FACTORS INFLUENCING THE PERFORMANCE OF LISTED PROPERTY TRUSTS

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ABSTRACT

A variance decomposition procedure is used to assess the proportion of LPT volatility that is attributable to stock, bond and property factors over 1985-2004. The dynamics of this LPT performance is also assessed. Property is seen to only make a small contribution to LPT variability, with the contribution of property only marginally increasing in recent years with the increased maturity of the LPT sector. The importance of stocks in LPT performance has decreased significantly, with bond-like features taking on more importance in LPT performance in recent years.

Keywords: LPTs, multi-factor model, variance decomposition, stocks factor, bond factor, direct property factor, idiosyncratic factor, market dynamics.

INTRODUCTION

Listed property trusts (LPTs) have been a successful indirect property investment vehicle in Australia. At November 2004, the LPT sector had total assets of over $100 billion, comprising over 1500 institutional-grade properties in diversified and sector-specific portfolios (Property Investment Research, 2004a). LPTs currently account for over $73 billion in market capitalisation, representing over 8% of the total Australian stockmarket capitalisation (UBS, 2004).

Table 1 presents an overall profile of the LPT sector at November 2004. Currently, LPTs account for approximately 8% of institutional asset allocations and account for 49% of all institutional-grade property in Australia (Garing et al, 2004). LPTs have performed strongly compared to the other major asset classes over the last ten years (see Table 2), being the best performed sector over the 3, 5 and 10-year holding periods. LPT risk levels (10.44% over 1985-2004) are significantly below stockmarket risk (19.23%) (Property Council of Australia, 2004), reflecting the defensive characteristics of LPTs. Sector-specific LPTs have also typically outperformed the corresponding direct property sector over these various holding periods.

Table 1: LPT sector profile: November 2004[(1)]

LPT sector	Market capitalisation	Total assets	# of properties
Diversified	$24.59B	$30.54B	464
Office	$8.55B	$12.32B	129
Retail	$32.68B	$45.66B	548
Industrial	$5.83B	$7.28B	295
Total	**$71.45B**	**$95.80B**	**1,436**

Source: UBS (2004), PIR (2004)
[(1)]: LPTs shown are those in ASX300; 10 LPTs which are not in ASX300 account for an additional $2.00B

LPT and stockmarket performance in Australia are correlated (r = .63 over 1985-2004) (Property Council of Australia, 2004) and it has been shown that there is not long-term market integration between LPTs and the stockmarket (Wilson and Okunev, 1996, 1999; Wilson et al, 1998). This evidence of market segmentation suggests that there are diversification benefits from including LPTs in an investment portfolio, particularly in conditions of increased stockmarket volatility (Newell and Acheampong, 2001). Both diversified and sector-specific strategies are equally effective for LPT portfolio diversification (Newell and Tan, 2003), with LPTs also showing evidence of superior property selection and market timing (Peng, 2004). The establishment of an LPT futures market in August 2002 further enhanced the stature of LPTs, with institutions being able to use LPT futures as an effective risk management tool for hedging their LPT exposure (Newell and Tan, 2004).

Overall, this has seen the significant maturity of the LPT sector since the early 1990s, as well as the LPT sector having undergone considerable structural change in recent years. This has included increased levels of international property, increased levels of debt, increased use of stapled securities structures and significant mergers and acquisitions (Oliver, 2004). While LPTs are listed on the stockmarket, their underlying assets are direct property. Hence, the issue of how much of LPT performance is attributable to direct property performance and how much to stockmarket performance has been actively debated in recent years.

Table 2: Asset class performance analysis: June 2004 [(1)]

Asset class	Average annual return (%)			
	1Y	3Y	5Y	10Y
Direct property	10.91%(3)	10.43%(2)	10.63%(2)	10.07%(2)
Office	7.43%	7.63%	8.78%	8.81%
Retail	13.87%	12.94%	12.24%	10.98%
Industrial	12.98%	12.94%	12.80%	13.83%
LPTs	**17.22%(2)**	**14.82%(1)**	**14.08%(1)**	**12.28%(1)**
Office	5.90%	7.50%	9.40%	9.10%
Retail	24.40%	18.00%	15.40%	14.20%
Industrial	14.30%	17.20%	15.90%	12.90%
Diversified	15.10%	15.10%	14.70%	12.30%
Stocks	22.37% (1)	4.93% (4)	7.41% (3)	10.02% (3)
Bonds	1.86% (4)	5.20% (3)	5.61% (4)	7.85% (4)

