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Focus, Liquidity and Firm Value

An Empirical Study of Listed Property Trusts in Australia

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Abstract

The relationship between corporate focus and firm value is frequently discussed in the financial literature. Most often, focused companies are valued at a premium in comparison to diversified firms. In this study, focus *within* a single line of business, rather than *across* multiple businesses, is analysed. An unbalanced panel dataset covering 39 Australian non-stapled Listed Property Trusts (LPTs) from 1992 through 2003 are observed. Focus over property type (retail, office, industrial and hotel) are significantly positive related to LPT value, while the corresponding connection measured over geographical regions are negative. After dividing the time period into two sub-periods (a) 1992-1997 and (b) 1998-2003, the significance disappears for property type focus but remains for focus over regions. These relationships remain after controlling for share market liquidity, with dollar trading volume used as a proxy.

Keywords: LPTs, Herfindahl Index, market-to-NTA, dollar trading volume, Australia.

1 Introduction

A focused firm specialises in one or a restricted number of business areas, while a diversified company invest across numerous segments. The relationship between the degree of focus and firm value has been frequently discussed in the financial literature.

Empirical studies most often detect a statistically negative relationship between firm value and diversification *across* multiple industries. This paper, however, concentrates on firms primarily active *within* a single line of business. In particular, the study is applied to a sample of Listed Property Trusts (LPTs) in Australia. How is the composition of these securitised property vehicles, over property types and geographical regions, related to their values? That is, how is the degree of focus (or opposite, diversification) associated to their performances?

Previous studies within this area have been conducted on other indirect property vehicles, e.g. US Real Estate Investment Trusts (REITs). LPTs have a similar structure to REITs, i.e. primarily investing in real estate assets with the shares being tradable on a stock exchange[1]. To study the value effects of diversification within a single industry, such as securitised real estate, rather than across multiple lines of business, has both advantages and disadvantages. The Australian LPTs industry has a high degree of transparency and well-defined dimensions, property type and geographical region, which make the sector easy to identify and analyse. The underlying properties are traded in an active primary market, which also is favourable and advantageous for empirical studies. It allows us to study the relationship between securitised property (public) and unsecuritised (private) property markets. In this case, we can study the relationship between the publicly traded LPTs and the direct property market where the underlying properties are bought and sold. A limited number of observations (here, N=263) and restricted possibilities to generalise the results across other industries are among the drawbacks. This study also contributes to the empirical research field of non-US studies.

This paper is organised as follows. The next section surveys the literature surrounding corporate focus in general, and the relationship between focus and firm value in specific. Special interest is given to empirical studies, especially papers on property vehicles. Chapter 3 introduces an economic model and statistically describes the sample as well as the included variables. The regression models with results, interpretations and inference is presented in Chapter 4. Finally, a brief summary and conclusions are displayed. The Appendix lists the LPTs that are included in the analysis.

2 Focus and Firm Value

How the degree of focus (or opposite, diversification) is related to a firm's value has been object to both theoretical and empirical research studies.

2.1 Theory

According to Berger and Ofek (1995, p. 39), the 1950s and '60s were characterised by "massive diversification programs", followed by a "merger wave" in the late 1960s. The rise of large conglomerate corporations during this period is often derived from the potential benefits that can be realised from diversification. Starting in the end of the 1970s, many corporations abandoned the diversification strategy and decided to specialise in a fewer amount of businesses (see Comment and Jarrell, 1995). Opposite from earlier, researchers instead emphasised on the costs of diversification. More recently, Martin and Sayrak (2003, p. 37) describe the end of the 20th century as a period with "record-breaking levels of mergers and acquisitions" and therefore a return to more diversified firms.

A key research area in the financial literature is to investigate the link between corporate focus and firm value. Hyland and Diltz (2002) state that diversification would not affect firm

[1] Further more, LPTs are excluded from corporate tax but must distribute at least 90% of its taxable income to its shareholders. The Australian LPT sector has grown rapidly during the last decades and is by 2004 the sixth largest sector on the Australian Stock Exchange (about 6% of exchange). The market capitalisation of the "LPT index" increased from AU$5 billion in 1987 to about AU$55 billion in 2004 (Source: ASX). During this time, the LPT sector has shifted form from a rather high degree of diversification to become more focused.

value if the markets were perfect, i.e. markets were without friction, taxes and transaction costs did not exist, information were free, borrowing and lending were without risk, and agents were utility-maximising. Of course, in reality, the markets are imperfect and corporate focus is thus assumed to affect firm value. Both text books and financial literature have leaned to the conclusion that corporate diversification destroys firm value and therefore the wealth of the shareholders. Still, many corporations choose to diversify and some researchers have recently questioned whether the present opinion on diversification and firm value is fully accurate (see Martin and Sayrak).

2.1.1 Why Firms Choose to Diversify

Montgomery (1994) outlines the three most used theoretical explanations for why corporations choose to diversify. The first, agency theory, suggests that the managers possess self-interest in the business and that at the expense of the shareholders. In detail, managers choose to diversify in order to increase their compensation (Jensen and Murphy, 1990), secure their positions within the firm (Schleifer and Vishny, 1989, 1990), or to reduce the risk of their personal investment portfolio (Amihud and Lev, 1981). The second theory, resource based view, is based on economies of scope and implies that a diversified firm enjoy superior resources and capabilities that can be successfully exercised in different segments of their organisation. An example of this is the possibility to exercise the same marketing strategies within several different business segments. Cronqvist, Högfeldt and Nilsson (2001, p. 90) summarise: “focus matters when there are significant increasing returns to specialisation but few gains from economies of scope”. The final source of diversification advantage can be traced from corporations trying to take advantage of their skills, obtained from diversification, when e.g. entering new markets (market power view).

While these theories try to explain why a corporation should diversify initially, it is also of great importance to understand the potential benefits and costs of diversification once a firm is diversified.

2.1.2 Benefits and Costs of Diversification

One of the benefits from diversification steam from combination of businesses that have imperfectly correlated earnings streams. Lewellen (1971) argue that this type of combination can reduce the variability of earnings and therefore induce greater debt capacity. As a consequence, diversified firms can benefit from increased interest tax shields.

Other researchers claim that diversified corporations are, in some ways, more efficient than their lines of business would be individually. For example, a diversified firm’s cash flows can obtain an enhanced ability of funding an internal capital market. The advantages of an internal market in front of an external capital market are several: raising equity capital is less costly internally than externally; avoidance of transaction costs associated with sales of public securities; improved capability for firm managers to select superior projects. Williamson (1986) states that an internal capital market can share inside information better and follow up previous investments more accurate. Further more, Chandler (1977) claims that diversified firms build up a certain management which increase the efficiency and thereby make them more profitable. Another source from where diversified corporations can benefit is the decreased exposure to failed product, labour and financial markets (especially in emerging and developing markets), see Martin and Sayrak (2003).

While the benefits of diversification can help to explain why some firms have a diversified form, the potential costs of a managing a diversified corporation constitute the source why some companies choose to focus. Martin and Sayrak (2003, p. 42) say that "the fundamental argument made against corporate diversification is that it somehow exacerbate managerial agency problem". Managers are thought to over invest when the firm has excess or free cash flow (Jensen, 1986). Then, a diversified firm grants a greater possibility for managers to over invest since it has access to an internal capital market. An alternative theory is that a diversified company does not have more free cash flow, but instead is inefficient when allocating their resources. Harris, Kriebel and Raviv (1982) argue that this inefficiency problem could be a result of asymmetric information between the firm's central management and the management of operating divisions.

