Understanding the Discount: Evidence from European Property Shares

Executive Summary. *This paper investigates why a set of seventy-two European property shares were traded below their net asset values in the year 2002. The findings indicate an average discount to asset value of 36%, which turns out to be highest among the U.K. companies in the sample. When these discounts are related to a wide set of variables, a significantly negative relation can be seen between property share discounts and firm size, liquidity, the level of focus on property types, and index-membership. The latter two parameters have not been considered before in previous literature and allow the model to explain over half of the observed cross-sectional variation in closed-end discounts.*

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Introduction

Being publicly listed yields various benefits, among which easy access to capital and debt reduction are most prominent. For private real estate companies attracting sufficient financial resources is sometimes a mission impossible, which hampers their growth strategy and might spoil valuable business opportunities. The drawback of a public listing is that the stock market does not always value the real estate company according to its fundamental value. Stock market sentiment becomes part of the fund price movement and very often market prices exhibit strong deviations from the net asset values (NAV) of the underlying property portfolio (see Barkham and Ward, 1999). In cases when the stock market is overoptimistic, in that stock prices exceed the NAV and a share price premium emerges, real estate companies can use this window of opportunity to attract 'cheap' equity capital to finance the expansion of their activities. Unfortunately, most of the time the situation is reversed such that the stock value is low compared to the NAV and the resulting discounts are often referred to as a major limitation for future investment plans. Vast discounts to NAV have also triggered a wave of takeovers and delistings, like has been the case for several firms. Examples of such events are the British Compco Holdings, Canary Wharf, Saville Gordon Estates, Citadel and the Dutch Rodamco North America and Rodamco Asia, which have disappeared from the stock exchanges during the last five years.

This discount to NAV is often referred to as the 'closed-end fund puzzle' (see Lee, Shleifer and Thaler, 1991; and Malkiel, 1995) and has been studied

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on numerous occasions. For real estate companies specifically this issue has been examined more sporadically. Barkham and Ward (1999) studied the discounts of thirty listed property companies in the United Kingdom and linked these discounts to both rational and irrational variables. They document that taxes, firm size, holdings of trading stock and historic monthly returns succeed in explaining about 15% of the cross-sectional variation. But expanding this traditional set of explanatory variables with a noise-trader hypothesis, which incorporates the irrational overreaction of investors, succeeds in boosting the explanatory power of their model towards 33%. Later Bond and Shilling (2003) performed a similar analysis on a pan-European sample of fifty property companies originating from eight countries and extend the existing literature by considering the impact of company risk on the discount. Their results show that risk is positively related to the discount to NAV and is successful in extending the understanding of why some property companies are undervalued by their stock investors. Although both studies have generated valuable insights, the closed-end puzzle for property companies has not been solved, since much of the cross-sectional variation in discounts is still not accounted for.

This study aims at extending the existing literature by employing a more elaborate sample consisting of seventy-two property companies originating from the U.K., Sweden, France, and the Netherlands and by applying a novel approach, which incorporates portfolio characteristics and the index membership of a firm. The study includes the spread of the portfolio both along geographical regions and across property types. Capozza and Seguin (1999) examined the issue of corporate focus for REITs in the United States and relate the loss of firm value, which is associated with diversification, to informational asymmetries. Moreover, Lee (2001) stresses the importance of property type and regional factors in real estate returns, which illustrates the importance of corporate focus along these two dimensions for real estate companies. This study will first test whether the dispersion of assets influences the discounts to asset values. Secondly, the index-membership of the firms in the sample will be included as an explanatory variable. Being a member of the Environmental Property Assessment (EPRA) Index enhances a firm's trading activity and should therefore reduce its discount to NAVs. This rational originates from a recent stream of literature in which Lynch and Mendenhall (1997) and Barberis, Schleifer and Wurgler (2005) present intriguing evidence for the price reactions on index memberships. European property companies, which are not part of the EPRA Index, might well be penalized by investors by low trading volumes and higher price discrepancies.

This paper first discusses the literature—the seminal literature on the closed-end discounts from mainstream finance and previous studies on property shares. Next, the institutional setting which underlies the national samples in the data set is discusses along with the sample selection procedure and research methodology. After discussing the sample statistics, the results are discussed, which is followed by concluding remarks.