Sources: PCA (2004), UBS (2004)
[(1)]: Ranks of major asset classes given in brackets

Previous research has shown that US REITs are viewed as a hybrid of stocks and bonds (eg: Karolyi and Sanders, 1998; Ling and Naranjo, 1997; Peterson and Hsieh, 1997), with a limited role for property in REIT pricing (Clayton and MacKinnon, 2003) and REITs becoming increasingly integrated with the stockmarket (Ling and Naranjo, 1999). However, with the increased investment stature and maturity of REITs since 1992, the ability of stock and bond factors to explain REIT returns has reduced since the early 1990s (Liang and McIntosh, 1998), with the unexplained variation taken as increasingly attributable to direct property, and REITs increasingly reflecting the nature of the underlying property assets.

Similarly, a number of international studies have recently assessed the significance of direct property in indirect property performance using style analysis, with studies conducted in the US (eg: Chiang and Lee, 2002; Gallo et al, 2000; Liang and McIntosh,

1998; Myer and Webb, 1996), UK (Lee, 1999; Stevenson, 2001), Australia (Newell, 2001) and Hong Kong (Newell et al, 2004).

In further examining this issue, Clayton and MacKinnon (2000, 2001, 2003) used a variance decomposition procedure to assess the relative importance of stock, bond and property factors in explaining REIT performance over 1978-98. Over this period, large cap stocks were seen to be the dominant factor in accounting for a large proportion of REIT volatility, with direct property making a negligible contribution to REIT volatility. With increasing REIT maturity in the 1990s, sub-period analyses revealed a significantly reduced large cap effect and increased significance for a small cap effect and importantly, for an increasingly significant property factor over these subsequent sub-periods. This was reflected in the property factor accounting for only 0.4% of REIT volatility over 1979-84, but increasing to 14.7% of REIT volatility over 1992-98 (Clayton and MacKinnon, 2000, 2003).

Given the increasing property investment stature of LPTs in Australia, the purpose of this paper is to use this variance decomposition approach to assess the proportion of LPT volatility that is attributable to stock, bond and property factors over 1985-2004. This is assessed at an LPT sector and individual LPT level. The dynamics of this LPT performance are also assessed to determine if LPT performance has reflected more direct property performance in recent years, as the LPT sector has matured as a significant asset class in Australia.

METHODOLOGY

Data

Total returns were obtained for June 1985-June 2004 (Property Council of Australia, 2004; UBS, 2004) for the following:

- LPT sector (LPT300)[1]
- individual LPTs: GPT, Stockland, Westfield
- direct property: total, office, retail, industrial
- equivalent stockmarket (All Ordinaries) and bond (All Maturities) sectors.

The PCA direct property indices are the benchmark series for commercial property in Australia, based on the performance of 500 commercial properties valued at over $45 billion at June 2004 (PCA, 2004). As the PCA direct property indices are only available six-monthly (quarterly from September 1995), all analyses were done six-monthly. The PCA direct property series were not de-smoothed, as the PCA series is less affected by

[1] LPT sub-sectors are only available from 1993, not for the full period of 1985-2004; hence they are not included in this paper.

valuation-smoothing than other international direct property benchmarks such as the US NCREIF series and the UK IPD series (Newell and MacFarlane, 1998).

Variance decomposition procedure

To assess the determinants of the volatility of LPTs, the following multi-factor model was used:

$$r_{LPT} = b_O + b_P r_P + b_B r_B + b_S r_S \qquad (1)$$

where r_{LPT}, $r_{B,}$ r_P and r_S are LPT returns, direct property returns, bond returns and stock returns respectively, and b_P, b_B and b_S are the LPT sensitivities to the respective property, bond and stock factors. After identifying the components of LPT volatility attributable to direct property, bond and stock factors, any remaining unexplained variation is taken to be attributable to idiosyncratic factors.

To apply this variance decomposition procedure used by Clayton and MacKinnon (2000, 2003) in assessing US REITs, uncorrelated factors are required in equation (1) above. The uncorrelated "pure" factors are determined as per Giliberto (1990) using the following procedure:

- the "pure" property factor is the residual of the regression of direct property returns on bond returns and stock returns
- the "pure" bond factor is the residual of the regression of bond returns on "pure" property returns and stock returns,

with these pure property factor, pure bond factor and stock factor being uncorrelated and used in equation (1) for this LPT variance decomposition regression.

