

## Capital Structure Theory: Evidence from European Property Companies' Capital Offerings

Dirk Brounen\* and Piet M.A. Eichholtz\*\*

This study examines the stock price reactions on announcements of both equity and debt offerings by European property companies. The unique setting in which corporate tax rates vary between different countries enables us to test established theories in the field of capital structure. In accordance with theory, we find a negative price reaction on equity offering announcements, which is less severe for low-tax countries and positive price reactions on the announcements of debt offerings. Besides tax arguments, we also test alternative explanations by analyzing variations in stock reactions based on differences in the relative size of the issue, the pre-offer leverage, the underlying property types, and operational performance. The results show that corporate taxation, issue size, and operational performance are significant explanatory factors in the negative price reactions.

Capital structure theory is one of the most puzzling issues in the corporate finance literature. Numerous empirical studies have shown that announcements of seasoned equity offerings (SEOs) cause negative price reactions, whereas the news of an additional debt issue is followed by an increase in stock prices. The majority of these studies use capital structure arguments emphasizing the importance of tax shield benefits from debt financing as the explanation for this phenomenon. In this paper, we investigate whether differences in tax regimes, the relative size of the issues, the pre-offer debt-to-equity ratio, the underlying property type, and/or the operational performance can account for the price reactions to issue announcements that occurred in various European property share markets over the last decade.

The idea to test whether tax arguments can account for market reactions to the news of security issues by investigating tax-exempt companies is not novel. Howe and Shilling (1988) investigated the stock price reactions to the

\*Department of Finance, University of Amsterdam, NL-1018 WB Amsterdam, The Netherlands or [dirkb@fee.uva.nl](mailto:dirkb@fee.uva.nl)

\*\*Department of Finance, University of Amsterdam, NL-1018 WB Amsterdam, The Netherlands or [p.eichholtz@berfin.unimaas.nl](mailto:p.eichholtz@berfin.unimaas.nl)

announcements of new security issues, both debt and equity, of tax-exempt Real Estate Investment Trusts (REITs). They found both the classical positive price reaction on debt issue announcements and the negative price reaction on equity issues. Documenting these typical price reactions in the absence of corporate taxation caused them to attribute these market reactions to the alternative negative signaling explanations. Ghosh, Nag and Sirmans (1999, 2000) repeated this effort by investigating a larger and more recent REIT sample and reported results that corroborate those of Howe and Shilling. But although the issue has been analyzed frequently over the years, some of the most fundamental questions on the cause of price reactions remain unanswered.

One key attribute of this paper is that it investigates a unique data set consisting of European rights issues that occurred in countries with different tax regimes. This setting enables us to isolate the impact of corporate taxation and at the same time test alternative hypotheses that will be discussed in the next section. After explaining the data collection procedures and methodology, we will present our results on stock price reactions. We then test several explanations for these market reactions by investigating factors we derived from theory. The paper ends with concluding remarks.

## Review of Literature and Hypotheses

Over the years, numerous studies on capital structure theory have appeared.<sup>1</sup> Modigliani and Miller (1958) became the first to theorize the issue by posing their “M&M capital structure irrelevance proposition.” By stating the circumstances under which capital structure does not influence firm value, the authors isolate factors that can explain why daily observations of reality prove the opposite. In a comment that followed five years later, Modigliani and Miller (1963) showed how the relaxation of one of their crucial initial assumptions, the absence of corporate taxation, could be attributed to the understanding of empirical findings that typically exhibit negative price reactions on equity offering announcements. These two classical publications triggered a stream of studies and hypotheses over time that contributed to the clarification of “the capital structure puzzle.”

Howe and Shilling (1988) were the first to study the capital structure issue for listed property by analyzing price reactions to the news of security issues of REITs. They attributed the resulting negative price reactions to SEO

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<sup>1</sup> A thorough summary of empirical evidence and hypotheses applying to the stock market reaction to security offerings is given by Smith (1986).

announcements to the negative signal content of equity offerings. Jaffe (1991) disputed this reasoning and argued that under a general model, based on Modigliani and Miller (1958), the value of a partnership, REIT, or related entity is invariant to leverage. The most recent contribution to this debate comes from Ghosh, Nag and Sirmans<sup>2</sup> (1999, 2000) who reexamined the issue by investigating a sample of equity offerings in the U.S. REIT market that occurred in the period 1991–1996. In accordance with Howe and Shilling (1988), they document negative price reactions on equity offering announcements and find evidence for the dominance of alternative hypotheses over the tax-based model. The focus of this paper is to contribute to this ongoing discussion by offering outcomes originating from a unique European data sample that enables us to test both the tax-based model and the alternative hypotheses that will follow next.