The Discount Literature

The majority of the discount literature focuses on the closed-end fund discounts of mutual funds and stems back to 1966, when Eugene Pratt was the first to address the discount to NAV in an academic fashion. Pratt (1966) refutes a variety of ongoing rationales, which were often used to explain the stock price divergences. According to Pratt, discounts result from a lack of sales and public understanding not because of built-in-capital tax liabilities, the cost of management or weak performance characteristics. Although his ideas were novel, they were merely based on anecdotal evidence. Boudreaux (1973) was among the first to analyze the closed-end fund puzzle through empirical evidence. He gathered discount-premium data on thirteen U.S. closed-end mutual funds, which invested solely in market-traded securities during the 1960–1970 period. Boudreaux succeeded in explaining over 50% of the cross-sectional variation in closed-end discounts by relating them to their turnover, which was computed as the lesser of dollar purchases or sales of portfolio securities divided

by the monthly average of total net assets during the year. According to Boudreaux, this turnover could serve as a proxy for market expectations regarding the intensity of future portfolio alterations, which investors use to value the closed-end stock price, allowing it to diverge from the current NAV. In 1977, Malkiel published his seminal paper on the valuation of closed-end investment-company shares. He documents persistent discounts for a sample twenty-four closed-end U.S. investment-company shares during the period 1967 through 1974. When analyzing discounts, he finds that these are related to unrealized appreciation, to distribution policy with respect to capital gains, as well as to portfolio policies concerning investing in letter stock. Over the years various authors have brought similar empirical evidence or theoretical arguments to bear on the reasons for closed-end fund discounts.[1] But it is difficult to arrive at an inclusive explanation, which is consistent with a semi-strong form of market efficiency.[2] Lee, Schleifer and Thaler (1991) extended the closed-end literature by including investor sentiment as a potential explanation for the closed-end puzzle. In their theory, discounts are high when investors are pessimistic about future returns and low when investors are optimistic. Average discounts exist because the unpredictability of investor sentiment impounds a risk of holding a closed-end fund in addition to the risk inherent in the fund's portfolio. This view complements the traditional set of rational explanations and was proven to be successful when tested empirically by the authors.

For closed-end property companies, the closed-end puzzle is very alive. Over the last few decades, real estate investors witnessed a wide dispersion of discounts to NAVs, which fluctuated over years and varied strongly across companies. Adams and Venmore-Rowland (1990) were first to address the issue of discounts for listed property companies by discussing several 'rational' hypotheses regarding property company discounts. They show that a reduction in contingent tax liability in the 1980s led to a reduction in average discounts, which indicates that unrealized capital appreciation might well serve as an explanation of why discounts exist. Besides taxes, Adams and Venmore-Rowland discuss the added value from management, liquidity, capital structure risks and the inefficient marketpricing of shares of listed real estate companies as potential explanations for why oscillations from underlying the NAVs can exist. Capozza and Lee (1996) investigated the issue of REIT discounts using asset value estimates, which were based on operating income and a portfolio cap rate. They find that REIT discounts are correlated with expense ratios, where high expenses were associated with the highest discounts to NAVs. Barkham and Ward (1999) build on these two previous studies by testing the full range of available hypotheses on a set of thirty listed U.K. property companies for the years 1993 through 1995. Their results show statistically significant relations between discounts and the capital gains tax, historic stock returns, company size and liquidity. Taxes and size increase the discount while returns and liquidity exhibit a negative relation. This set of rational parameters succeeded in explaining 33% of the cross-sectional variation in the observed closed-end discounts, while documenting that the market-wide sentiment appeared to be just as influential as the rational company factors. Capozza and Seguin (2000) study management contracts and find that external advisory contracts result in large NAV discounts and poor performance. By the same token, Capozza and Seguin (2003) find that ownership structure significantly affects discounts to NAV, since insider ownership reduces the likelihood that the fund will be taken over and liquidated at the NAV. Recently, Bond and Shilling (2003) have used Merrill Lynch and EPRA data to perform a pan-European analysis of discounts to NAVs for a set of fifty European property companies. They patterned their study after Shin and Stulz (2000) who show that risk plays a crucial part in explaining relative values. By extending the analysis of Barkham and Ward through the inclusion of various risk measures, Bond and Shilling succeeded in explaining around 50% of the cross-sectional variation in discounts, and by reporting positive and significant relations between discounts and both total and systematic risk. This study will further extend the real estate literature on the closed-end puzzle by employing richer data and by extending the prevalent models by including asset portfolio

characteristics and by incorporating the index-membership of the individual firms.