2.2 Empirical Studies

2.2.1 Measuring Focus

Of course, an empirical study involving corporate focus requires an appropriate measure of focus. In the US, the use of Standard Industry Classification (SIC) codes can successfully be applied. The SIC system divides establishments, that primarily produce a type of product or render the same service, into groups and sub-groups, assigned with four-digit numbers. Measurements using SIC codes involve: (1) number of single-segment firms contra number of multi-segment firms, (2) number of industry groups in which a firm is active, (3) percent of firms with one segment.

The SIC codes are also often used when constructing an additional measure of focus, namely the Hirschman-Herfindahl Index[2]. This measure calculates the degree of focus for a firm at a specific point in time, by adding the squared proportions of the firm's assets in each respective business segment:

$$HH = \sum_{i=1}^{n} \left(\frac{x_i}{x}\right)^2, \qquad (1)$$

where x_i is the weight attributable to business segment i, and x is the firm's total assets[3].

The interpretation of the index is rather straightforward: a completely focused firm, with all of their assets in a single-line of business, has an index value of 1.0; a corporation with assets in several industries has a lower value and is therefore considered to be more diversified.

2.2.2 *Across* Multiple Industries

While studies applying for the 1960's and '70s suggest a small value gain from diversification (see e.g. Hyland and Diltz, 2002), more recent publications emphasise a negative relationship between corporate diversification and firm value.

[2] Usually called Herfindahl Index, after Orris Herfindahl, who used it in the 1950s when working on energy. But also named after Albert Hirschman from work on foreign trade patterns. See Hirschman (1964). It is also often used to measure monopoly power in industrial economics, see Capozza and Lee (1995).
[3] Most often is book values used as weights, but a firm's revenues can also be employed.

An overview of the empirical research is completed by Montgomery (1994, p. 169), and reveals that there is "a neutral or negative, not a positive, relationship between diversification and firm performance". Put in another way, firms with a higher degree of diversification are, on average, less profitable than firms with lower degree of diversification.

The most regularly exercised approach when studying this topic is to estimate the value of each business segment of the diversified firm, and then compare their sum to the currently observed market value of the diversified firm.

Berger and Ofek (1995) use an industry multipliers method for their data set containing US corporations (1986-1991). The method is carried out by attribution of standalone values for individual business segments within a corporation. The sum of these values is then compared to the firm's market value ("actual firm value"). If the sum of the individual values exceeds the overall value of the firm, diversification has negative effect on firm value. The standalone values of each segment are estimated by multiplying the median ratio, for firms in the same industry and that only invests in a single segment, of total capital to one of three accounting measures (assets, sales or earnings) by the segment's level of the accounting measure. In the next step, they compare the imputed values, as if they were operated as standalone businesses, to the overall market value of the firm. This is achieved by calculating the natural log of the ratio of a firm's market value to its imputed value (excess value). Their results provide evidence of a 13-15% average loss from diversification.

Comment and Jarrell (1995) measure focus with Herfindahl indices. They then link this measure to firm performance, expressed as stock returns for corporations listed on NYSE[4] and AMEX[5] from 1978 through 1989. Their results show that an increase in focus, measured by an asset-based Herfindahl index, of "0.1 yields a 3.5% increase in wealth over two years", while an equal sized increase in the revenue-based index "is associated with an additional stock return of 4.3%". They also find that a reduction of one in the number of SIC codes generates a 3% increase, while the same decline in number of segments is related to a 5% increase.

Using Tobin's *q* (*q*-ratios)[6] as a measure for firm performance and Herfindahl indices as focus measurements, Lang and Stulz (1994) provide further proof of the negative relationship between corporate diversification and performance. Precisely, firms with interests in only one single-line business have *q*-ratios higher than 1.5, while corporations involved in multiple lines of business are below 0.95.

Tobin's *q* is also adopted by Servaes (1996), the results suggesting that US corporations, since the 1960s, are distinguished with a diversification discount.

2.2.3 *Within* a Single Industry: The Real Estate Sector

With a well documented link between value and corporate diversification across multi-segments, some studies have explored how focus within a single industry affects value.

[4] New York Stock Exchange
[5] American Stock Exchange
[6] Tobin's *q* is defined as the ratio of the market value of the outstanding financial claims on the firm to the current replacement cost (the alternative-use value of the assets) of the firm's assets. See Tobin and Brainard (1968) and Tobin (1969).

Since this study concentrates on focus within a single industry rather than diversification over set of different businesses, a review of this literature is of significance.

The effects of including real estate in a mixed-asset investment portfolio (along with e.g. shares and bonds) are thoroughly examined in the real estate literature. Most often, inclusion of properties is considered to have diversifying effects on the portfolio as a whole[7]. However, investigating the effects of diversification *within* a real estate portfolio has not been subject to the same research interest. While e.g. Viezer (2000) evaluate "within real estate" diversification from a Modern Portfolio Theory (MPT) perspective, an overview of studies surrounding focus and firm value are more necessary here. In particular, how is focus within securitised real estate related to firm value?

Capozza and Seguin (1999) perform an analysis of US REITs between 1985 and 1992. They argue that the limitation of only studying focus within one industry has both benefits and shortcomings. Among the advantages lie the simplicity of the REIT industry, the availability of detailed financial accounts and the existence of an active market where the underlying properties are traded (and therefore priced). Potential disadvantages are a limited sample size and that the results from a single business cannot be fully generalised to other industries.

In their model, *q*-ratios and Herfindahl indices are used to track how focus affects REIT values. The *q*-ratios are constructed by dividing the REITs' stock market values by the replacement cost of capital, the latter expressed as net asset values (NAV). The NAVs are obtained by summing the property market values and the value of other assets, less total liabilities. Three asset-based Herfindahl indices are then created. The first is based on property types (retail, office, warehouse and apartment) and the second on geographical regions (eight real estate regions in the US). The third measure captures type and region focus simultaneously, and can be interpreted as the proportion of a REIT's assets invested in property type i and region j[8]. Their findings show that an increase in property type focus, measured within a single SIC defined line of business (the US REIT industry), of 0.1 is associated with a 1.6% wealth enhancement. Nevertheless, they found no statistical support that regional focus should affect value.

Cronqvist, Högfeldt and Nilsson (2001) also use the real estate industry as a single line of business. Their choice of industry is motivated because of its relatively high degree of transparency, achieved through portfolio management of assets with well-defined market values. They study listed Swedish real estate companies (SRECs, 1990-1996) and find that, even within a single industry, a diversified company has lower value. In addition, they show that "the *ex ante* discount is larger and more important than the contemporaneous discount measuring the inefficiency of an already diversified firm". This means that, in contradiction to Capozza and Seguin, the diversification discount can be derived from the firm's future diversifying strategies, rather than diversification *per se*. To measure a SREC's expected diversifying strategy, an *ex ante* proxy, provided by the business magazine *Börsveckan*, is applied. The proxy is a dummy variable, classifying a firm as (1) nonfocusing (i.e. diversifying or unclear) or (2) focusing. Their conclusion demonstrate that firms that are

[7] Real estate has shown to be lowly correlated with shares and bonds, albeit the degree of correlation depends on the type of property vehicle invested in. According to Hoesli and MacGregor (2000, p. 227), direct property has shown to have a low correlation with shares and bonds, while indirect property shows higher correlation. Overall, property is an "attractive portfolio diversifier".

