best linear unbiased estimate (BLUE) but given the relatively large sample size this should not be a problem. We have also reported White (1980)'s heteroskedasticity consistent coefficients and *p*-values to correct for heteroskedasticity.

Determinants of underwriting fees

Table V presents the OLS regression results of factors influencing underwriting fees for US REIT IPOs from January 1996 until June 2010. The table consists of three specifications with underwriting fees as percentage of gross proceeds as the dependent variable. Specification 1 is with the maximum number of observations whereas other two specifications have 108 observations after excluding two outliers and adjusting for the missing data of some independent variables particularly of OWNLIM. Year dummies have been used to control for any effect of time trend. The univariate result (not reported) of natural logarithm of proceed shows reduced underwriting fees for increased IPO proceeds. This is consistent with specification 1 and supports the economies of scale for underwriting fees.

The OLS multivariate regression results show that NAREIT industry return volatility (INDVOL), offer price per share (OFFPRICE), the number of representative underwriters

Table V.
Regression results of
factors influencing
underwriting fees of
raising external equity
capital for US REIT IPOs
from January 1996 until
June 2010

	1	2	3
Constant	0.138 0.000***	0.088*** 0.000***	0.067*** 0.000***
LNPROCEED	-0.003 0.024**	-0.001 0.415	
UNDRANK		-0.001 0.593	
INDVOL	-0.116 0.003***	-0.123*** 0.002***	-0.065 0.047**
QINDYIELD	0.001 0.741	0.002 0.073*	0.002 0.186
OFFPRICE	-0.001 0.006	-0.001 0.036**	-0.001 0.026
OWNLIM		0.066 0.051*	0.075 0.028**
NUMREPUND		-0.001 0.072*	-0.001 0.011**
NUMRISKFACT	-0.001 0.038**	-0.001 0.063*	-0.001 0.020**
BIG4TOP		-0.002 0.128	-0.003 0.061*
UPREIT		-0.002 0.108	-0.002 0.067*
REITTYPE		0.002 0.295	

(continued)

	1	2	3
POSTGFC			
Time trend	Yes	-0.003	Yes
R^2	0.48	0.959	0.51
Adj. R^2	0.4	Yes	0.46
White test	46.85	0.47	23.44
(p -value)	0	31.22	0.218
Jarque-Bera	59.9	0.147	9.11
(p -value)	0	5.7	0.011
Ramsey stability ^a	17.27	0.048	-57.32
(p -value)	0.577	-39.87	0.001
Wald statistic	8.01	0.003	18.21
(p -value)	0.237	0.041	0.033
Sample size (n)	125	108	108

Notes: Significant at: *10 percent, **5 percent, ***1 percent levels; ^aRamsey (1969) RESET (regression specification error test) becomes negative because of variables used with missing values; the test and specification is done using EViews which usually does not allow any missing value in independent variables to diagnose RESET; our variable of ownership limit (OWNLIM) has some missing values and hence if any value (e.g. 0) is given to fill up the missing cells, the fitted R^2 will be positive; this table reports the OLS results of factors influencing the underwriting fees paid by the issuers of US REIT IPOs over the period from January 1996 until June 2010 along with both R^2 and adjusted R^2 and standard regression diagnostics; the number of complete observations (n) is presented at the last row.

$$\text{UNDFEES} = \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{UNDRANK} + \beta_3 \text{INDVOL} + \beta_4 \text{QINDYIELD} + \beta_5 \text{OFFPRICE} + \beta_6 \text{OWNLIM} + \beta_7 \text{NUMREPUND} + \beta_8 \text{NUMRISKFACT} + \beta_9 \text{BIG4TOP} + \beta_{10} \text{UPREIT} + \beta_{11} \text{REITTYPE} + \beta_{12} \text{POSTGFC} + \varepsilon \quad (2)$$