The most popular capital structure model is the *static trade-off theory*.<sup>3</sup> It claims that tax shield benefits of debt financing need to be adjusted for financial distress costs that rise with increasing debt levels, creating an optimal capital structure that balances both forces. Issuing equity means moving away from that optimum and should therefore be interpreted as bad news. The magnitude of this effect should be related to the size of the tax burden. Given the diversity of corporate tax rates in our sample, we can test whether the size of the price reaction is related to the corporate tax regime or not.

One of the alternative hypotheses that we will test is the so-called *implied cash flow change hypothesis*,<sup>4</sup> which claims that by raising additional resources, a company signals that the net operating cash flows of current operations are disappointing. In the opinion of investors, changing the financing policy may indicate that the future looks less bright than expected. Since relatively large issues imply more severe cash flow changes, we expect equity offerings of relatively large size to be associated with more severe price reactions than issues of more modest magnitudes.

A second signaling hypothesis is the *informational asymmetry hypothesis*. In this hypothesis Myers and Majluf (1984) assumed that firm managers have

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<sup>2</sup> McDonald (1999) also analyzed the capital structure issue for real estate investments, but contrary to Howe and Shilling (1988) and Ghosh, Nag and Sirmans (1999, 2000) his examination is of a more theoretical nature.

<sup>3</sup> Various papers have analyzed different types of trade-offs between capital structure and corporate taxes (Modigliani and Miller 1963), personal taxes (DeAngelo and Masulis 1980), and transaction cost of bankruptcy (Kraus and Litzenberger 1973).

<sup>4</sup> This hypothesis originates from Miller and Rock's (1985) analysis of dividends.

superior information about the true value of the company. Managers will therefore time a new equity issue if the market price exceeds their own assessment of the stock value—if the stocks are overvalued by the market. Since investors are aware of the existence of the information asymmetry, they will interpret the announcement of an equity issue as a signal that the listed stocks are overvalued, which subsequently will cause a negative price reaction. Although information asymmetry is difficult to measure, we follow the example of Ling and Ryngaert (1997), who showed that the transparency of property companies varies among the different property types. These variations are partly due to differences in lease contract structures. Offices, for instance, are typically managed using long-term lease contracts in which the future rent is known in advance. Retail properties, however, are often managed using percentage rent contracts in which future rents are linked to the sales of the store, which make future rental inflows harder to predict, thus increasing information asymmetry.

An alternative hypothesis we derived from Bayless and Chaplinsky (1991) is the *debt market accessibility hypothesis*. The rationale of this theory is based upon the consideration of investors for the decision of managers to issue equity. If a company is already highly levered, it will be regarded as being relatively risky by capital suppliers. Hence, accessing the debt market will be less attractive and issuing additional equity becomes a sound decision. Assuming investors reason in this manner, we expect highly levered equity issuers to be associated with better post-issue stock performance than issuers with relatively low debt-to-equity ratios.

A more recent stream of literature focuses on the slump in operational profitability that tends to occur in the year following a security issue. This phenomenon has been documented by studies like McLaughlin, Safieddine and Vasudevan (1996, 1998) and Loughran and Ritter (1997). A general explanation for this post-issue slump in earnings originates from Jensen's (1986) free cash flow theory, which claims that managers have incentives to invest issue proceeds in unprofitable projects due to *agency problems* causing earnings to decrease. A second explanation for the post-issue operational slump is the slow start of new projects that are initiated with the proceeds of the issues. In the case of property companies, these projects are real estate assets that will need to be leased, managed, and maybe renovated, which will take time and delay optimal payoffs. Both these explanations indicate that equity offerings are likely to be followed by a year in which earnings slow down, which can drive the negative price reaction. In line with Friday, Howton and Howton (2000), we will investigate whether this operational slump is also present in the European listed property market.

## Data and Methodology

### Data

By combining the Global Property Research database with Datastream and the Bloomberg News Retrieval Services, we retrieved the necessary data on a sample of seasoned equity offerings for the period 1990 to 2000. Our efforts resulted in a unique data set covering 113 SEOs in 13 different countries and 26 debt offerings in 6 different countries. Table 1 provides a distribution of the sample by country and by year. Besides the announcement dates and the corresponding stock return series, we also obtained the offering size, the pre-offer debt ratio, the underlying property types, and the corporate tax rate for each offering in our sample.