[8] This additional measure is required if the two former are not independent, see Capozza and Seguin (1999, p. 596).

expected to adopt a nonfocusing strategy are valued at a significant discount, around 20%, compared to firms that are anticipated to practise a focusing scheme. Their model obviously takes the issue to another level, but requires a reliable and objective measure of future corporate strategy, which perhaps not always is available.

3 Methodology and Data

An economic model is developed to connect LPT value and focus, and moreover outline this paper's hypotheses. Different theories are sketched out to give explanations for the surveyed relationship. The sample and variables are further introduced and described.

3.1 An Economic Model

Since LPTs have to distribute at least 90% of their taxable income, there should theoretically be a strong relationship between distributed dividends and the firm's cash flows. This means that the value of a LPT share is strongly connected to the present value of the firm's future cash flows[9]. Suppose continuously compounding, the value of one LPT unit, V_t , can then be estimated by calculating the present value of the future cash flows available to the shareholders, dividends (D_t), at time t:

$$V_t = \int_t^{\infty} D_t \times e^{-rt} dt \qquad (2)$$

where r is the required rate of return (discount rate).

Assuming that a LPT's value is calculated with the above formula, there are two broad avenues through which focus can affect value: (1) dividends (D_t) and (2) the required rate of return (r). The former is basically the net cash flows generated from the trust's business, and can be expressed as the income generated from the properties, minus interest expenses and overhead expenses. If focus does not affect value through the cash flows, it must be through the required rate of return. The required rate of return can be further described as the risk free rate of return plus a risk premium.

3.1.1 Hypotheses

This paper's first hypothesis states that focused LPTs, measured over property type and geographical region, are trading at a premium, i.e. focus is positive related to LPT value.

It is believed that a LPT focusing on management of a restricted number of property types will be trading at a premium since the property management skills cannot be beneficially attributed across several sub-sectors. Also, Cronqvist, Högfeldt and Nilsson (2001) suggest that specialisation in management of specific property types has potential gains since it requires knowledge on property and investor level (valuation of properties, knowledge about

[9] Dividend pricing/present value models are the most common approach when estimating current stock prices. Some empirical research has found that these models are poor predictors of true prices. Kallberg, Liu and Srinivasan (2003), however, study US REITs and discover that, for their population, the use of dividend pricing models cannot be rejected.

potential buyers and sellers, etc.), which most often are attributed to a few persons. They further argue that economic fundamentals, such as business cycles, affect different property types differently. Since the clienteles of the investors have individual preferences regarding e.g. risk and return, a diversified firm's exposure to numerous sub-sectors make the investment characteristics harder to define and measure. Thus, a LPT specialised in few types will match the preferences of a specific investor better. At the same time, focusing within a specific property type but spread over numerous regions are expected to be less positive "since the same specialised knowledge is applied more thinly". Entering new markets, but within the same property type, might be profitable because the possibilities of "picking the right properties" are higher. However, the ability of selecting profitable projects in new areas may be still be offset by the requirement of highly specialised managerial skills (Stein, 1997).

Another motivation for the specified hypothesis is that diversification leads to higher required rates of return since the potential for agency costs is higher for a diversified property trust (Capozza and Seguin, 1999). The agency costs can for example be generated from greater asymmetric information as pointed out by Harris, Kriebel and Raviv (1982), or from increased costs of collecting information (Ippolito, 1989). Ferris and Sarin (1997) argue that diversified firms are assigned with greater asymmetric information since they are less followed by analysts. They then show that corporate values increase with greater analyst coverage. Hence, investors require higher returns as a compensation for an increase in agency costs. If the cash flows are held constant at the same time as the discount rate is increased, a LPT will have lower values as predicted by Equation (2) above.

A focused LPT is more transparent and hence, easier to analyse and value. While a transparent LPT may trade at a premium over more diversified LPTs, the transparency may also increase the share's attractiveness and thus the trading volume, i.e. its liquidity. Hence the second hypothesis: a focused LPT is more transparent and is therefore traded more frequently. Precisely, focus increase the trading volume, i.e. the share market liquidity.

If the second hypothesis is fulfilled, it can be hypothesised that focus affects value through the liquidity channel: In other words, there is a link, indirectly via share market liquidity, between focus and LPT value. From the perspective dictated in the economic model: An increase in liquidity (with dollar trading volume as a proxy) due to higher degree of focus, decrease the risk and therefore the required rate of return. If D_t in Equation (2) is held constant (cash flows), a decrease in the required rate of return will increase the LPT values.

To test the hypotheses, econometric techniques are applied for the LPT sample. Firstly, a link between focus and LPT value must be established. To test if focus affects value through the liquidity component, it must first be confirmed that focus are associated with liquidity. If focus is proven to affect both value and liquidity, it can then finally be tested whether focus affects value entirely through the share market liquidity or not.

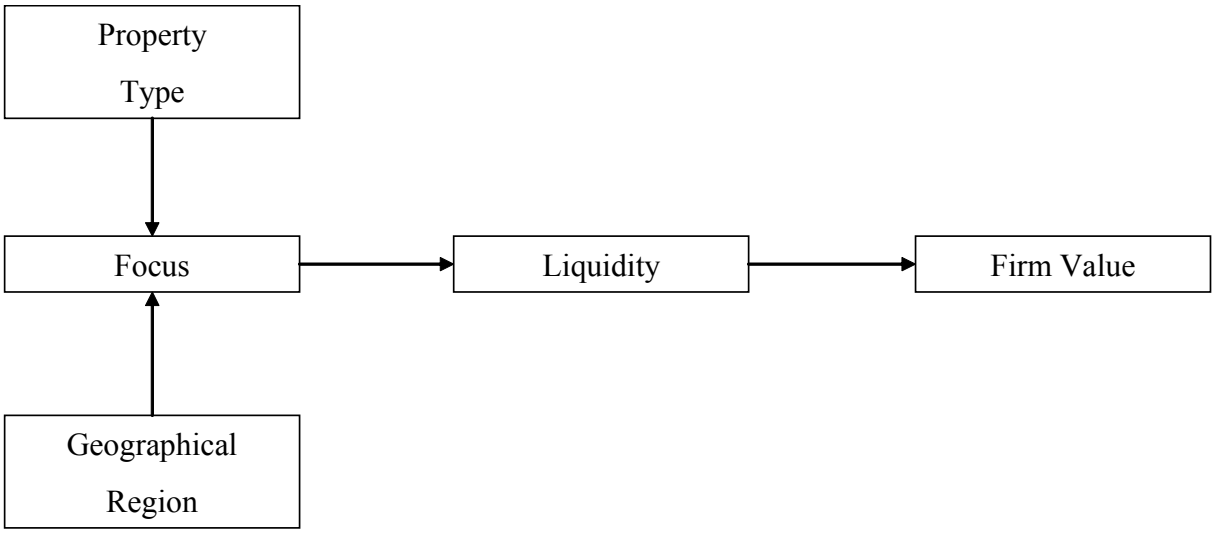

Figure 1. *Hypothesised model: focus, over property types and geographical regions, affects LPT value through stock market liquidity.*

3.2 Sample Selection

The data consists of annual observations of 39 LPTs listed on the Australian Stock Exchange (ASX) any year between 1992 and 2003. At the end of each financial year (30th June) data on LPTs, which appear for at least one year, are collected. Here, few LPTs appear every year (mostly as a consequence of mergers, delisting and missing data) and the dataset are thus unbalanced. A total of 263 observations are available, rather than 468 (39*12) which would have been the case for a balanced dataset.