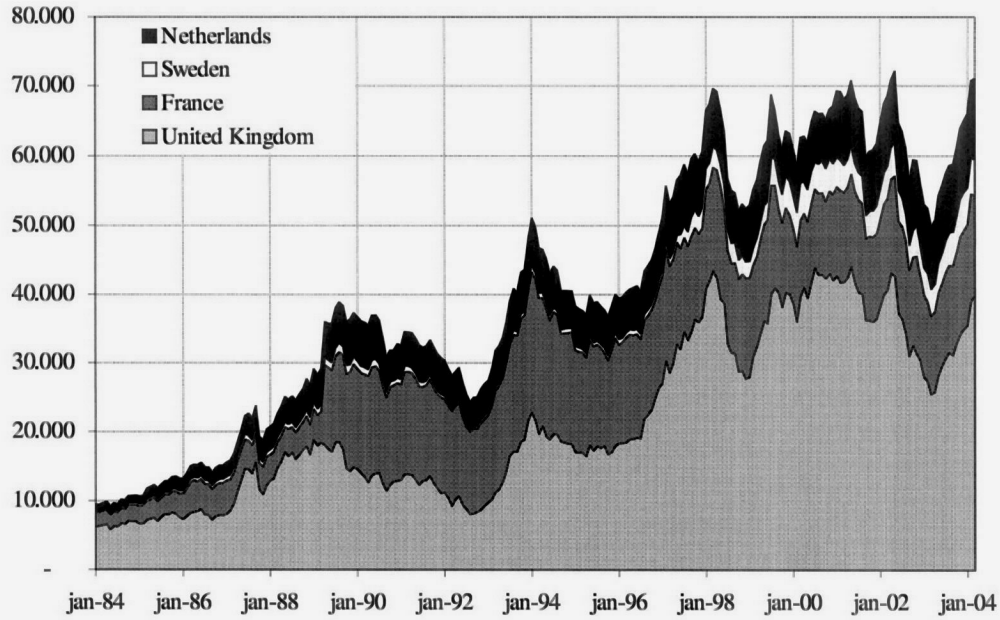
Institutional Settings

This study analyzes a sample that contains data on four different European property share markets: the U.K., Sweden, France and the Netherlands. Investing in publicly listed shares of these real estate investment vehicles has recently become increasingly popular. This 'indirect real estate market' enables investors to invest their money in professionally managed real estate portfolios by buying relatively liquid shares that are traded on public stock exchanges at low transaction costs. Exhibit 1 clearly shows that the property share markets in the sample have matured internationally, both in size and in numbers, and now offer unique laboratory situations for testing established theories accurately.

The British property share market is by far the largest in Europe, both in numbers and in size (some 35 billion euros by the end of 2003). Most companies have existed for several decades and often directors own a significant amount of shares in their company. A large proportion of the property companies focus on the London area, and all property companies are subject to corporate taxation at a rate of around 30%,[3] measured by size. France is the second largest European property share market, with a total market capitalization of more than 14 billion euros by the end of 2003. Activities in the French property share market are divided into two parts: the property investment market and the property leasing market (crédit-bail). In the past, a large number of property companies were active in crédit-bail (SICOMIs), because of the specific tax advantages. Since 1989, these advantages no longer exist and consequently the market for crédit-bail is ever decreasing. Property companies are now mostly Foncières, which are quoted real estate companies paying corporate tax at a rate of 33.33%. The Swedish property share market has been the most volatile over the last two decades, including a banking crisis in the early 1990s and a remarkable recovery during the turn of the millennium, as can be seen from the performance graphs in Exhibit 2. Most Swedish property companies focus on the Stockholm region and are subject to corporate taxation at a tax rate of 28%. By the end of 2003, the market cap of the