The relative contributions to LPT volatility by each factor are given as:

- Property factor contribution = $b_P^2 \sigma_P^2 / \sigma_{LPT}^2$ (2)
- Bond factor contribution = $b_B^2 \sigma_B^2 / \sigma_{LPT}^2$ (3)
- Stock factor contribution = $b_S^2 \sigma_S^2 / \sigma_{LPT}^2$ (4)

where σ_P^2, σ_B^2, σ_S^2 and σ_{LPT}^2 are the property factor, bond factor and stock factor variances, with the remaining relative contribution being attributable to idiosyncratic factors.

Previous research using style analysis into the contribution of property to LPT performance (eg: Newell, 2001) has treated the property contribution as a "residual" after the stocks and bond contributions are determined. The variance decomposition procedure used in this paper seeks to break down this residual property contribution into an actual property contribution and an idiosyncratic contribution which captures the characteristics of individual LPT properties.

This variance decomposition procedure was applied over June 1985-June 2004, as well as for the two sub-periods of June 1985-December 1993 and June 1994 – June 2004. The sub-period break-point of December 1993 was chosen as it coincides with the LPT sector becoming a more mature asset class compared to the 1980s. To assess the dynamics of this LPT variability and the changing relative contributions by property, bonds and stocks to LPT variability over the nineteen year period of June 1985-June 2004, the variance decomposition procedure was also applied to rolling 8-year data periods[2]. These procedures were applied for the LPT sector and for individual LPTs (Stockland, GPT and Westfield). These three individual LPTs were chosen due to their significant stature in the LPT sector, as well as being the only LPTs operating over the full period of June 1985-June 2004.

RESULTS AND DISCUSSION

LPT performance analysis

Table 3 presents the performance analysis (average annual returns and annual risk) for the LPT sector and individual LPTs, as well as for direct property, shares and bonds over June 1985 - June 2004 and for the sub-periods of June 1985 - December 1993 and June 1994 - June 2004. The strong LPT performance at low risk is clearly evident across all timeframes, with LPT risk having decreased significantly since 1994 as the LPT sector experienced significant growth in market capitalisation and increased asset class maturity.

[2] Rolling eight-year periods were selected to ensure sufficient data was available for variance decomposition estimates to be reliable per sub-period

Table 3: LPT performance analysis: 1985 – 2004

Sector	June 1985 - June 2004		June 1985 - Dec 1993		June 1994 - June 2004	
	Average annual return	Annual risk	Average annual return	Annual risk	Average annual return	Annual risk
LPTs	13.09%	10.63%	14.82%	13.04%	11.62%	8.24%
Direct property	10.32%	6.47%	10.39%	9.59%	10.26%	1.11%
Office	8.63%	8.04%	8.19%	11.94%	9.00%	1.28%
Retail	13.32%	3.78%	15.85%	4.69%	11.17%	1.95%
Industrial	11.82%	5.58%	9.35%	7.91%	13.96%	1.18%
Stocks	14.10%	15.53%	20.05%	20.52%	9.13%	8.67%
Individual LPTs						
GPT	12.95%	13.97%	14.69%	15.56%	11.46%	12.75%
Stockland	16.53%	15.01%	21.45%	17.16%	12.40%	12.67%
Westfield	16.26%	15.58%	19.84%	17.72%	13.23%	13.62%

The inter-asset correlation matrix for 1985 - 2004 is shown in Table 4. However, considerable variation in the inter-asset correlations is evident over the sub-periods of 1985-1993 and 1994-2004 that directly impact on LPTs. In particular, while the correlation between LPTs and stocks was r = .62 over this 1985-2004 period, LPTs have become less correlated with stocks over this period, with the correlation decreasing from r = .74 (for 1985-1993) to r = .29 (for 1994-2004). LPTs have also become more correlated with bonds over this period, with the correlation increasing from r = .26 (for 1985-1993) to r = .68 (for 1994-2004), compared to r = .43 over the full period of 1985-2004.

Table 4: Inter-asset correlation matrix: June 1985 - June 2004

	LPTs	Total property	Office property	Retail property	Industrial property	Stocks	Bonds
LPTs	1.00						
Total property	-.15	1.00					
Office property	-.15	.99	1.00				
Retail property	-.24	.76	.68	1.00			
Industrial property	-.10	.85	.86	.45	1.00		
Stocks	.62	-.06	-.05	-.14	.02	1.00	
Bonds	.43	-.23	-.23	-.10	-.36	.17	1.00

LPTs have also shown less correlation with direct property over this period, with the correlation decreasing from r = -.17 (for 1985-1993) to r = -.27 (for 1994-2004). Similar trends of decreasing correlation were also evident for LPTs with each of the office, retail and industrial property sectors; particularly for retail property (r = -.32 for 1994-2004) and industrial property (r = -.35 for 1994-2004).