The paper compromises companies classified as Property Trusts by the Global Industry Classification Standard (GICS). An additional limitation is that the sample only includes LPT units and not stapled securities. The latter type is not only involved in "holding" of properties, but they also have significant resources in construction and management of properties. This means that stapled securities are analysed and priced under different assumptions than the traditional units. Exclusion of stapled securities is in line with other empirical studies in this field. Capozza and Seguin (1999) investigate US REITs, which by law are constrained to have 75% of its assets in real estate assets. Cronqvist, Högfeldt and Nilsson (2001) also make this assumption when surveying Swedish real estate companies. They only include firms that have at least 75% of the assets invested in property assets.

Further, the study only includes LPTs who invest in Australia and New Zealand, and not international investments such as in the US. The reason for this is that these LPTs do not fit into the model used to measure regional focus. Finally, some LPTs are excluded from the analysis, completely or for certain years, when required data are missing.

The data are primarily collected from the LPTs´ annual reports and with additional information from the electronic data sources *IRESS* and *FinAnalysis*.

The Appendix lists the LPTs that are used in the analysis. The different types of LPTs are spread as follows: retail (8 trusts), office (12), industrial (8), hotel (3) and diversified (8).

3.3 Variables

To test the relationship between focus and firm value for LPTs in Australia, measurement of LPT focus and value are required.

Firm Value: *Market-to-NTA*

To measure LPT value, the market capitalisation (MC) of each LPT is divided by the corresponding net tangible asset (NTA)[10] to obtain the *market-to-NTA*[11]. Market capitalisation is calculated by multiplying the number of outstanding shares by the current share price of each LPT. Next, the net tangible asset (NTA) is defined as the market value of properties[12] plus the book value of other assets minus the book value of debt. Capozza and Lee (1995) manually estimate the market values of the properties, by attributing specific capitalisation rates for each property. These separate rates are then weighted (by the net operating income, NOI) to achieve a capitalisation rate for the whole LPT portfolio. The market value for the entire property portfolio can thereafter be estimated at time *t* (where *t* is the annual date of observation), by calculating the present value of the observable NOIs with the weighted capitalisation rate as discount rate. Finally, the NAVs are determined by adding other assets and subtracting the liabilities.

In contrast, this study instead relies on the NTAs as reported by the LPT managers. Here, real estate market values are estimated according to standard property valuation methods[13] conducted by certified property appraisers. The value of other assets is then added and the value of debt subtracted, to obtain the NTAs.

If the *market-to-NTA* ratio is greater than one, the LPT is trading at a premium, and if lower than one, at a discount.

Lang and Stulz (1994) argue that, when comparing the performance of conglomerates to performance of nonconglomerates, this measure is to prefer in front of stock prices. This is because the stock prices have to be adjusted for risk[14], usually with an asset pricing model (traditionally CAPM). Several studies show that CAPM is not an accurate risk-adjustment model, and it therefore misjudges the expected return[15]. By instead adopting *q*-ratios, the authors avoid some of these drawbacks. They state that:

[10] The same as net asset value (NAV).
[11] More a less the same as Tobin's *q* (*q*-ratio)
[12] The market value of a property is often defined as: "The estimated amount for which a property should exchange on the date of valuation between a willing buyer and a willing seller in a arm's-length transaction after proper marketing wherein the parties had each knowledgeable, prudently, and without compulsion", International Valuation Standards Committee (IVS) 2003.
[13] The three general approaches used when estimating a property value are: sale comparison, discounted cash flow method and income capitalisation method.
[14] A risk-averse investor requires an increase in expected stock return, given an increase in risk.
[15] See Fama and French (1992). They argue that a single risk factor, beta, is not enough for explaining the cross-section of expected stock returns. Instead, two additional factors seem to have important impact, size and book-to-market equity. Empirical studies show that small firms seem to earn higher returns than large firms (after controlling for market risk), while firms with high book-to-market ratios appear to be associated with higher returns on average over long periods of time (after controlling for market risk and size).

"By focusing on Tobin's *q* rather than on performance over time, we avoid some of the problems of the earlier literature. In particular, since *q* is the present value of future cash flows divided by the replacement cost of tangible assets, no risk adjustment or normalisation is required to compare *q* across firms, in contrast to comparisons of stock return on accounting performance measures".

Corporate Focus: *Herfindahl Indices*

A LPT's degree of focus is measured by two Herfindahl indices. This measure is usually used to measure focus across multiple lines of business. However, in analogy with e.g. Capozza and Lee (1995), Capozza and Seguin (1999), Benveniste, Capozza and Seguin (2001), and Cronqvist, Högfeldt and Nilsson (2001), the Herfindahl index is used within a single industry, namely securitised real estate. The two indices are calculated over property types and geographical regions for the LPT sample.

The Herfindahl property type index (*HHPT*) for each respective LPT is calculated as follows:

$$HHPT = \sum_{i=1}^{5} \left(\frac{x_i}{x}\right)^2 \qquad (3)$$

where i = *type of property: retail, office, industrial, hotel or car park*
x_i = *amount invested in property type i (book value)*
x = *total value of a LPT's property portfolio (book value)*

The second index, Herfindahl geographical region (*HHRG*) measures focus over regions:

$$HHRG = \sum_{j=1}^{9} \left(\frac{x_j}{x}\right)^2 \qquad (4)$$

where j = *geographical region: the states in Australia (New South Wales, Victoria, Queensland, South Australia, Western Australia, Northern Territory, and Tasmania), Australian Capital Territory (ACT) and New Zealand*
x_j = *amount invested in region j (book value)*
x = *total value of a LPT's property portfolio (book value)*

A totally focused LPT has an index equal to one, while the index for a diversified LPT is closer to zero. Obviously, the index values can vary in the range $0.20 \leq HHPT \geq 1.00$ and $0.11 \leq HHRG \geq 1.00$.

Liquidity: *Annual Dollar Trading Volume*

An illiquid asset is assumed to be associated with higher returns, since they are more costly to trade, and therefore trade at lower values, *ceteris paribus* (see e.g. Amihud and Mendelson, 1988). This can be realised from the economic model in section 3.1.1. It is hypothesised that focus affects LPT value via stock market liquidity, because focused LPTs are easier to analyse and value and therefore are more attractive to investors. Therefore, a liquidity measure is required. Liquidity is a complex area in finance, and a measure of liquidity can only be a proxy (see Bernstein, 1987). Here, annual dollar trading volume (*$VOL*) is used. Benveniste,

Capozza and Seguin (2001) argue that the use of trading volume mitigates some of the shortcomings of the bid-ask spread since it measures liquidity by the outputs (dollar trading volume) of the market exchange process, rather than the inputs (quoted bid and ask prices).