Dependent variable is the underwriting fees as a percentage of total proceeds raised and averaged to 6.49 percent; sample size becomes 108 in specifications 2 and 3 after adjusting for missing data of variables used in the regressions and excluding three outliers lying beyond mean ± 3 standard deviations of underwriting fees; the results in the table are based on the following equation; the other variables are as defined in Table I; White (1980) heteroskedasticity consistent coefficients and p -values are reported; White's cross terms are excluded due to insufficient observations; the regression diagnostic of Jarque-Bera is reported to delineate whether the regression residuals are normally distributed and Ramsey (1969) (regression specification error test or RESET) Stability statistic is reported to assess any model misspecification due to omitted variables

Table V.

(NUMREPUND) in the underwriting syndicate, the number of risk factors (NUMRISKFACT) and the indicator variable for umbrella partnership REIT (UPREIT) have statistically significant negative influence on the underwriting fees. The significant negative effect of industry return volatility is in sharp contrast to Chen and Lu (2006) who argue for higher underwriting fees for higher perceived industry risk for IPOs issued during the period following higher industry return volatility. They document a significant positive coefficient in one specification but an insignificant negative coefficient in their last specification when they add other control variables. They also argue that over time underwriters may charge lower underwriting fees which is supported by our results (Table II). Our dataset (Table III) shows that industry return volatility is 5.14 percent on average but it increased during 2008-2010 and more specifically it was highest at 16.43 percent on average in 2009 with corresponding average lowest underwriting fees of 5.68 percent. Our OLS regression results show the significant negative relation of industry return volatility (INDVOL) with underwriting fees (UNDFEE). We attribute this relationship to the higher non-underwriting direct expenses incurred by the firms issuing IPOs following higher industry return volatility. This is supported by the significant positive coefficient of INDVOL in determining non-underwriting direct expenses (Table VI). This is possible because some of the non-underwriting direct expenses incurred by the underwriters are reimbursed by the issuing firm[5]. We also argue that underwriters may require the issuing firm to spend more on promotional expenses to reduce their litigation and reputational risk of such IPOs. They may deliberately do this to keep their competitiveness by not raising their fees during such period.

The significant negative coefficient of the offer price per share is consistent with Kutsuna *et al.* (2008) supporting their argument of more certainty of equity valuation with higher offer price per share. The significant negative coefficient of the number of representative underwriters[6] (NUMREPUND) in the underwriting syndicate supports our conjecture of higher distributional efficiency (Carter and Dark, 1990) with the more representative underwriters. The significant negative effect of the number of risk factors (NUMRISKFACT) also corroborates with the hypothesis of Beatty and Welch (1996, p. 555) that the number of risk factors reduces information asymmetry and underwriters' liability for any litigation risk which might also raise optimism among the subscribers. This reduced information asymmetry might motivate the underwriters to charge lower underwriting fees. The effect of expected higher liquidity and the better monitoring by the participating experienced partnership unit holders who transfer the property to the offering UPREIT firm support the significant negative coefficient of UPREIT (Chen and Lu, 2006; Han, 2006). The significant positive coefficient of ownership limit corroborates with the hypothesis that it inversely affects the aftermarket liquidity which is considered by the underwriting syndicate in setting underwriting fees. Our findings suggest that higher ownership limit raises the underwriting fees. The negative coefficient of differentiated auditor (Ernst & Young) is consistent with the certification role of auditor in determining the underwriting fees (Wang and Wilkins, 2007; Beatty and Welch, 1996, p. 578).