Overall, recent years have clearly seen enhanced portfolio diversification benefits of LPTs in a mixed-asset portfolio; particularly with stocks and direct property. These changing asset correlations with LPTs are likely to impact on the asset contributions to the LPT variance decompositions over the sub-periods (see next section).

LPT variance decomposition

Table 5 presents the relative contribution of the property, bond and stocks factors to LPT variability over June 1985 - June 2004. The following factors in the LPT variance decomposition procedure were used in developing three models:

- model #1: "pure" property factor, "pure" bond factor, stocks factor; as per procedure outlined in previous section
- model #2: property factor, "pure" bond factor, "pure" stocks factor; this results in a re-ordering of the orthogonalisation process needed in equation (1).
- model #3: property factor, bond factor, stocks factor: this results in the original factors being used in equation (1) without being orthogonalised to generate pure factors.

These three models were used to test the robustness of the relative contributions of the factors to LPT variability. In particular, model #1 can potentially under-estimate the property factor contribution and model #2 can potentially over-estimate the property component. Model #3 uses the original factors, without the factors being uncorrelated. The similarity of the relative contributions of the various factors to LPT variability in the three models (see Table 5) confirms the robustness of the LPT variance decomposition procedure regarding the order of orthogonalisation of the factors. This is further confirmed in the significant R^2 values for the regression models (see equation 1) in determining the factor sensitivities (ie: b_P, b_B, b_S) to be used for determining the factor contributions (see equations 2-4). For example, in model #1 above, R^2 is 0.50, with similar R^2 values seen for the remaining variance decomposition regression models. As such, emphasis in this discussion of the results will focus on the standard model #1. This is also consistent with the Clayton and MacKinnon procedure (2000, 2003) for an effective comparison with US REIT trends.

Table 5: Relative contribution of factors to LPT variability: June 1985 - June 2004

Factors	Model #1 (%)	Model #2 (%)	Model #3 (%)
Property factor	0.3%	1.8%	0.3%
Bond factor	10.7%	17.5%	10.2%
Stocks factor	38.9%	36.7%	32.0%
Idiosyncratic factor	50.1%	44.0%	57.5%

Over the full 20-year period of June 1985-June 2004, the main factor contributing to LPT variability was stocks (38.9%), with bonds (10.7%) playing less of a role. Importantly, the contribution by property (0.3%) to LPT variability over this 20-year period was negligible. Of the LPT variability unexplained by the property , bond and stocks factors, the idiosyncratic factor was 50.1%.

The relative contribution of the three factors to the variability of leading LPTs (ie: Stockland, GPT, Westfield) over June 1985 - June 2004 is shown in Table 6. In each case, the contribution by property to LPT volatility was also very low; being 0.2% (GPT), 2.1% (Westfield) and 2.8% (Stockland). The significant contribution by stocks is clearly evident, being 28.5% (Stockland) - 31.6% (Westfield); with bond contributions being 10.8% (GPT) - 15.0% (Westfield). In each case, unexplained variation accounted for 51.3% - 60.2% of the LPT variation.

Table 6: Relative contribution of factors to individual LPT variability: June 1985 - June 2004

Factors	Stockland	GPT	Westfield
Property factor	2.8%	0.2%	2.1%
Bond factor	13.7%	10.8%	15.0%
Stocks factor	28.5%	28.8%	31.6%
Idiosyncratic factor	55.0%	60.2%	51.3%

This low contribution by property to LPT variability (0.3%) is consistent with that seen for US REITs (0.8%) over the period of 1978-98 (Clayton and MacKinnon, 2000, 2003). Similarly, the large contribution by stocks (38.9%) to LPT variability was similar to the large contribution by stocks for US REITs (54.2%).

Impact of sub-periods on LPT variance decomposition

Given the growth in LPT maturity over the second half of this 1985-2004 period, it is important to assess whether there are differences in the contributions by these property, bond and stocks factors over the sub-periods of 1985 - 1993 (emerging LPT sector) and 1994 - 2004 (maturing LPT sector). Table 7 gives these relative contributions over these two sub-periods.