3.4 Data and Statistics

3.4.1 General Trends

Exhibit 1 reveals that both value measure inputs, market capitalisation and net tangible asset, span over a range of just a few million dollars, up to almost $7.5 billion for the largest LPT. The ratio of these two, *market-to-NTA* has a mean of 0.96, implicating that the LPTs in this sample, on average, trade at a discount to the net tangible asset[16].

The two Herfindahl indices express the sample's degree of focus. The LPTs are, on average, more focused over property type (84.7%) than over geographical region (54.4%).

Exhibit 1*. Summary statistics for the variables*.

Variable	Mean	Median	Maximum	Minimum	Standard Deviation
Market Capitalisation ($ million)	728	355	7 440	1.2	1 140
Net Tangible Asset ($ million)	713	339	6 730	6.1	1 050
Market-to-NTA	0.96	0.99	1.32	0.18	0.19
Herfindahl Index - Property type (%)	84.7	100.0	100.0	26.2	24.2
Herfindahl Index - Region (%)	54.4	47.3	100.0	20.7	23.9
Annual Dollar Trading Volume ($ million)	346	108	5 300	0.06	697

A preliminary analysis can be achieved by looking at the mutual correlations between the included variables (see Exhibit 2). For example, the relationship between *market-to-NTA* and the *Herfindahl indices* is weakly positive for property types, but strongly negative for regions. This suggests that focus may have an impact on LPT value (however yet without any definitive statistical guarantee). The relative high correlation between *HHPT* and *HHRG* (0.29) indicates that the variables are perhaps not independent. This opens for the introduction of a third focus measure, namely a bivariate Herfindahl (*HHBV*). This is further discussed in Chapter 4.

[16] Observe that the ratio of the means (*MC* and *NTA*) is greater then the mean of the *q*-ratios. See Benveniste, Capozza and Seguin (2001, p. 642) for a clarification of this inequality.

***Exhibit 2**. Correlations between included variables: market capitalisation (MC), net tangible asset (NTA), market-to-NTA (M-to-NTA), Herfindahl index – property type (HHPT), Herfindahl index – geographical region (HHRG) and dollar trading volume ($VOL).*

	MC	*NTA*	*M-to-NTA*	*HHPT*	*HHRG*	*$VOL*
MC	1.00					
NTA	0.99	1.00				
M-to-NTA	0.27	0.22	1.00			
HHPT	-0.16	-0.19	0.04	1.00		
HHRG	-0.37	-0.37	-0.40	0.29	1.00	
$VOL	0.93	0.91	0.24	-0.13	-0.31	1.00

To further describe the characteristics of the LPTs, and thereby increase the understanding of the LPT sector, additional statistics are here attached. Time-series of the number of LPTs and property values are presented in Exhibit 3, and highlights the dramatic increase in size of the LPT sector during the period 1992 to 2003. The number of LPTs more than tripled from 1992 up to 1999, but the figures have since then dropped due to consolidation and rationalisation (M&A and stapling). The book values of the properties underlying the sample LPTs have increased with over 700% during the period, mostly as a consequence of the amplified securitisation of real estate assets.

Retail and office are without any doubt the sectors where the trusts invest most of their capital; together they have an average of around 90% of the book values. Investments in the industrial sector have seen a fair increase during the period, with a mean of around 10% of the total stock. The hotel sector only plays a minor role in the LPT industry, standing for about 1.5% of the investments in this study. Car parks constitute a very small fraction, and are not included in Exhibit 5.

LPT managers generally focus their investments in and around the major cities, and particularly in Sydney, Melbourne and Brisbane. New South Wales, the largest state by population, is the most popular geographic region among the trusts, representing around 50% of property book values. Next is Victoria with around a quarter of the investments, followed by Queensland with an average of 13%. Perth, Adelaide and Canberra investments lie in the range of 4-6%, while Northern Territory and Tasmania are rare regions for LPT investments. Investors have showed an increased interest in the New Zealand market during the recent years, although only a small percentage of the total portfolio is invested there.

***Exhibit 3**. Yearly sample characteristics represented by number of LPTs and book values of underlying properties.*

		Property Values ($ million)													
		Total	Property Type				Region								
Year	Number of LPTs	TOT	RET	OFF	IND	HOT	NSW	VIC	ACT	QLD	SA	WA	NT / TAS	NZ
1992	10	4 483	2 551	1 619	313	n/a	2 306	456	319	783	301	219	100	n/a
1993	11	5 752	3 619	1 817	316	n/a	2 953	891	338	878	302	281	111	n/a
1994	17	8 111	5 023	2 661	426	n/a	3 661	1 879	397	1 053	358	595	167	n/a
1995	18	9 195	5 667	2 771	757	n/a	4 144	2 056	406	1 328	433	644	183	n/a
1996	22	11 407	6 492	3 685	1 230	n/a	5 311	2 941	412	1 464	532	525	221	n/a
1997	26	15 552	8 225	5 604	1 684	38	7 040	4 170	557	1 790	534	1 199	262	n/a
1998	30	19 032	9 238	7 026	2 444	324	8 873	4 688	653	2 100	805	1 340	575	n/a
1999	34	24 621	12 471	8 436	3 363	352	11 102	6 108	829	3 128	1 055	1 781	620	n/a
2000	29	29 274	15 762	9 510	3 490	513	14 149	6 619	859	3 854	1 204	1 962	628	n/a
2001	23	30 241	15 819	10 220	3 668	535	15 784	6 510	766	3 470	1 184	1 893	634	n/a
2002	21	34 135	18 028	11 519	4 017	571	18 340	7 145	820	3 871	1 230	2 025	673	30
2003	22	37 765	20 836	11 372	4 932	626	20 643	7 778	873	4 195	1 384	1 900	706	286

TOT	=	Total	NSW	=	New South Wales
RET	=	Retail	VIC	=	Victoria
OFF	=	Office	ACT	=	Australian Capital Territory
IND	=	Industrial	QLD	=	Queensland
HOT	=	Hotel	SA	=	South Australia
			WA	=	Western Australia
			NT / TAS	=	Northern Territory and Tasmania
			NZ	=	New Zealand

3.4.2 Market-to-NTA

Market-to-NTA can be interpreted as the relationship between public (securitised) and private (unsecuritised) pricing of property assets, expressed as the ratio between the stock market value and the value of underlying assets (predominately properties). This ratio has proven to change significantly over time for LPTs as well as US REITs and other securitised property vehicles. Clayton and MacKinnon (2001) argue that the discrepancies of REIT share prices from NAV are caused by "noise" or "information". The noise theory suggests that, when REIT investors become irrationally pessimistic about the securities, the stock market value of the REITs become lower than the value of the underlying properties. The authors say that rational investors face an additional risk because they have to take into account the behaviour of these noise traders. This causes the stock prices to partly decrease because of the required "noise trader risk premium". The second explanation, information theory, says that the securitised market is "more informationally efficient" than the underlying real estate market. That is, new information is first discovered in the securitised market and causes the share values to rise or fall, and thus forecasting the future performance of the property market.

The sample's *market-to-NTA*s have low values initially and more recently followed by premium trading or low discounts

It is also appealing to observe and try to understand the difference in *market-to-NTA* between the different sub-sectors, e.g. why is the retail sector trading at a higher ratio than the office sector? Kishore (2000) tries to derive this discrepancy from differences among investor types and firm size. He highlights that LPTs were initially traded mainly by individual investors, investing preferably in smaller trusts, and that the securities were trading at large discounts. More recently, the increased interest from institutional investors has turned around the *market-to-NTA*. These investors normally invest in larger trusts, trading at smaller discounts or premiums.