The insignificant coefficient of reputation of the underwriters (UNDRANK) is consistent with Chen and Lu (2006). The positive sign of the coefficient of quarterly industry yield (QINDYIELD) prior to the offer supports the conjecture that higher NAREIT dividend yield reduces the demand for its IPOs (Hartzell *et al.*, 2005, p. 42). The sign of the insignificant coefficient of Equity REITs (REITTYPE) is in accordance

	1	2	3
Constant	0.027 0.453	-0.016 0.675	0.027 0.475
LNPROCEED	-0.005 0.001***	-0.005 0.001***	-0.006 0.000***
INDVOL	0.136 0.060*	0.138 0.047**	0.146 0.042**
QINDYIELD	0.006 0.074*	0.006 0.084*	0.006 0.079*
NUMTOTUND	-0.001 0.033**	-0.001 0.020**	-0.001 0.010***
NUMRISKFACT	-0.001 0.509		
BIG4TOP	-0.001 0.639		
REITTYPE	0.007 0.033**	0.008 0.025**	0.01 0.009***
PYNUMIPO	0.014 0.015**	0.015 0.013*	0.018 0.006***
NYSE	0.006 0.050**	0.006 0.043**	0.004 0.126
UPREIT	0.005 0.11	0.004 0.179	0.003 0.316
Time trend	Yes	Yes	Yes
R ²	0.47	0.47	0.5
Adj. R ²	0.35	0.37	0.4
White test	14.36	14.78	17.95
(p-value)	0.887	0.789	0.591
Jarque-Bera	78.19	79.55	64.24
(p-value)	0	0	0
Ramsey stability	20.83	15.59	19.15
(p-value)	0.017	0.052	0.029
Wald statistic	12.55	10.92	13.22
(p-value)	0.324	0.281	0.153
Sample size (n)	119	119	120

Notes: Significant at: *10 percent, **5 percent, *1 percent levels; this table reports OLS results of factors influencing the non-underwriting fees paid by the issuers of US REIT IPOs over the period from 1996 until June 2010; dependent variable is the non-underwriting direct expenses as a percentage of total proceeds and is 1.87 percent at 1 percent level of significance; sample size becomes 119 in specifications 1-3 after adjusting missing data of variables used in the regressions and excluding 1 outlier beyond mean \pm 3 standard deviations of non-underwriting direct expenses; the results are based on the following OLS regression equation:

$$\begin{aligned} \text{DIRIPOEXP} = & \beta_0 + \beta_1 \text{LNPROCEED} + \beta_2 \text{INDVOL} + \beta_3 \text{QINDYIELD} + \beta_4 \text{NUMTOTUND} \\ & + \beta_5 \text{NUMRISKFACT} + \beta_6 \text{BIG4TOP} + \beta_7 \text{REITTYPE} + \beta_8 \text{PYNUMIPO} \\ & + \beta_9 \text{NYSE} + \beta_{10} \text{UPREIT} + \varepsilon \end{aligned} \quad (3)$$

Other variables are as defined in Table I; White (1980) heteroskedasticity consistent coefficients and *p*-values are reported; White's cross terms are excluded due to insufficient observations with year dummies; the regression diagnostic of Jarque-Bera is reported to delineate whether the regression residuals are normally distributed and Ramsey (1969) (regression specification error test or RESET) stability statistic is reported to assess any model misspecification due to omitted variables

Table VI.
The OLS regression results of factors influencing non-underwriting direct expenses of raising external equity capital by US REIT IPOs from 1996 until June 2010

with the expectation that underwriters charge higher fees for such issues because they are more uncertain about their value compared to mortgage REITs. After adjusting the time trend insignificant negative coefficient of the dummy variable POSTGFC implies that the GFC has no effect on underwriters in charging their fees.

The Wald statistics reject the null of no structural break over the sample period in specifications 2 and 3 at 5 percent and lead us to infer that the linear relationship between underwriting fees and its determinants are not consistent across the sample period particularly in specifications 2 and 3.

Determinants of non-underwriting direct expenses

In Table VI, we present the multivariate OLS regression results of factors influencing non-underwriting expenses directly incurred by the issuer. The non-underwriting direct expenses are calculated as percentage of gross proceeds and used as the dependent variable in all three specifications. There are 119 complete observations in specifications 1 and 2 after excluding one outlier lying above mean plus 3.5 standard deviation of the dependent variable and specification 3 contains all complete observations used to test the significance of different factors. The significant negative coefficient of offer size (LNPROCEED) as reported in the result strongly supports the economies of scale in non-underwriting other expenses (Ritter, 1987; Barry *et al.*, 1991; Gerbich *et al.*, 1995; Lee *et al.*, 1996).