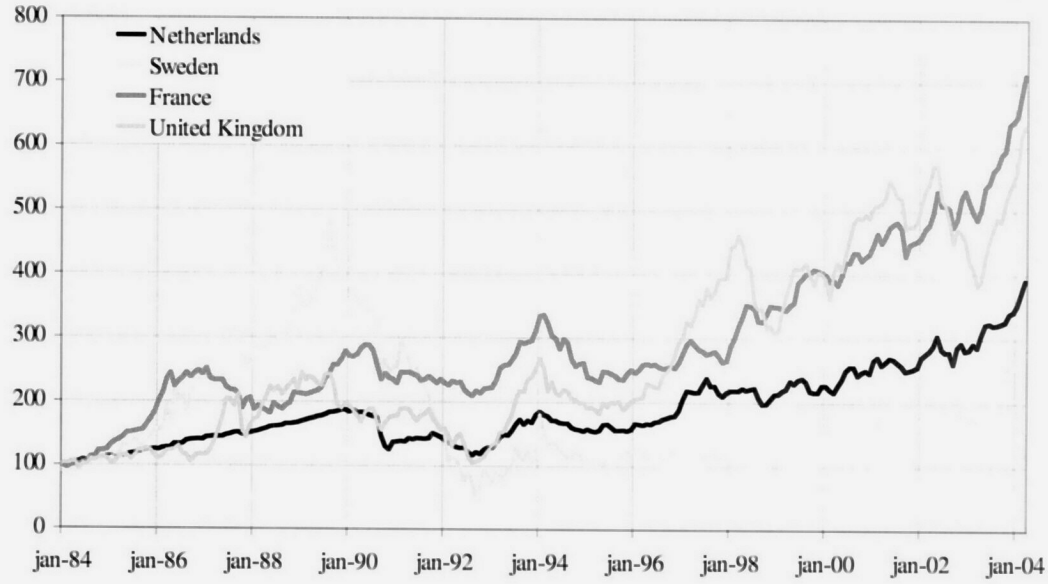
Exhibit 1

National Property Share Market Values 1984–2004 (in million euros)



Numbers are based on the GPR-General National indices, which include the performance of all listed property shares. The source is Global Property Research.

Exhibit 2
Total Returns of National Property Share Markets 1984–2004 (in euros)



Numbers are based on the GPR-General National indices and include the performance of all listed property shares that are part of the GPR universe. The source is Global Property Research.

Swedish listed property market equaled almost 6 billion euros. Relative to the size of its national economy,[4] the Dutch property share market is the largest in the sample, with a total market value over 10 billion euros by the end of 2003. The Dutch property share market is unique in the sense that most companies have an international property portfolio, whereas in the majority of other countries, investments are chiefly domestic. In most cases, Dutch property investment companies are structured as tax transparent investment companies and are in that respect quite similar to U.S. REITs.