***Exhibit 4**. Yearly averages of market-to-NTA across different LPT types.*

	Tobin's *q*											
	Total		Retail		Office		Industrial		Hotel		Diversified	
Year	U	W	U	W	U	W	U	W	U	W	U	W
1992	0.77	0.84	0.83	0.97	n/a	n/a	0.69	0.69	n/a	n/a	0.75	0.76
1993	0.90	0.99	1.04	1.14	0.52	0.52	0.92	0.92	n/a	n/a	0.89	0.92
1994	0.85	0.81	0.89	0.87	0.70	0.71	1.07	1.10	n/a	n/a	0.87	0.78
1995	0.85	0.86	0.91	0.95	0.81	0.86	0.91	0.72	n/a	n/a	0.82	0.80
1996	0.90	0.88	0.90	0.94	0.92	0.95	0.93	0.86	n/a	n/a	0.85	0.83
1997	1.08	1.08	1.08	1.08	1.15	1.17	1.10	1.02	1.15	1.15	1.00	1.05
1998	1.03	1.07	1.13	1.16	1.04	1.06	0.99	0.92	1.01	1.01	0.99	1.05
1999	0.99	1.03	1.06	1.12	0.96	0.98	0.99	1.00	1.04	0.92	0.94	0.99
2000	0.96	1.05	1.00	1.10	0.96	1.00	1.00	1.02	0.60	0.70	0.97	1.03
2001	0.96	1.06	1.01	1.11	0.99	1.03	1.01	1.03	0.65	0.68	0.97	1.04
2002	0.98	1.07	1.05	1.10	1.01	1.03	1.11	1.11	0.36	0.46	1.05	1.06
2003	0.99	1.07	1.11	1.09	0.98	0.99	1.12	1.13	0.56	0.58	1.09	1.10
Average	0.94	0.99	1.00	1.05	0.91	0.94	0.99	0.96	0.77	0.79	0.93	0.95

U = Unweighted *q*
W = Weighted *q* (NTA as weights)

3.4.3 Herfindahl Indices

Finally, the focus measures are surveyed in detail. Just looking at the number of property types and geographical regions that the LPTs invest in reveals some interesting trends (Exhibit 5). The average number of sub-sectors is 1.6 for property types and 3.8 for regions. The percentage of the LPTs that was only active in one property type has increased from 30 to around 70 in recent years. The pattern for regions is different and more stable during the time period.

The same focusing pattern is discovered when looking at the Herfindahl indices (see Figure 2). During the period, the LPTs have become more specialised in specific property types, the Herfindahl index increasing from about 70% to almost 90%. However, the degree of focus by geographical region is relative stable, in the range of 50-60%.

***Exhibit 5**. Descriptive statistics over the sample's concentration over different sub-sectors and regions at significant points in time.*

	Propert Type				Geographical Region			
Year	Mean	Maxi-mum	Min-mum	LPTs active in one type (%)	Mean	Maxi-mum	Min-mum	LPTs active in one region (%)
1992	2.2	4	1	30.0	3.2	5	1	20.0
1993	2.1	4	1	36.4	3.2	5	1	18.2
1994	1.7	4	1	58.8	2.9	5	1	17.6
1995	1.7	4	1	66.7	3.1	5	1	16.7
1996	1.6	4	1	72.7	3.1	6	1	18.2
1997	1.5	4	1	73.1	3.5	7	1	11.5
1998	1.5	4	1	70.0	3.6	7	1	10.0
1999	1.5	4	1	70.6	4.0	7	1	8.8
2000	1.5	4	1	72.4	4.1	7	1	10.3
2001	1.6	4	1	69.6	4.3	7	1	8.7
2002	1.6	4	1	71.4	4.6	7	1	4.8
2003	1.5	4	1	68.2	4.5	7	1	13.6

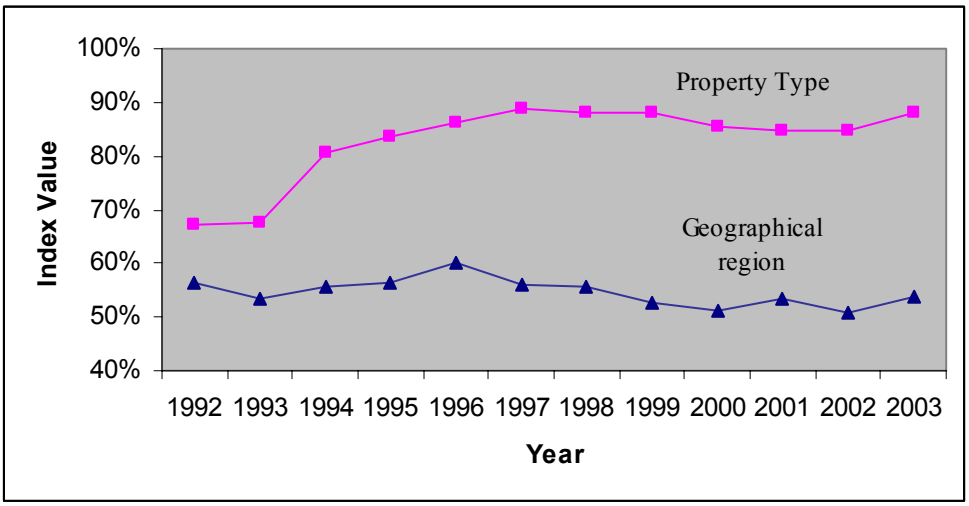

***Figure 2**. Time-series development of the Herfindahl indices, measuring the LPTs' degree of focus over property types and geographical regions.*

3.4.4 Conclusions

It should firstly be emphasised that the data used in this study are an unbalanced panel data set, i.e. observations for each LPT do not appear in each year. Even though the study includes 39 LPTs in total, only 10 are available in 1992, 34 in 1999 and 22 in 2003 (see Exhibit 3).

Some trends can be accentuated: The *market-to-NTA* of the LPT sample has changed from obvious discounts in the beginning of the 1990s, to premium or low discounts more recently.

Focus, over property type and geographical region, seems to affect LPT value. At the same time, the fact that LPTs have become more focused over property types during the period can be interpreted as an increased awareness of the drawbacks from diversification/advantages of focus.

4 Results

The previous sections described the background of securitised real estate, the basics of LPTs and the relationship between focus and firm value. With this as a base, an economic model was constructed, on which the hypotheses rely on. In this chapter, these hypotheses are empirically tested by adopting some elementary econometric methods.