### Methodology

A number of studies<sup>5</sup> suggest that the traditional single-factor CAPM model is inappropriate for measuring price effects in the case of real estate investments since they are particularly sensitive to unexpected changes in inflation and interest rates. Therefore, in accordance with Howe and Shilling (1988), we analyze the price effects of equity offering announcements by applying the mean adjusted return (MAR) model, which is developed by Masulis (1980).

In analyzing the impact of announcements of equity and debt offerings on stock rates of returns, we constructed time series of 60 daily stock return observations prior to and after the announcement date of each offering in our sample. After excluding day 0 and day +1, we define the remaining time series as the comparison period returns.<sup>6</sup> Assuming that the return process is stationary and that the time series are representative for the security's return distribution, we consider the mean daily return of this time series to be "the normal return." By subtracting these normal returns, we adjust the event day returns for general return behavior in order to filter the anomalous daily swings in the property share prices.

$$R_{ni} = (1/N) \sum [R_{t-60i} + R_{t-59i} + \cdots + R_{t-1i} + R_{t+2i} + R_{t+3i} + \cdots + R_{t+60i}], \quad (1)$$

<sup>5</sup> See Brueggeman, Chen and Thibodeau (1984) and Titman and Warga (1986) for a wider discussion on the matter of suitability of single-factor CAPM models for real estate investments.

<sup>6</sup> Day +1 return is excluded to filter effects of announcements that have been made after trading on day 0.

**Table 1** ■ Distribution of announcement dates by country and by year.

Panel A: Sample Distribution by Country					
Country	Rights Issue	Debt Offering	Country	Rights Issue	Debt Offering
Austria	7	0	Norway	3	3
Belgium	3	0	Portugal	2	1
Denmark	4	0	Spain	11	2
Finland	1	0	Sweden	7	0
France	1	6	Switzerland	15	0
Germany	15	0	United Kingdom	35	13
The Netherlands	9	1			
Total				113	26

Panel B: Sample Distribution by Year					
Year	Rights Issue	Debt Offering	Year	Rights Issue	Debt Offering
1990	3	0	1996	13	0
1991	4	1	1997	18	5
1992	3	0	1998	13	6
1993	21	0	1999	15	12
1994	10	0	2000	8	1
1995	5	1			
Total				113	26

Panel C: Tax Regimes for Property Companies			
Country	Corporate Tax Rate	Country	Corporate Tax Rate
Austria	34%	Norway	28%
Belgium*	0%*	Portugal	37.4%
Denmark	34%	Spain	35%
Finland	28%	Sweden	28%
France	33%	Switzerland	22%
Germany	39%	United Kingdom	29%
The Netherlands	0%**		

\*The corporate tax rate in Belgium is 0% for companies with the so-called SICAFI structure. To qualify as such, a company has to comply with certain regulations. Investing solely in real estate, a maximum of 20% of investments in one single asset, and not more than 33% of assets as borrowing capacity are the most prominent ones. Furthermore, at least 80% of profits have to be distributed to investors.

\*\*Dutch property companies are structured as so-called “erkende beleggingsinstellingen,” which means that they have to distribute at least 95% of their profits in dividends. Being an “erkende beleggingsinstelling,” the property companies do not have to pay any corporate taxes.

- $R_{ni}$  = Normal return of company  $i$ .  
 $R_{t-60i}$  = Rate of return of company  $i$  on event day  $-60$ .  
 $N$  = The number of event days in the comparison period.

Next we formed “portfolio” returns by averaging adjusted stock returns across common event dates. Given that these returns were from different calendar times and are therefore independent in event time, these daily returns allowed us to call upon the Central Limit Theorem. This allows us to apply standard  $t$ -tests of significance of the excess returns of each event day.

$$MAR_t = (1/M) \sum [R_{ti} - R_{ni}], \quad (2)$$

- $MAR_t$  = Mean adjusted return across companies on event day  $t$ .  
 $R_{ti}$  = Rate of return of company  $i$  on event day  $t$ .  
 $M$  = The number of companies in the sample.

To study longer term price effects we also derive cumulative mean adjusted returns, which we calculate by cumulating the subsequent mean adjusted returns.

$$CMAR_{-t,ti} = \sum R_{ti}, \quad (3)$$

- $CMAR_{-t,ti}$  = Cumulative mean adjusted returns for company for event period  $-t$  until  $t$ .