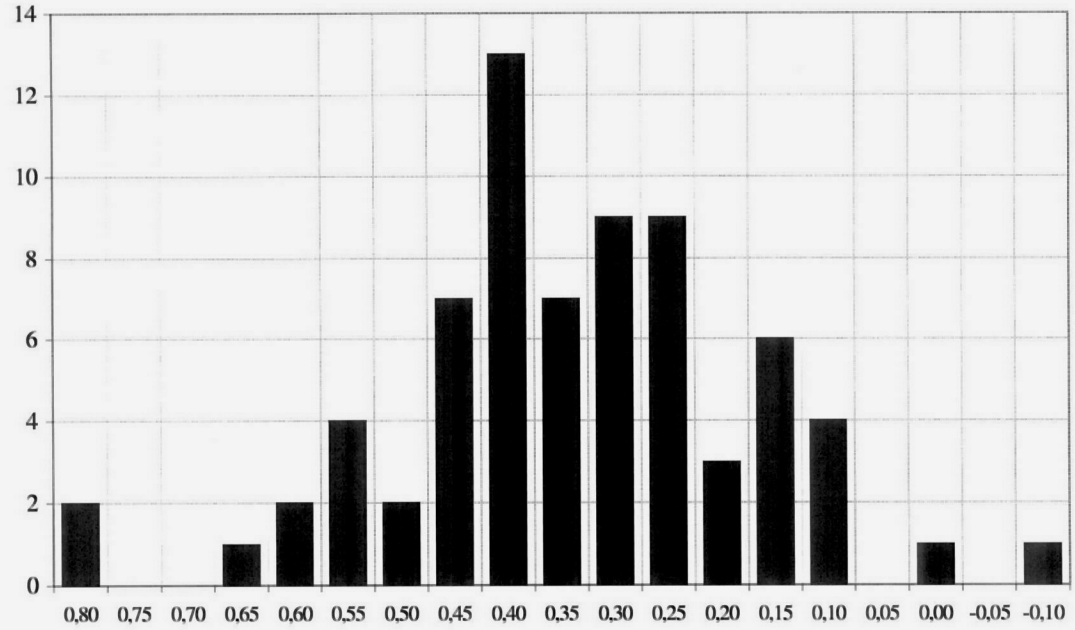
Data and Methodology

Data was collected on seventy-two closed-end European property shares using all available information from Goldman Sachs and Worldscope. First, annual discounts for the end of 2002 were computed as the difference between NAVs and market caps divided by the NAV.[5]

$$Discount_{02} = \frac{(NAV_{02} - Marketcap_{02})}{NAV_{02}} * 100\%. \quad (1)$$

This research focuses on the year 2002, since European stock price discounts were peaking at that time and therefore offer the widest range of cross-sectional variation. The first computations result in discounts ranging between 81% and −11%, a wide range, which is graphically depicted in Exhibit 3. Although most observations cluster around the sample average of 36%, there are also remarkable outliers. In order to understand why this vast variation exists, information regarding firm size (Size), leverage (Leverage), the stock return of the preceding year (Mean Return), and statistics on the stock liquidity by measure of free float (Freefloat) and company risk (Total Risk and Systematic Risk) are also collected. Size is measured as the natural log of the end-of-year total balance sheet value. Regarding size, there are no ex-ante expectations. This is because size might increase discounts as large firms are more difficult to liquidate in the market or by the same token decrease the discount, since large firms are more popular among investors and therefore allow less space for price dispersions. Leverage is the ratio of long-term debt to total balance sheet value and is expected to be positively related to discounts, since leverage increases risk. In line with Malkiel (1995), the mean stock return over the preceding three years is used as a proxy for a firm's reputation among investors. This momentum is expected to have a negative relation with discounts since

Exhibit 3
Distribution of Discounts (end of 2002)



The percentage discount to NAVs is the x-axis, while the number of companies in each 5% cluster is displayed on the y-axis. Premiums to asset values are presented as a negative discount.

strong-performing funds tend to be popular among investors and therefore be priced optimistically. Freefloat is the value of traded stock as a percentage of the total value of the balance sheet; the parameter is expected to be negatively related to the discount since trade induces arbitrage. Finally, risk is measured both as the standard deviation of stocks prices in the preceding year and as the beta of the share, based on the preceding three years of trading history. Both entities are expected to show positive coefficients, since risk tends to lower the market values. These firm-specific characteristics have been typically used to explain the cross-section of discounts, and which are employed in the first model. Statistics regarding these explanatory variables are presented in Exhibit 4, and because these statistics also reveal variations on a national level, country dummies are included in all the models.

$$Discount_{02} = f(Constant, Size, Leverage, Mean\ Return, Freefloat, Total\ Risk, Syst.\ Risk). \quad (2)$$

This study differs from previous work as it includes the portfolio spread. A scientific measure of the level of concentration of investment assets is applied along geographical regions and across property types (offices, retail, residential, industrial, hospitals and other) in line with previous research (Boer, Brounen and Op't Veld, 2005). Portfolio spread of company i is quantified using the asset-based Herfindahl Index,[6] which adds the sum of squares of proportions in either regions r or property types t based on annual report information for the year 2002.

$$Herfindahlindex_{i,02} = \sum_{r \in R} S^2_{r,i,02}. \quad (3)$$

If, for example, a firm spreads its assets equally across office and retail property types, the Herfindahl Index for property type spread will equal 0.5 ($0.5^2 + 0.5^2$). Hence, a Herfindahl Index can vary between almost zero, indicating a widespread diversification over regions or property types, and one, which indicates a complete focus of all assets in only one region or property type.