4.1 Focus and Firm Value

The first hypothesis states that a focused LPT, measured over property type and region, is associated with a greater firm value than a more diversified firm, *ceteris paribus*. To test this, a basic ordinary least squares (OLS) model is adopted. The *market-to-NTA*, market capitalisation (*MC*) divided by net tangible asset (*NTA*), is regressed against property type focus (*HHPT*) and geographical region focus (*HHRG*):

$$Market\text{-}to\text{-}NTA = \frac{MC}{NTA} = \alpha + \beta_{HHPT} \times HHPT + \beta_{HHRG} \times HHRG + \varepsilon, \qquad (5)$$

where, α = *intercept*
β_{HHPT} = *slope coefficient associated with HHPT*
β_{HHRG} = *slope coefficient associated with HHRG*
ε = *error term*

The null hypothesis, tested at a 5% significance level, is set up so that:

$$H_0 : \beta = 0$$
$$H_0 : \beta \neq 0$$

The results of the first regression are presented in the first column of Panel A in Exhibit 6. First of all, the intercept can be interpreted as the average *market-to-NTA* spread out over the investigated period (when focus measures are included). On average, the sample is trading at a premium of 4% relative to *NTA*.

The coefficients associated with the Herfindahl indices are statistically significant and can be interpreted in analogy with Comment and Jarrell (1995) and Capozza and Seguin (1999):

(i) An increase in the Herfindahl property type index by 0.1, or 10 percentage points, is associated with a 1.4% wealth gain.

(ii) An increase in the Herfindahl region index by 0.1, or 10 percentage points, is associated with a 3.6% value loss. That is, diversification across geographical regions enhances the values of the LPTs.

The descriptive statistics in Chapter 3 show that the LPTs have become more focused over property types during the latest years. The dataset is therefore divided into two parts, (a) 1992-1997 and (b) 1998-2003. The results for the first time period are presented in the second column of Panel A. Here, *HHPT* is still significantly positive (increase in Herfindahl property type by 0.1 is associated with a 2.3% wealth gain). The same test for the period 1998-2003 find no statistical proof of that focus over property types should affect value (see the third column). These differences in estimation results for the two sub-periods could be interpreted as follows: the LPTs have become aware of that the market prefers focused firms and thus, as shown in Chapter 3, have adjusted their portfolios to include less number of property types and thereby become more focus.

Focus over regions is significantly negative related to LPT value over both time periods.

Capozza and Seguin (1999) argue that if *HHPT* and *HHRG* are not independent, a third focus measure, capturing the interactions simultaneously, should be introduced. Here, *HHPT* and *HHRG* have relative high correlation, and introduction of bivariate measure should at least be discussed. The bivariate Herfindahl (*HHBV*) is defined as:

$$HHBV = \sum_{i=1}^{5}\sum_{j=1}^{9} S_{ij}^2 \,, \qquad (6)$$

where S_{ij} is the proportion of a LPT's assets invested in property type *i* in region *j*.

The correlation between *HHRG* and *HHBV* is high; it is in fact almost a linear relationship between the two measures. If *HHBV* is employed in the model, instead of *HHPT* and *HHRG*, the bivariate variable will be significantly negative related to LPT value. Econometric literature further says that interpretation of an interaction term, such as *HHBV*, should be carried out with extreme caution because the partial derivate is included[17].

[17] See Wooldridge (2002).

Exhibit 6. *Panel A*: *Estimated coefficients when q-ratios are regresses against the focus measures*. *Panel B*: *Estimations when liquidity is incorporated*. *Columns for specified time periods*.

Method: OLS

Dependent Variable: *Market-to-NTA = (Market Capitalisation / Net Tangible Asset)*

Panel A	*1992-2003**		*1992-1997***		*1998-2003****	
Variable	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	1.04	24.71	0.92	13.55	1.14	22.00
Focus Property Type	0.14	2.95	0.23	2.71	0.05	0.90
Focus Geographical Region	-0.36	-7.61	-0.35	-4.13	-0.37	-6.66
Adjusted R^2	0.18		0.13		0.21	

Panel B	*1992-2003**		*1992-1997***		*1998-2003****	
Variable	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	1.00	22.67	0.92	12.55	1.10	19.36
Focus Property Type	0.14	3.07	0.23	2.69	0.06	1.13
Focus Geographical Region	-0.33	-6.66	-0.34	-3.82	-0.34	-5.78
Liquidity Trading Volume (x 10^9)	0.04	2.42	0.02	0.22	0.03	1.77
Adjusted R^2	0.19		0.13		0.22	

* 263 Observations ** 104 Observations *** 159 Observations

4.2 Focus and Liquidity

The second hypothesis states that a focused firm is easier to analyse and value because of its high degree of transparency. This feature may increase the attractiveness of the share and therefore the trading activity, liquidity. To see of focus affect liquidity, annual dollar trading volume (*$VOL*)[18] is regressed against the two focus measures. The baseline OLS model is:

$$\$VOL = \alpha + \beta_{NTA} \times NTA + \beta_{HHPT} \times (HHPT \times NTA) + \beta_{HHRG} \times (HHRG \times NTA) + \varepsilon \quad (7)$$

However, the data set is constructed from repeated cross sections over time (panel data) and to avoid heteroskedasticity a weighted least square (WLS) model is instead employed. The WLS regression equation is achieved by dividing each component in the OLS equation by the *NTA* variable:

$$\frac{\$VOL}{NTA} = \alpha \times \frac{\tau}{NTA} + \beta_{NTA} \times \tau + \beta_{HHPT} \times HHPT + \beta_{HHRG} \times HHRG + \frac{\varepsilon}{NTA}, \quad (8)$$

where τ is a vector of ones. Observe that the estimated regression coefficients should be interpreted as they are defined in the original OLS equation.

The coefficient associated with *NTA* can be viewed as a form of share market turnover (another proxy for liquidity). The results in Exhibit 7 show that the liquidity in the LPT sector has increased during the latter half of the period, increasing from 0.18 in 1992-1997 to 0.64 in 1998-2003.

The coefficient estimates for property type focus measures are statistically significant for the first half but not during the latter half.

[18] Share turnover, defined by Cronqvist, Högfeldt and Nilsson (2001) as (trading volume/average market capitalisation) during the last 50 trading days, was also tested. However, I found no proof that focus should affect turnover.

***Exhibit 7**. Estimated coefficients when liquidity is regressed against focus.*

Method:	WLS
Dependent Variable:	*Annual Dollar Trading Volume*

	1992-2003		*1992-1997*		*1998-2003*	
Variable	Coefficient	*t*-statistic	Coefficient	*t*-statistic	Coefficient	*t*-statistic
Intercept	-3 350 831	-4.22	-3 280 534	-2.15	-3 328 268	-3.72
Net Tangible Asset	0.41	7.61	0.18	3.76	0.64	7.97
*Focus * NTA Property Type*	0.14	2.28	0.16	2.62	0.02	0.20
*Focus * NTA Geographical Region*	-0.30	-4.79	-0.10	-1.51	-0.41	-4.65
N	263		104		159	
Adjusted R^2	0.17		0.11		0.22	

4.3 Focus, Liquidity and Firm Value

Hitherto, two relationships are established: (a) focus affects LPT value and (b) focus has an effect on the share market liquidity. The final step seeks to investigate whether focus affects value solely via liquidity, or through some other component. This is achieved by adding the dollar volume trading variable to the original OLS regression equation:

$$\textit{Market-to-NTA} = \alpha + \beta_{HHPT} \times HHPT + \beta_{HHRG} \times HHRG + \beta_{\$VOL} \times \$VOL + \varepsilon, \qquad (9)$$

where $\beta_{\$VOL}$ is the slope coefficient associated with LPT dollar trading volume.