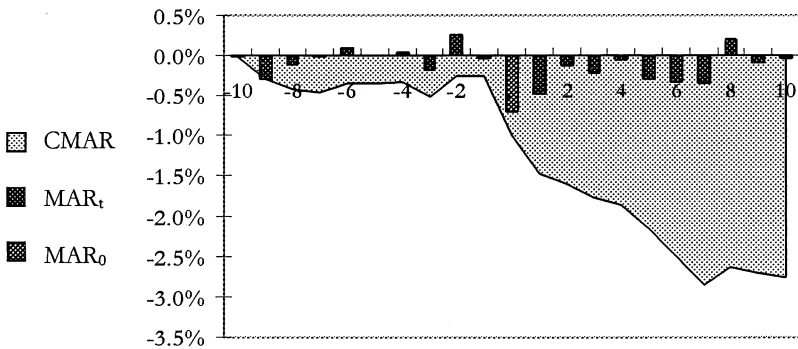
## Findings

First we studied the price reactions to the announcements of additional equity offerings. The results of our computations are stated in Table 2 and show a significant negative adjusted return of  $-0.707\%$  on the announcement day. This outcome supports the findings of Howe and Shilling (1988) and Ghosh, Nag and Sirmans (1999, 2000), who reported announcement day returns of  $-0.603\%$  and  $-0.416\%$ , respectively. The cumulative two-day return of both the announcement day and the following trading day of  $-1.181\%$  illustrates the cumulative effect of the postannouncement effect, which turns the cumulative returns into severely negative figures after the announcement of the offering.

Table 3 presents the outcomes we document for the market reactions to the announcements of debt issues. For the announcement day, we report a modest nonnegative price reaction of  $0.102\%$ , on average. The sign of the reaction corresponds with previous results of Howe and Shilling (1988), but, contrary to their outcomes, we find a statistically significant reaction. The modest but

**Table 2** ■ Mean and cumulative adjusted returns around European equity issues.

Day Relative to Announcement Day	Mean Adjusted Return	<i>t</i> -Statistic	Cumulative Adjusted Return	<i>t</i> -Statistic
-10	-0.013%	-0.06	-0.014%	-0.06
-9	-0.287%	-1.87	-0.297%	-0.97
-8	-0.103%	-0.60	-0.424%	-1.11
-7	-0.025%	-0.11	-0.466%	-1.07
-6	0.088%	0.41	-0.341%	-0.66
-5	0.008%	0.04	-0.341%	-0.69
-4	0.033%	0.18	-0.324%	-0.61
-3	-0.175%	-0.69	-0.516%	-0.89
-2	0.251%	1.49	-0.263%	-0.41
-1	-0.026%	-0.14	-0.260%	-0.37
<b>0</b>	<b>-0.707%</b>	<b>-3.22</b>	<b>-0.990%</b>	<b>-1.43</b>
+1	-0.474%	-1.93	-1.476%	-2.07
+2	-0.122%	-0.60	-1.607%	-2.21
+3	-0.218%	-1.08	-1.776%	-2.39
+4	-0.058%	-0.22	-1.858%	-2.25
+5	-0.300%	-2.03	-2.161%	-2.54
+6	-0.331%	-2.97	-2.495%	-2.92
+7	-0.342%	-1.94	-2.849%	-3.27
+8	0.208%	0.70	-2.640%	-2.84
+9	-0.091%	-0.42	-2.709%	-2.87
+10	-0.043%	-0.27	-2.770%	-2.91



## Cumulative Excess Returns

$CMAR_{0,1}$	-1.181%	-3.54
$CMAR_{0,2}$	-1.303%	-3.27

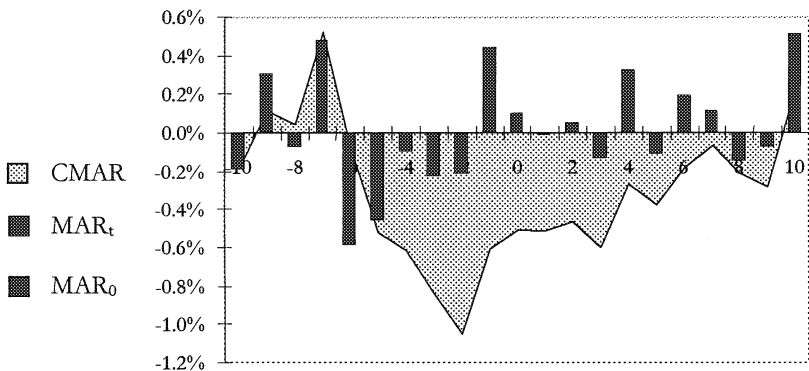
Mean adjusted returns ( $MAR_t$ ) are cross-sectional averages for a given event day. The cumulative adjusted returns are simply the cumulated versions of these mean adjusted returns for the period beginning 10 days prior to the announcement day and ending 10 days following the announcement day.

The cumulative mean adjusted return ( $CMAR_{0,1}$ ) is derived from the mean adjusted return for the period of the announcement day and the first day following the offering announcement.