Exhibit 4
Sample Statistics by Country (end of 2002)

	Number	Discount to NAV (%)	Average Marketcap	Debt-Ratio (%)	Mean Return (%)	Type Herf.	Regional Herf.	Freefloat (%)
United Kingdom	40	40.9	761	45.3	10.7	0.61	0.81	51.7
Sweden	13	34.9	359	57.8	15.0	0.53	0.64	64.2
France	10	26.8	1.0	60.6	9.8	0.48	0.82	51.9
The Netherlands	7	22.3	894	32.1	3.6	0.62	0.56	77.9
Total sample	72	36.1	757	48.1	10.5	0.58	0.75	57.1

Notes: The statistics exclusively relate to the seventy-two companies in the samples. The discount is the percentage difference between the market value and the NAV by the end of 2002. The debt-ratio divides the long-term debt to the total balance sheet value at the end of 2002. Mean return is the annualized average total stock return for each stock during the period 2000 through 2002. The Herfindahl Indices, the Herfs, measure the degree of portfolio concentration regarding the spread of assets over property types, as well as over geographical regions. High Herfs indicate a high degree of focus. Freefloat is the value of traded stock as percentage of the total value of the balance sheet.

Finally, the model specification is extended by including a binary dummy, which is one when the property company is part of the EPRA Index and zero otherwise. The wider universe of the Global Property Research (GPR) General indices is employed, which includes all listed property companies with a market caps exceeding 50 million US dollars for two consecutive months. Of this large set of companies, those who are also members of the narrower defined EPRA Index are identified.[7] Being part of the EPRA Index means that investors who are tracking only the index will invest in the company's shares, which increases popularity, liquidity and would reduce price anomalies like discounts.

Results

Equipped with four different model specifications in which various sets of explanatory variables are applied, an attempt is made to explain why the observed discounts to asset values vary so strongly across the individual firms in the samples. Before running the regressions, the explanatory data was examined using a simple set of correlations. The results of Exhibit 5 show that there are some noteworthy cross-relations. For instance, the two risk measures move strongly together, a result that coincides with common sense and finance theory. More interestingly is the strong negative relation between firm size and the discounts. Apparently discounts are highest among the smallest firms, a result that cannot be rationalized unambiguously. Certainly, small firms are covered less intensely by the media and might therefore suffer from a higher level of information asymmetry. By the same token, large firms may face higher discounts due to higher liquidation costs. A small firm with limited portfolio sizes can be delisted and disposed of in the real estate market without pressuring the market prices at which the individual assets can be sold. Finally, Exhibit 5 shows a remarkably strong and positive relation between firm size and index-membership. This correlation directly results from the selection criteria of the EPRA Index, which demand a certain critical mass for real estate companies to qualify for index-membership. These correlations influence the regression analysis and will therefore be incorporated explicitly.

Discounts are first regressed on the most traditional set of firm-specific characteristics, which is patterned after Barkham and Ward (1999) and yields results, which largely strengthen their outcomes. The output, as laid out in Exhibit 6, exhibits significant relations between discounts and firms size, leverage and trading liquidity. All signs corroborate previous results, except for firm size, which has a negative sign. Contrary to Barkham and Ward (1999), the largest firms in the sample are associated with the lowest discounts, which might a result of the increased popularity and higher transparency that accompanies large firms. Leverage and liquidity show negative signs, which

Exhibit 5
Correlations Among the Research Variables

	Size	Leverage	Returns	Freefloat	Total Risk	Systematic Risk	Type Herfindahl	Regional Herfindahl	Index-Member
Discount	**−0.45**	0.16	−0.25	−0.25	0.32	0.31	−0.13	0.19	**−0.52**
Size	1.00	−0.19	0.10	−0.13	−0.16	−0.08	−0.10	−0.30	**0.74**
Leverage	−0.19	1.00	0.01	0.22	0.18	−0.02	−0.14	−0.09	−0.19
Returns	0.10	0.01	1.00	0.13	−0.15	−0.11	0.01	−0.04	0.02
Freefloat	−0.13	0.22	0.13	1.00	−0.23	−0.16	−0.04	−0.08	−0.07
Total Risk	−0.16	0.18	−0.15	−0.23	1.00	0.72	−0.04	0.03	−0.14
Syst. Risk	−0.08	−0.02	−0.11	−0.16	**0.72**	1.00	−0.02	0.07	−0.07
Type Herf.	−0.10	−0.14	0.01	−0.04	−0.04	−0.02	1.00	0.17	0.05
Regional Herf.	−0.30	−0.09	−0.04	−0.08	0.03	0.07	0.17	1.00	−0.22
Index member	**0.74**	−0.19	0.02	−0.07	−0.14	−0.07	0.05	−0.22	1.00