The results are presented in Panel B of Exhibit 6. To see the effects when liquidity is added, simply compare the estimations in Panel A's columns with the corresponding columns in Panel B. While inclusion of liquidity makes the focus measures less significant, there are no verifications of that the significances should totally disappear. Thus, the third hypothesis, saying that focus affect LPT value solely through liquidity, cannot be empirically established.

Since share price are included in both the dependent variable (*market-to-NTA*) and one of the explanatory variables (*$VOL*), share volume is also used as proxy for liquidity. Capozza and

Seguin (1999, p. 614) argue that "if price is measured with any error, this problem of simultaneity leads to estimates that are biased and inefficient". The results of the modified model (with share volume as proxy) are in line with those illustrated in the first column of Panel B, and therefore give some proof of robustness to the model. The coefficients with *t*-statistics are: intercept (0.99/22.28), property type focus (0.14/2.99), region focus (-0.32/-6.41), and share volume ($1.13*10^{-10}$/2.76).

5 Summary and Conclusions

This paper examines the relationship between corporate focus and firm value. A sample of 39 non-stapled Listed Property Trusts (LPTs) in Australia is studied. To study the value effects of diversification *within* a single industry, such as securitised real estate, rather than *across* multiple lines of business, has both advantages and disadvantages. The Australian LPT industry has a high degree of transparency and well-defined dimensions (property type and geographical region), and the underlying properties are traded in an active primary market. A limited number of observations (N=263) and restricted possibilities to generalise the results across other industries are among the drawbacks.

It is hypothesised that focused LPTs are associated with higher firm values than trusts that diversify across numerous property types and regions. An economic model, based on a dividend pricing formula, states that focus affects firm value either through cash flows or the discount rate (required rate of return). To measure LPT focus, two Herfindahl indices are constructed. The indices are calculated by summing the squared proportions of a trust's investments in specific sub-sectors for both property types (retail, office, industrial, hotel and car parks) and regions (nine geographical areas). Focus is thereafter linked to market-to-NTA (market capitalisation/net tangible asset).

Regressions, linking market-to-NTA to the Herfindahl indices, provide statistical evidence that can be interpreted as follows: Focus over property types is significantly positive related to LPT value, indicating a 1.4% increase in LPT value for an increase in the index by 0.1. However, focus over regions is strongly negative, saying that LPTs can gain from diversification (0.1 decrease is associated with a 3.6% value gain).

An important feature is discovered when the sample is divided into two sub-periods: (a) 1992-1997 and (b) 1998-2003. While the positive relationship between property type focus and LPT value remains significantly for the period 1992-1997, there exists no statistical proof of such a link for the latter time period. A plausible explanation for this detection could be the increase in the observed degrees' of focus during recent years. While the LPTs were more diversified in the beginning of the 1990s, the trusts have become aware of the market's negative attitude towards diversification, and therefore adjusted their property portfolios to include fewer property types.

Capozza and Seguin (1999), investigate US REITs during 1985-1992, but find no proof of a link via the REITs' cash flows. Instead, they hypothesise a link via a sub-component of the required rate of return, namely liquidity. In detail, they hypothesise that a focused firm is associated with higher trading volume, i.e. a proxy for liquidity. After checking for liquidity, their results do not provide any further proof of that focus should affect the value the REITs.

This implies that focus affects value, but entirely through liquidity. This study, however, find no support for this hypothesis.

Even though this study provides some initial evidence surrounding the relationship between focus and LPT value, much still remains to be explained. To start with, we lack knowledge of through which channel focus affects LPT value. It can be through the cash flows or via some component of the required rate of return, as the employed model suggests. This means that we are also unsure about the underlying economic theories surrounding the relationship of focus and value. Are focused LPTs valued with a premium because, for example, the potential for agency costs are higher for diversified trusts, or because focused trusts are more transparent and thus easier to analyse and value? Other reasons? The results are even harder to interpret and explain when the sample is divided into the two sub-periods. At the same time, how do we explain the strong negative relationship between value and focus over regions?

While this study shows that focus of an already diversified/focused firm has some influence of the value of firm, the model does not consider expectations about future diversifying strategies. Cronqvist, Högfeldt and Nilsson (2001) find that Swedish real estate companies with an assumed nonfocusing (diversifying or unclear) future strategy are valued at discount of about 20% relative to firms with a predicted focusing strategy. Their results show that an *ex ante* measure explains more of the diversification discounts than diversification of an already diversified firm. A similar study for the LPT sample would be of interest, especially because of the discovered differences in the two sub-periods. Nevertheless, an *ex ante* measure is of course required.

Regarding the possibilities to generalise the results over other industries one should be moderate, even for other securitised property sectors. Differences in investment vehicles, time periods studied, market sizes, etc., make generalisations uncertain. It should also be remembered that the panel data in this study are unbalanced with different amounts of LPTs appearing in each year. This together with somehow an insufficient set of explanatory variables should be taken into account when interpreting the results of this study.

Summarised, focus affects the value of LPTs in Australia, but it is still uncertain whether it is through the LPTs' cash flows or via the investors' required rate of return. To further analyse the composition of LPTs, a deeper understanding of the effects of diversification (both diversification *per se* and prediction of future strategies) is required. It is even more challenging considering the ongoing changes of the LPT sector (mergers and stapling), at the same time as many LPTs are exploring new markets overseas (e.g. US and UK), and investing in more unorthodox property types.

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Appendix

The sample LPTs, specified with ASX code and sub-sector type.

Listed Property Trust	ASX Code	Type
Advance Property Fund	APF	Diversified
AMP Diversified Property Trust	ADP	Diversified
AMP Industrial Trust	AIP	Industrial
AMP Office Trust	AOF	Office
AMP Shopping Centre Trust	ART	Retail
Armstrong Jones Industrial Fund	AJS	Industrial
Armstrong Jones Office Fund	AJO	Office
Armstrong Jones Retail Fund	AJR	Retail
Australian Commercial Property Trust	ACY	Office
Australian Hotel Fund	AHO	Hotel
BT Property Trust	BTP	Diversified
BT Sydney Development Trust	BTS	Office
Bunnings Warehouse Property Trust	BWP	Retail
Carindale Property Trust	CDP	Retail
CFS Commercial Property Trust	COC	Office
CFS Gandel Retail Trust	GAN	Retail
CFS Industrial Property Trust	CIP	Industrial
CFS Property Trust Group	CFT	Diversified
CFS Retail Property Trust	CMF	Retail
Commonwealth Property Office Fund	CPA	Office
Deutsche Diversified Trust	DDF	Diversified
Deutsche Industrial Trust	DIT	Industrial
Deutsche Office Trust	DOT	Office
Flexi Property Fund	FPF	Office
General Property Trust	GPT	Diversified
ING Industrial Fund	IIF	Industrial
Macquarie Countrywide Trust	MCW	Retail
Macquarie Goodman Industrial Trust	MGI	Industrial
Macquarie Industrial Trust	MIP	Industrial
Macquarie Office Trust	MOF	Office
MFS Hotel Property	MPY	Hotel
Paladin Commercial Trust	PDC	Diversified
Paladin Industrial Trust	PID	Industrial
Prime Credit Property Trust	PRP	Office
Principal Office Fund	POF	Office
Property Trust of Australasia	PYT	Diversified
Record Realty	RRT	Office
Westfield Trust	WFT	Retail
Westralia Property Trust	WST	Hotel