The results show that the NAREIT industry return volatility prior to the offer (INDVOL), average REIT industry yield during immediate past quarter prior to the offer (QINDYIELD), equity REIT (REITTYPE), number of IPOs issued during the year prior to the offer (PYNUMIPO), listing exchange (NYSE) have significant positive influence on non-underwriting direct expenses whereas the offer size (LNPROCEED) and the number of total underwriters in the underwriting syndicate (NUMTOTUND) negatively affect such expenses.

The increase in industry dividend yield during the past quarter adversely affects issuers seeking to go to IPO which requires issuers to incur more expenses on promotion and marketing of the offer. The more uncertainty or complexity with cash flows of equity REIT requires higher assessing costs. More IPOs during the immediate prior year positively affects the non-underwriting direct expenses which might be attributed to more promotional expenses. Similarly the more requirements along with higher listing fees of NYSE require IPOs to spend more on such expenses. These arguments support the significant positive coefficient of QINDYIELD, REITTYPE, PYNUMIPO and NYSE.

The more underwriters in the syndicate are expected to reduce these expenses through reduced complexity (Gerbich *et al.*, 1995, p. 46) and increased efficiency in distribution (Carter and Dark, 1990) of the offering. This argument is supported by the significant negative coefficient of number of total underwriters in the syndicate (NUMTOTUND). The insignificant coefficients of the number of risk factors (NUMRISFACT), BIG4TOP are consistent with our expectation that the reduced asymmetry through elaborating the potential risk factors requires lower non-underwriting direct expenses due to the engagement of differentiated auditor some promotional expenses are reduced. The positive coefficient of UPREIT dummy variable supports the notion that IPO issuing REITs need to incur some expenses to transfer the traditional structure into umbrella partnership before going public. More specifically they need to incur more on legal

expenses forming a limited partnership, transferring of properties and also issuing operating units to the owners transferring properties. The Wald statistic under Chow (1960) stability test reject the null of no structural break in all three specifications which lead us to infer that the linear relationship between non-underwriting direct expenses and their determinants are stable over the sample period.

Findings

The major findings of the study are as follows:

- Direct costs consisting of both underwriting fees and non-underwriting direct expenses followed a declining trend over our sample period and experienced economies of scale with size of IPO amounts.
- NAREIT monthly industry index return volatility over 12 months prior to the offer is found to inversely affect the underwriting fees but positively influences the non-underwriting direct expenses and quarterly NAREIT industry yield prior to the IPO is found to positively affect both underwriting fees and non-underwriting direct expenses.
- Number of underwriters has a negative influence on direct costs, e.g. number of representative and total underwriters significantly negatively affects underwriting fees and non-underwriting direct expenses, respectively.
- Number of risk factors inversely affects the direct costs particularly by affecting the underwriting fees due to the lower litigation risk of underwriters.
- Prior year number of completed IPOs has a positive influence on non-underwriting direct expenses.
- Equity REITs and those listed on the NYSE incurred higher non-underwriting direct expenses.
- Underwriters charge higher underwriting fees for REITs with a higher ownership limit for an individual investor due to the aftermarket liquidity effect.
- Larger offer price per share reduces the issue uncertainty and is found to negatively affect the underwriting fees.
- The effects of some of the determinants of underwriting fees are not consistent but that of non-underwriting direct expenses are consistent across our sample period.
- The effect of UPREIT structure in influencing the total direct costs is not significant but has marginal negative effect on underwriting fees.