Importantly, the property contribution only marginally increased from 0.3% to 3.6%, even though this later period of 1994 - 2004 was characterised by increased LPT maturity and the expectation of significantly more property performance being evident in LPT performance. This was also evident for US REITs, which saw the property contribution to REIT performance increase from 0.4% in 1979-84 to 14.7% in 1992-98 as the REIT sector matured (Clayton and MacKinnon, 2000, 2003).

Importantly, the relative contribution by stocks reduced significantly (from 64.2% to 4.4%), while the bond contribution increased significantly (from 6.8% to 25.5%). Whilst correlation only reflects an association between factors, rather than direct causality, this increased bonds contribution to LPT performance reflects the "bond-like" stability of the rental cash-flows from high-quality tenants on long-term leases from the landmark properties typically seen in LPT property portfolios. This lesser contribution by stocks in recent years is similar to that for US REITs, with the contribution by US stocks reducing from 76.1% over 1979-84 to 17.7% over 1992-98.

Over this period, the level of idiosyncratic risk in LPT performance has increased considerably from 28.7% to 66.5%; this increase being similar to that seen for US REITs (13.7% to 62.5%) (Clayton and MacKinnon, 2000, 2003). The explanation for this increased contribution by idiosyncratic factors is fully discussed in the next section.

Table 7: Relative contribution of factors to LPT variability: sub-period analysis

First sub-period: June 1985 – Dec 1993				
Factors	**LPT (%)**	**Stockland (%)**	**GPT (%)**	**Westfield (%)**
Property factor	0.3%	9.6%	0.4%	1.4%
Bond factor	6.8%	0.1%	8.2%	9.8%
Stocks factor	64.2%	42.3%	52.9%	50.3%
Idiosyncratic factor	28.7%	48.0%	38.5%	38.5%

Second sub-period: June 1994 – June 2004				
Factors	**LPT (%)**	**Stockland (%)**	**GPT (%)**	**Westfield (%)**
Property factor	3.6%	19.5%	4.1%	0.6%
Bond factor	25.5%	24.0%	15.8%	32.8%
Stocks factor	4.4%	0.2%	7.0%	7.8%
Idiosyncratic factor	66.5%	56.3%	73.1%	58.8%

At the individual LPT level, the property contribution for individual LPTs also remains low, with only Stockland having a significant and increasing contribution by property to its volatility; increasing from 9.6% to 19.5%. The property contributions to GPT and Westfield do not exceed 5% in any of these sub-periods.

Overall, this sub-period analysis has emphasised that, with the increased maturity of the LPT sector, the property effect has not significantly increased its contribution to LPT variability, with the more significant contribution being increased bond-like features in LPT performance, as well as increased importance by idiosyncratic factors and the markedly reduced impact of stocks on LPT variability. Whilst the property contribution to both LPTs and REITs has increased in recent years, the contribution to LPTs (3.6%) was significantly less than that seen for REITs (14.7%).

Dynamics of LPT volatility

The previous sub-period analysis has highlighted the continued minor role by property and the increasingly significant role of bond-like features in contributing to LPT variability. To gain a fuller sense of the dynamics of these changing contributions by property, bonds and stocks to LPT performance, the LPT variance decomposition procedure was applied to rolling eight-year periods over June 1985 - June 2004. Table 8 presents the dynamics of these factor contributions to LPT volatility over this 20-year period.

Over this 20-year period, the property contribution to LPT performance has been consistently low; the maximum level being 6.1% over 1993 - 2001 (see Table 8). The contribution by bonds to LPT volatility has steadily increased over this period from 5% in 1985 - 1992 to 59.6% in 1996 - 2004, while the contribution by stocks has steadily reduced from 69.3% over 1986 - 1994 to only 13.2% over 1996 - 2004. Idiosyncratic risk has steadily increased over this period, being consistently over 50% in recent years. This rolling sub-period analysis further confirms the consistency of the previous sub-period analysis and the ongoing low contribution by property to LPT variability.

Table 8: Dynamics of LPT variability: June 1985 - June 2004

Time period	Property factor (%)	Bond factor (%)	Stocks factor (%)	Idiosyncratic factor (%)
Dec 1985 – June 1993	0.2%	5.2%	68.3%	26.4%
Dec 1986 – June 1994	0.4%	1.2%	69.3%	29.1%
Dec 1987 – June 1995	1.9%	2.2%	60.9%	35.0%
Dec 1988 – June 1996	2.2%	11.6%	30.5%	55.8%
Dec 1989 – June 1997	0.1%	10.9%	40.8%	48.1%
Dec 1990 – June 1998	1.2%	13.4%	56.2%	29.2%
Dec 1991 – June 1999	0.8%	30.4%	16.9%	51.8%
Dec 1992 – June 2000	0.1%	35.0%	14.9%	50.0%
Dec 1993 – June 2001	6.1%	18.9%	24.3%	50.7%
Dec 1994 – June 2002	1.7%	35.0%	4.9%	58.4%
Dec 1995 – June 2003	3.9%	35.5%	2.6%	58.0%
Dec 1996 – June 2004	0.1%	59.6%	13.2%	27.1%