Notes: Size is measured as the natural log of the end-of-year total balance sheet value. Leverage is the ratio of long-term debt to total balance sheet value and is expected to be positively related to discounts, since leverage increases risk. Mean stock return over the preceding three years is used as proxy for firm's reputation among investors. Freefloat is the value of traded stock as percentage of the total value of the balance sheet. Risk is measured both as the standard deviation of stocks prices in the three preceding years, the total risk, and as the beta of the share, the systematic risk. The Herfindahl Indices, the Herfs, measure the degree of portfolio concentration regarding the spread of assets over property types as well as over geographical regions. High Herfs indicate a high degree of focus. The index-member variable is a dummy, which equals one in case the firm is part of the EPRA Index, and zero otherwise.

are in line with prevailing theories and previous results. Regarding the country dummies, while the country averages of Exhibit 4 appear to be very different, these national differences do not stand the test of statistical significance. Apparently, the variations in institutional settings that have been discussed previously do not drive the discounts of individual firms. Although at first hand it seems that discounts to NAVs are highest on average in countries where corporate tax rates are high as well, these national patterns decrease when controlling for firm-specific features. Model 2 extends the traditional variables by including firm-specific risk measures, for which total risk (sigma) and systematic risk (beta) are used. In line with Bond and Shilling (2003), the findings document positive coefficients for both types of risks, which imply that risk increases the closed-end discount. Risk complicates the valuation of firms and the results suggest that in the European listed property markets, risk increases the 'mispricing' of property companies by increasing the discount to NAV. Contrary to Bond and Shilling, this study did not find any significant relation between firm risk and the discount; extending the model by including risk does not strengthen the explanatory power of the models in this study. Including the degree of portfolio focus in the analysis, like in model 3, yields some new insights. While the geographical spread appears to be unrelated to discounts, there is a negative and significant relation between a firm's focus on property types and its discount to asset values. Apparently concentrating an asset portfolio in only few or even one single property type reduces a firm's discount to asset value. The fact that only property type appears to matter in this respect could be due to the relatively high degree of regional focus that is present in the sample. European property companies tend to be rather domestically focused when it comes to their international strategy. Regarding their focus on property types, the sample contains much wider variation and lower average, which enhances the cross-sectional study.[8] Including focus characteristics of the firm helps to understand the discount since the R^2 of the model increases towards 44% from 41%. A final step in the analysis involves the index-membership of the firms in the sample and further increases the R^2 to 51%.

The EPRA Index was founded in 1999, and has steadily increased its market coverage towards 137 European property investment companies by 2004 and is currently used as tracking-index by fifty-

Exhibit 6
Cross-Sectional Regressions for Explaining Discounts

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	84.73**	82.23**	86.01**	92.66**	54.24**
	(4.00)	(3.78)	(4.09)	(3.99)	(2.09)
Size	−3.96**	−3.94**	−4.15**	−4.11**	−0.73
	(−3.35)	(−3.32)	(−3.52)	(−3.41)	(−0.44)
Leverage	0.20*	0.18	0.16	0.16	0.12
	(1.69)	(1.38)	(1.27)	(1.29)	(1.05)
Mean Returns	−0.24	−0.23	−0.24	−0.21	−0.28*
	(−1.49)	(−1.46)	(−1.53)	(−1.37)	(−1.88)
Freefloat	−0.22**	−0.21**	−0.22**	−0.23**	−0.19**
	(−2.35)	(−2.14)	(−2.31)	(−2.46)	(−2.18)
Total Risk		0.14			
		(0.57)			
Systematic Risk			9.97	8.05	8.03
			(1.39)	(1.12)	(1.18)
Type-Focus			−15.12**	−10.79	
			(−1.95)	(1.44)	
Regional-Focus			5.83	4.65	
			(0.71)	(0.60)	
Index-Member				−14.07**	
				(−2.81)	
U.K.	8.04	7.43	5.09	4.08	7.52
	(1.19)	(1.08)	(0.72)	(0.57)	(1.09)
France	−2.47	−1.75	−1.41	−5.52	−1.61
	(−0.32)	(−0.22)	(−0.18)	(−0.68)	(−0.21)