**Table 3** ■ Mean and cumulative adjusted returns around European debt issues.

Day Relative to Announcement Day	Mean Adjusted Return	<i>t</i> -Statistic	Cumulative Adjusted Return	<i>t</i> -Statistic
-10	-0.188%	-0.43	-0.188%	-0.43
-9	0.304%	0.92	0.116%	0.23
-8	-0.074%	-0.37	0.042%	0.08
-7	0.478%	1.59	0.520%	0.89
-6	-0.588%	-1.31	-0.067%	-0.09
-5	-0.456%	-1.25	-0.523%	-0.67
-4	-0.091%	-0.36	-0.614%	-0.73
-3	-0.227%	-0.69	-0.841%	-0.90
-2	-0.206%	-0.52	-1.048%	-1.07
-1	0.438%	1.26	-0.609%	-0.63
<b>0</b>	<b>0.102%</b>	<b>0.26</b>	<b>-0.508%</b>	<b>-0.46</b>
+1	-0.006%	-0.02	-0.514%	-0.42
+2	0.050%	0.18	-0.465%	-0.36
+3	-0.134%	-0.56	-0.598%	-0.46
+4	0.328%	0.96	-0.270%	-0.20
+5	-0.106%	-0.28	-0.376%	-0.28
+6	0.192%	0.77	-0.184%	-0.14
+7	0.116%	0.34	-0.068%	-0.05
+8	-0.143%	-0.25	-0.211%	-0.13
+9	-0.072%	-0.29	-0.283%	-0.19
+10	0.511%	1.88	0.228%	0.16



## Cumulative Adjusted Returns

$CMAR_{0,1}$	0.095%	0.19
$CMAR_{0,2}$	0.145%	0.24

Mean adjusted returns ( $MAR_t$ ) are cross-sectional averages for a given event day. The cumulative adjusted returns are simply the cumulated versions of these mean adjusted returns for the period beginning 10 days prior to the announcement day and ending 10 days following the announcement day.

The cumulative mean adjusted return ( $CMAR_{0,1}$ ) is derived from the mean adjusted return for the period of the announcement day and the first day following the offering announcement.

positive two- and three-day cumulative mean adjusted returns do not strengthen this result. However, the fact that the price reactions are nonnegative weakly confirms the implications of capital structure arguments that claim that the beneficial tax shields of debt financing cause nonnegative market reactions to debt offering announcements. Moreover, the outcome is in line with the implied cash flow hypothesis, which states that issuing debt sends a positive signal to the market in which the company proves to be confident enough about the future to take on additional financing costs.

To find out whether international differences regarding equity announcement reactions exist, we compared national samples with respect to average and cumulative excess returns. Table 4 contains information on price reactions that we gathered for the U.K. and Dutch/Belgian samples. The U.K. mean adjusted return of  $-1.014\%$  on the announcement day was significantly stronger than the Dutch/Belgian mean of only  $-0.157\%$ . This difference in price reactions corresponds with the difference in tax regimes of the two countries. The Dutch and Belgian property companies, which are exempt from paying corporate taxes, experience hardly any negative price reactions when announcing the issuance of additional equity. However, their U.K. competitors, which are subject to a corporate tax rate of  $29\%$ , experience a quite dramatic price reaction. Besides the difference on the announcement day itself, we also find different aftermarket price behavior. In the U.K. sample, the negative sentiment lasts for many subsequent trading days, whereas the Dutch/Belgian sample exhibits a mixed sentiment following the event.

## Explanations

In this section, we analyze to what extent the hypotheses and theories that we discussed in the second section are capable of explaining the cross-sectional variation in price reactions to equity offering announcements. First we will look for cross-sectional patterns based on differences in relative issue size, pre-offer debt-to-equity ratios, underlying property types, and tax bracket. The results, which are given in Table 5, give support to the implications we derived from the hypotheses.

We find stronger negative price reactions for the relatively large equity issues compared to those for smaller issues:  $-1.430\%$  and  $-0.347\%$ , respectively. This result is in line with the implied cash flow hypothesis, which posits that relatively large issues imply larger negative changes in expected profits. Furthermore, we find milder price reactions for issues belonging to the group with the highest pre-offer debt-to-equity ratio. This outcome corroborates the debt market accessibility hypothesis, which attributes this difference in price reaction to variation in investors' sympathy, which is larger for companies that

are heavily leveraged and therefore must turn to the equity market to raise additional funding.