PROPERTY INVESTMENT IMPLICATIONS

Since 1993, LPTs have developed into a significant, well-performed and mature property investment vehicle with quality property assets. While it would be expected that property would play an increasingly important role in LPT performance as the LPT sector matured, this study has shown that property only makes a minor contribution to LPT volatility over 1985 - 2004, with these levels having increased recently, but still being consistently low in all sub-periods. The increasingly important contribution to LPT performance has been a bond-like factor (reflecting the high yield and secure income stream for LPTs), with the previously significant contribution by stocks having reduced dramatically in recent years.

This study has highlighted a number of property investment issues; particularly concerning the underlying market characteristics for LPTs. In the longer-term, it would be expected that LPTs and direct property should perform in a similar manner. However,

shorter time periods can highlight the role of other potential influences. In this case, more recent years have seen LPTs increase their correlation with bonds, decrease their correlation with stocks and decrease their correlation with direct property. This has reflected increasing property values, decreasing property yields and decreasing interest rates over this second sub-period of 1994-2004. As bond pricing is influenced by external factors, this strong association between LPTs and bonds may potentially weaken in the future. This is likely to result in a stronger association between LPTs and direct property, as reflective of the longer-term relationship between direct and indirect property. Similarly, it emphasises the issue of statistical correlation not necessarily denoting causality, but rather general association.

Importantly, this study has also shown that there is still high and increasing levels of idiosyncratic risk which is unexplained by property, bonds and shares; this also being evident in equivalent studies of US REITs (Clayton and MacKinnon, 2000, 2003). Contributing to this idiosyncratic risk is the specific features of individual properties that make up the LPT portfolios; this is in contrast to the property "factor" which reflects the broad market dynamics and performance. These increasing levels of idiosyncratic risk have a number of possible causes.

Firstly, a major cause has been identified as the increased institutionalisation of stock ownership (Campbell et al, 2001). This has seen institutional investors dominate the stock market, often demonstrating coordinated trading and generating increased turnover. This has clearly been evident with US REITs (Graff and Young, 1997), with institutional investors accounting for 53% of REIT stocks in 1998 and preferring the larger, more liquid REITs (Ciochetti et al, 2000). Similarly, for LPTs, institutional investors account for approximately 70% of LPT stocks, with high levels of LPT liquidity evident in recent years. For example, in 2004, monthly LPT liquidity was an average of 6.9% of the LPT market cap; representing over 82% annual turnover for LPTs (UBS , 2004).

A second cause has been advances in information technology (Campbell et al, 2001), with more frequent and detailed LPT information from LPT analysts becoming increasingly available in a timely manner for institutional investors to act on in their LPT investment strategy decision-making. The growth, performance and stature of the LPT sector is such that it has been considered to be the most over-analysed sector of the stockmarket in recent years (Larsen, 2002).

A third cause of these high levels of idiosyncratic risk relates to possible omitted variables in the LPT variance decomposition regression (see equation 1) (Clayton and MacKinnon, 2003). This potentially sees an important variable that may influence LPT pricing not being captured by the current property, bond and stock factors. For example, the growth rate in real per capita consumption has been identified as a driver of US REIT returns (Ling and Naranjo, 1997, 1999).

Overall, while direct property is the underlying asset in all LPTs, this study has shown that property is only a small contributor to LPT performance over 1985 - 2004. Importantly, this contribution by property to LPT performance has not increased significantly in recent years as the LPT sector has matured into a significant property investment vehicle and asset class that is strongly supported by both institutional and retail investors. Increasingly, LPT performance has been more influenced by a bond-like factor, with a marked reduction in the influence of stocks on LPT performance in recent years. Whilst there is expected long-term convergence between LPT and direct property performance, this raises ongoing property investment issues; particularly concerning whether LPTs are the most effective property investment vehicles to obtain a high degree of direct property exposure. In particular, unlisted property trusts and property syndicates are more likely to perform like their underlying physical direct property assets; with both unlisted property trusts and property syndicates having become increasingly popular in Australia in recent years.

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