Notes: *t*-Stats are in parentheses.
*Significant at the 10% level.
**Significant at the 5% level.

three international institutional investors. This implies that not being part of EPRA reduces its popularity among investors, which might well eventually reduce the market price. This liquidity issue has been researched before by Benveniste, Capozza and Seguin (2001) who use 'freefloat' as a measure for liquidity and document a clear and negative relation between liquidity and the discount to NAV. The issue of liquidity is also incorporated in this study by following the example of two recent studies of Lynch and Mendenhall (1999) and Barberis, Schleifer and Wurgler (2005). Both studies clearly show that membership in a major index influences stock price behavior in a positive manner. To test this hypothesis within a property context, a dummy variable was included that is one in case the firm is part of the EPRA Index. The results in Exhibit 6 confirm this hypothesis. Index membership turns out to be significantly negative, indicating that members of the EPRA Index are associated with the lowest discounts. The fourth and final model is most successful in explaining the cross-section in discount, since it produces an R^2 of 51%. However, multicollinearity enters into this final specification. Firm size and index membership move together for obvious reasons. Including the index-factor reduces the effect of size back to insignificant proportions. This bias is controlled by including the variables separately, and dropping size from model 4 does not alter the results nor weaken the model. Certainly both variables capture part of the same signal, but the results show that index membership is more successful in doing so.

Conclusion

This paper extends the understanding of why some European property shares trade at greater discounts than others. This so-called closed-end fund

puzzle, which is concerned with the presence of discounts or premiums to NAVs, has been part of the finance literature for many years. Several theories and empirical studies attempted to make sense of the discount within a rational expectations framework, but none can account fully for the peculiarities that can be observed in practice. For property shares specifically, less research is available regarding the presence of discounts. This study combined an original set of explanatory variables with a collection of data regarding seventy-two listed property shares that originate from the U.K., Sweden, France and the Netherlands. Focusing on the observed discounts for the year 2002, discounts were found to decrease with firm size, historic stock returns and freefloats, while leverage tended to increase the discount. In line with results of Bond and Shilling (2003), the findings indicate that as risk increases, the discount to NAV rises. Furthermore, property companies with portfolios spread over a wide variety of property types face the highest discounts to NAVs. A rationale for this result might involve the transparency of the firm, which decreases as the focus of the firm reduces. Finally, index membership matters when it comes to discounts. In line with a recent stream of finance literature, being part of the EPRA Index is associated with the lowest discounts. The two latter results are new, and improve the R^2 (51%) of the variation in discounts in the property share markets.

Endnotes

1. For a comprehensive discussion of the closed-end discount literature, see Dimson and Minio-Paluello (2002).
2. The hypothesis that prices fully reflect publicly available information is called the semi-strong form of Efficient Market Hypothesis, as it is discussed in full detail and tested empirically by Fama (1970).
3. The exact corporate tax rate for U.K. property companies depends on their profit level and company structure and ranges between 23% and 31%.
4. When expressing the market value of the national property share market as a percentage of the GDP, we find 1.92% for the U.K., 0.88% for France, 1.89% for Sweden and 2.17% for the Netherlands. The GDP data have been obtained from the Worldbank statistical bulletins and relate to the end of 2002.
5. In line with Barkham and Ward (1999), convertible debt is excluded from NAVs and the market caps in the computations. Net asset value is defined as the net market value of all company's assets, including but not limited to its properties, after subtracting all its liabilities and obligations.
6. For classifying assets, the following standard property types are used: offices, retail, industrial, residential, hospitals and others, while the geographical regions are defined using national borders, and for the U.K., France, the Netherlands and Sweden, a London, Paris, Randstad and Stockholm region are added, respectively. The Randstad area includes Amsterdam, the Hague, Rotterdam and Utrecht.
7. The same analysis was performed in which index membership was defined as membership of national midcap indices (like the FTSE-250). The correlation between membership of a national equity midcap index and the EPRA Index is close to 1.0 and causes identical results in further analyses.
8. The joint effect of corporate diversification was also analyzed through the use of a hybrid Herfindahl Index, which combines both dimensions, but this lowers the impact back to insignificant proportions.

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