Panel C shows that the cross-sectional pattern we document with respect to differences in corporate tax rates corresponds with the outcomes we stated in Table 4. Again we find that companies subject to relatively high tax rates are associated with the most drastic negative price reaction. Our results regarding the underlying property type are more scattered, indicating that companies specialized in industrial property suffer from the least severe negative price reactions. Overall our results indicate that companies with a specialized property portfolio experience a milder price reaction after announcing an equity issue.

To test the operational slack hypothesis, we analyzed the profit development of the companies in our sample around the issue year. In this analysis, we gather annual Return on Capital Employed (*RCE*) ratios for each company in our sample from Datastream.

$$RCE = \frac{\text{Pre-tax Profits} + \text{Total Interest Charges}}{\text{Net Capital Employed}} * 100\% \quad (4)$$

*Pre-tax Profits* = The pre-tax profit, including associates, adjusted for extraordinary items, nonoperating provisions, and exchange profits and losses.

*Total Interest Charges* = The interest on bank and convertible loans, bonds, and debentures.

*Net Capital Employed* = Total Capital Employed + Borrowings repayable within one year – Total Intangibles – Future Income Tax Benefits.

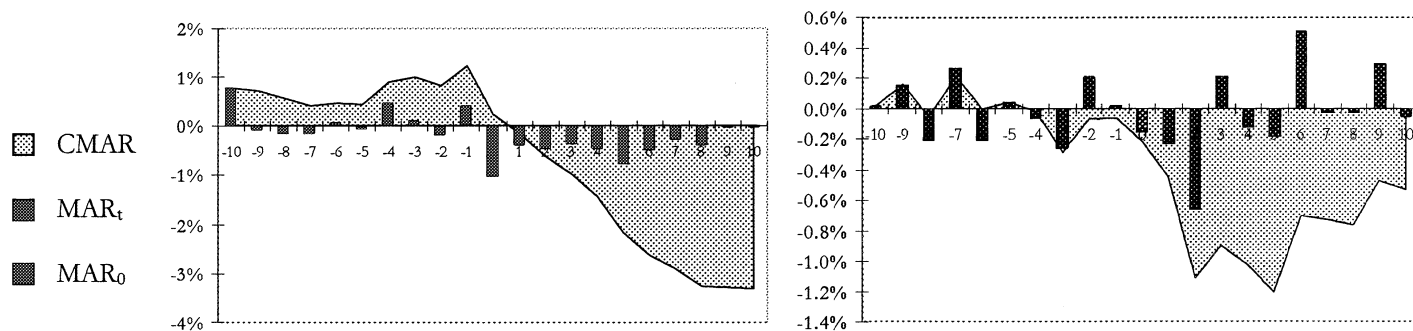
The overall average *RCE* for our European sample over the sample period equals 5.55%. Table 6 provides our results concerning the offering events. Compared to the previous years, we find increasing *RCEs*, indicating that issues occur in prosperous times. For the years following the equity offerings, we document a fall in *RCE* from 5.96% to 4.96%, on average. This post-issue decrease is present in both our mean and median series, and the decrease occurred in 75% of all cases, indicating that the phenomenon is both significant and robust.

To truly isolate the impact of the different factors on the mean adjusted returns, we perform multivariate regression analysis. We regress the announcement day mean adjusted returns on four factors: relative size, pre-offer debt-to-equity ratio, corporate tax rate, and underlying property type. Since the operational slack is an *ex post* phenomenon, it cannot be entered as an explanatory variable