5. Conclusion

Our study documents the declining trend of total direct costs of raising external equity capital for 125 REIT IPOs over 1996-2010. The study is particularly important because REITs leave less money on the table through underpricing and their operations are initiated with the fund from IPO. Hence the direct costs of raising equity capital by issuing IPOs are major component of their costs of capital. The study is also important because it includes the recent GFC period which was caused by the bankruptcy of many financial institutions due to the sharp downturn of real estate values (Loapodis (2009, p. 576). Moreover, our study on REIT underpricing has documented the REIT direct costs to influence the indirect cost of underpricing (Bairagi and Dimovski, 2011).

The equally weighted total direct costs, underwriting fees and non-underwriting direct expenses as a percentage of gross proceeds raised averaged 8.33, 6.49, and 1.87 percent, respectively. Consistent with prior evidence, our findings report economies-of-scale on both underwriting fees and non-underwriting direct expenses. Higher offer price per share, the number of representative underwriters, disclosing potential risk factors and industry return volatility negatively influence underwriting fees but quarterly industry dividend yield prior to the offer and ownership limit for an individual investor positively determine underwriting fees. The significance of some of the factors affecting underwriting fees is not same over the sample period especially for IPOs after 2001.

This study also investigates non-underwriting direct expenses that can be up to 30 percent of the cost of the underwriting fees and are reported in the literature as a function of issue complexities and method (Gerbich *et al.*, 1995). The study finds that the number of underwriters negatively influences such expenses while industry return volatility and dividend yield and number of completed IPOs prior to the issue, Equity REITs, and NYSE positively determine such expenses. Even the relationship between underwriting fees and some of their determinants are found dynamic, it is statistically persistent for non-underwriting direct expenses over the sample period.

Our findings suggest that the total direct costs of raising external equity capital can be minimized by optimally controlling for offer size, offer price, ownership limit, the number of underwriters and the number of potential risk factors. Organizational structure of the firm is not significant in affecting total direct costs but can affect underwriting fees. The study will benefit the issuer in making decisions on issue size, underwriting syndicate size and also on some of the non-underwriting direct expenses. It will also benefit the underwriters and investors in general and particularly those involved in REIT IPOs. The few IPO direct costs studies do not appear to perform any major robustness tests except Chahine (2008) who used two stage least squares and performed a Hausman test on the endogenous variable of participation ratio on gross spreads. Further studies can introduce a number of other variables in determining underwriting fees as suggested by our RESET test and improve the R^2 . As in Chen and Lu (2006) institutional ownership and aftermarket stock return volatility may be investigated but these of course are post IPO variables. The costs of matching industrial IPOs can also be used to test the significance of the difference in direct costs between industries.

Notes

1. For details, see Logue and Lindvall (1974), Carter and Dark (1990), Pugel and White (1988), Lee *et al.* (1996), Chisty *et al.* (1996) and Torstila (2001).
2. As a percentage of gross proceeds.
3. EDGAR has been keeping the SEC filings of all US based publicly listed and traded companies since 1996. SEC filings as a source have been used in a number of recent studies including Horng and Wei (1999) who used the EDGAR database for financial footnotes, Howe and Jain (2004) for annual reports, Loughran and Ritter (2004) for final IPO prospectuses (form 424B4) after 1996, Chung *et al.* (2005) and Brau *et al.* (2007) have also used EDGAR since 1996 in their studies.
4. Issuers usually pay for the non-underwriting direct expenses required for listing in the trading exchanges, printing, accounting, auditing, legal and due diligence, advertising,

engraving, etc. These expenses are also sometimes incurred by the concerned underwriting syndicate. In such cases reimbursing between issuers and underwriters takes place to determine the net underwriting fees and non-underwriting expenses.

5. IPO prospectuses state where reimbursement takes place between underwriting and non-underwriting direct expenses.
6. The name of the underwriters who represent the underwriting syndicate in dealing with issuer is specified in the underwriting section of the prospectus as "representative underwriters". These underwriters underwrite significantly larger proportion of the offer. In our sample it is nearly 80 percent.

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