**Table 4 ■** Mean and cumulative excess returns around U.K. and Dutch/Belgian equity issues.

United Kingdom					The Netherlands/Belgium			
Day Relative to Ann. Day	Mean Adjusted Return	<i>t</i> -Statistic	Cumulative Adjusted Return	<i>t</i> -Statistic	Mean Adjusted Return	<i>t</i> -Statistic	Cumulative Adjusted Return	<i>t</i> -Statistic
-10	0.774%	1.62	0.774%	1.62	0.010%	0.04	0.010%	0.04
-9	-0.057%	-0.20	0.717%	1.18	0.146%	0.53	0.156%	0.47
-8	-0.140%	-0.87	0.577%	0.89	-0.210%	-0.73	-0.054%	-0.14
-7	-0.147%	-1.05	0.429%	0.63	0.259%	1.29	0.205%	0.44
-6	0.049%	0.32	0.479%	0.66	-0.208%	-1.07	-0.002%	-0.01
-5	-0.036%	-0.11	0.443%	0.54	0.037%	0.09	0.035%	0.05
-4	0.459%	1.12	0.902%	1.04	-0.060%	-0.39	-0.025%	-0.04
-3	0.102%	0.27	1.003%	1.08	-0.259%	-0.66	-0.284%	-0.29
-2	-0.170%	-0.74	0.834%	0.87	0.212%	0.54	-0.072%	-0.09
-1	0.407%	1.27	1.240%	1.12	0.011%	0.03	-0.061%	-0.07
<b>0</b>	<b>-1.014%</b>	<b>-2.25</b>	<b>0.227%</b>	<b>0.17</b>	<b>-0.157%</b>	<b>-0.55</b>	<b>-0.219%</b>	<b>-0.30</b>
+1	-0.376%	-1.12	-0.149%	-0.11	-0.231%	-0.48	-0.450%	-0.48
+2	-0.463%	-1.55	-0.613%	-0.44	-0.660%	-1.03	-1.110%	-1.11
+3	-0.356%	-1.38	-0.968%	-0.69	0.211%	0.95	-0.900%	-0.93
+4	-0.448%	-2.30	-1.416%	-1.00	-0.124%	-0.34	-1.024%	-0.82
+5	-0.745%	-3.35	-2.161%	-1.44	-0.184%	-0.68	-1.208%	-0.89
+6	-0.467%	-2.93	-2.628%	-1.75	0.506%	1.51	-0.702%	-0.49
+7	-0.276%	-0.80	-2.904%	-1.85	-0.030%	-0.13	-0.732%	-0.49
+8	-0.364%	-1.37	-3.268%	-2.10	-0.033%	-0.17	-0.764%	-0.50
+9	-0.021%	-0.04	-3.289%	-2.03	0.290%	0.56	-0.474%	-0.36
+10	-0.024%	-0.12	-3.313%	-2.04	-0.058%	-0.32	-0.532%	-0.43

Table 4 ■ continued



Cumulative Excess Returns

$CMAR_{0,1}$	-1.390%	-2.50	-0.389%	-0.79
$CMAR_{0,2}$	-1.853%	-2.68	-1.049%	-1.38

Mean adjusted returns ( $MAR_t$ ) are cross-sectional averages for a given event day. The cumulative adjusted returns are simply the cumulated versions of these mean adjusted returns for the period beginning 10 days prior to the announcement day and ending 10 days following the announcement day.

The cumulative mean adjusted return ( $CMAR_{0,1}$ ) is derived from the mean adjusted return for the period of the announcement day and the first day following the offering announcement.

**Table 5** ■ Cross sections of mean adjusted announcement day returns.

	$MAR_0$	$t$ -Statistic
Panel A: Relative Size of the Offer		
Small, <50%	-0.347%	-1.41
Medium	-0.686%**	-2.18
Large, >95%	-1.430%**	-2.34
$F$ -statistic		1.383
Panel B: Pre-offer Debt-to-equity Ratio		
Low, <40%	-0.997%***	-3.16
High, >40%	-0.416%	-1.53
$F$ -statistic		1.917
Panel C: Corporate Tax Rate		
Low, <29%	-0.327%	-1.42
High, >29%	-0.822%	-1.62
$F$ -statistic		0.903
Panel D: Underlying Property Type		
Diversified ( $n = 35$ )	-0.956%**	-2.13
Specialized ( $n = 78$ )	-0.595%**	-2.72
Retail ( $n = 30$ )	-0.601%	-1.56
Office ( $n = 25$ )	-0.717%	-1.48
Residential ( $n = 17$ )	-0.769%	-1.57
Industrial ( $n = 6$ )	-0.064%	-0.07
$F$ -statistic		0.188

The relative size of the offering is measured as the capitalization of the issue divided by the pre-issue market capitalization of the company.

The debt-to-equity ratio is computed by dividing the pre-offer total debt by the pre-offer market value of the firm.

Specialization is determined by looking at the asset portfolio of the company. Companies investing more than 70% of their total assets in one property type are considered specialized.

The Anova  $F$ -statistics test equality of means of all cohorts.

\*\*\*Significant at 0.01 level.

\*\*Significant at 0.05 level.

in the regressions.

$$MAR_0 = a + b_1 \text{Relative Size} + b_2 \text{Pre-offer Debt Ratio} + b_3 \text{Corporate tax rate} + \varepsilon \quad (5)$$

$$MAR_0 = a + b_1 \text{Relative Size} + b_2 \text{Pre-offer Debt Ratio}$$

$$MAR_0 = a + b_1 \text{Relative Size} + b_2 \text{Pre-offer Debt Ratio} + b_3 \text{Corporate tax rate} + b_4 \text{Specialized} + \varepsilon \quad (6)$$

$$+ b_3 \text{Corporate tax rate} + b_4 \text{Office} + b_5 \text{Retail} + b_6 \text{Residential} + b_7 \text{Industrial} + \varepsilon \quad (7)$$

The results we documented for both models are stated in Table 7. Concerning the size variable, we find robust results, indicating a negative relation between issue size and announcement day return that supports the previous cross-sectional pattern. With respect to the pre-offer debt level, the positive sign of the coefficient coincides with our previous results, supporting the debt market accessibility hypothesis. In this case, however, the results are not statistically significant. Concerning the third variable, the corporate tax rate, the outcomes exhibit the theoretically consistent negative sign, robustness, and statistical significance. Regarding the underlying property type, our results are mixed and lack significance, consistent with our cross-sectional results. Diversified companies seem to experience a slightly more negative reaction on announcements of equity offerings, whereas property companies specializing in industrial real estate suffer from the least severe price declines.

**Table 6 ■** Operating performance analysis.

Panel A: Return on Capital Employed Ratio					
	Year (-2)	Year (-1)	Year (0)	Year (+1)	Year (+2)
Mean	5.16%	5.81%	5.96%	4.96%	5.84%
Median	5.59%	5.64%	5.94%	5.17%	5.29%
% Positive	94.29%	95.00%	97.73%	95.45%	100.00%
Panel B: Change in Return on Capital Employed Ratio					
	-2 to 0	-1 to 0	-1 to +1	0 to +1	0 to +2
Mean	1.08%	0.18%	-0.76%	-0.99%	-0.38%
Median	1.03%	0.05%	-0.25%	-0.46%	-0.95%
% Positive	65.71%	52.63%	35.00%	25.00%	31.58%

The annual RCEs are derived from Datastream, using the formula:

$$RCE = \frac{\text{Pre-tax Profits} + \text{Total Interest Charges}}{\text{Net Capital Employed}} * 100\%$$

The year in which the issue has taken place is denoted as Year(0), the first year following as Year (+1).

**Table 7** ■ Multivariate regression analysis on equity issues.

	<i>CMAR</i> <sub>0,1</sub>	<i>CMAR</i> <sub>0,1</sub>	<i>CMAR</i> <sub>0,1</sub>
Constant	0.008 (0.74)	0.005 (0.41)	0.011 (0.87)
Relative size	-0.041** (-2.39)	-0.041** (-2.39)	-0.042** (-2.39)
Pre-offer debt ratio	0.012 (0.53)	0.010 (0.47)	0.016 (0.66)
Corporate tax rate	-0.044 (-1.59)	-0.042 (-1.61)	-0.064* (-1.84)
Specialized (yes = 1, no = 0)	—	0.004 (0.41)	—
Office (yes = 1, no = 0)	—	—	0.008 (0.66)
Retail (yes = 1, no = 0)	—	—	-0.009 (-0.82)
Residential (yes = 1, no = 0)	—	—	0.007 (0.64)
Industrial (yes = 1, no = 0)	—	—	0.007 (0.49)
<i>F</i>	2.992**	2.283	1.756
<i>R</i> -squared	0.081	0.083	0.112

The *t*-statistics are stated in parentheses and are based on heteroskedasticity-consistent standard errors.

With respect to the underlying property types we used “diversified” as the omitted variable for comparison purposes.

\*\*Significant at 0.05 level.

\*Significant at 0.10 level.

## Conclusions

This paper documents the price reactions to the announcements of security offerings by European property companies. In accordance with the existing literature, we find a modest nonnegative price reaction following the announcements of debt offerings and a significantly negative price reaction for the announcement of equity issues.

Our data set enabled us to distinguish between equity offerings that differed in corporate tax rates, relative size, underlying property type, pre-offer debt ratio, and operational post-issue performance. By performing both cross-sectional cluster and multivariate regression analysis we investigated differences in price reactions depending on these factors. The negative relationship between issue size and price reaction gives support to the implied cash flow hypothesis.



The positive relation between the pre-offer debt ratio and the price effect corroborates the debt market accessibility hypothesis. Furthermore, we document a negative relation between the corporate tax bracket and the announcement reaction. This indicates that companies facing higher corporate tax rates are punished more severely by their investors when they announce an equity issue, which corresponds with the implications that flow from the static trade-off theory. Concerning the underlying property type, we find mixed results indicating that the negative price reaction is the most severe for companies with a diversified property portfolio. Finally, regarding the operational performance, we discovered the typical post-issue slump in earnings in the first year following an equity offering. This result coincides with previous studies and indicates that offering proceeds are not contributing to the firm profitability, which might explain why stockholders react negatively on the news of an equity issuance.

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