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Australian Securitised Property Funds: Tracking Error Analysis and Investment Styles

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by

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Abstract

In broad terms, the main aim of a securitised property fund is to replicate the essence of a particular property index. The success of constructing such a fund depends less on the absolute returns it produces, but rather, how closely the returns match those of the benchmark (e.g. S&P/ASX A-REIT 300 index). Based on tracking error analysis, this research identified a range of passive, structured and active investment styles in the selected 16 wholesale securitised property funds. Interestingly, over the 2000-2007 period, the tracking errors rankings of the securitised property funds appeared unrelated to other key investment performance measures. In part, this could be due to the poor performance of the active and some structured securitised property funds during times of major market downturns. This is evident in comparing cumulative downside returns with and without outliers. This research illustrates how tracking error can categorise a fund's investment style. Placed alongside the information ratio and other key investment measures, funds can be identified which consistently outperform the benchmark index. Further research is recommended as to the impact of different market conditions on investment performance measures, however these techniques are valuable decision making tools for an investment in securitised property funds.

Keywords: securitised property funds, tracking error, real estate investment trusts

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1. Introduction

In fund management, the concept of portfolio construction can, in simple terms, be based on how well a defined investment product (fund) performed in the past and the likely future performance. In stating the performance, it can be detailed in absolute terms (how much money was made or loss) or in relative terms against an appropriate benchmark. The relative return measurement is particularly attractive to passive fund managers, as tracking an index can be a useful tool to categorise the investment style of a fund.

There are various types of passive funds. Most common are those with a buy and hold mandate and those that offer an index tracking strategy. Here the indexed fund is governed by a selected benchmark index and regular comparisons are made between the actual fund performance and the index. By defining acceptable tracking parameters fund managers can either closely replicate the index or actively manage their portfolio in an attempt to outperform the index, with associated lower ongoing index rebalancing costs.

When evaluating a fund's investment style, this research looked at 16 Australian securitised property funds over a seven year period. The investment style of each fund was analysed over the total dataset and in normal conditions (excluding outliers), with reference to statistical investment performance models which include upside and downside analysis, tracking error, and the information ratio. The tabulated results were ranked to show how fund performance can vary with different investment analysis techniques.

It should be noted that the investment analysis presented here is not intended to endorse a particular securitised property fund, but rather to illustrate an approach for evaluating the investment style of the selected securitised property funds. The ranked performance measures can demonstrate different investment styles, although it should be noted that the relative performance of securitised property funds can vary over time. This can be due to unprecedented events and changes in securitised property funds mandates, personnel and strategies. Even recognising past returns may not be a good indicator of future performance, knowing the investment style of a securitised property fund could provide a good indication of the fund's relative future performance to associated peers and the selected benchmark.

Following this introduction, Section two provides a literature review on investment styles and the different measures of investment performances with reference to real estate. Section three details the selected securitised property fund data and associated methodology. Section four provides the empirical findings and the implications for fund managers. The last section provides the concluding comments.

2. Literature Review

Investment analysis has evolved, with major milestones providing a new way of thinking about the nature of financial markets and the theory of investing. Work by Markowitz (1952), Sharpe (1964) and Treynor and Black (1973) have introduced new concepts that have shaped investment strategies and improved the way of recording returns in relation to risk.

In acknowledging the impact of new investment techniques, Bernstein (2007) points out that diversification is essential to successful investment and that investment markets are hard to beat. Ambachtsheer (1994) provided the evidence that the cost savings on passive investment strategies can be substantial and Sharpe (1991) suggested that, on average, passive funds perform better net of transaction costs when compared with active funds.

To assist with how to allocate assets between active and passive strategies, Alford *et al* (2003) examined the performance of US equity fund managers and showed that investment styles of funds can be categorised as to their tracking error to a relevant benchmark. Table 1 details the investment styles and associated tracking error ranges under different market conditions: all data, and normal data being all the data less outliers (data outside +/- 2 standard deviations).

Table 1

Investment Styles Based on Tracking Error

Investment Style	Tracking Error Range	Comments
Passive	All data - less than 1.0% (0.5% or lower for normal data)	A passive strategy seeks to reproduce as closely as possible an index by minimising the tracking error of the replicated index. Focus is on risk management to minimise fund deviation to the defined index
Structured	All data - between 1.0% and 5.0%	A structured strategy seeks to be benchmark sensitive and tends to target relatively low levels of tracking error. Focus is on a relatively large number of small active deviations.
Active	All data - 5.0% to 15% (over 3.0% for normal data)	An active strategy seeks to outperform an index while staying within certain risk boundaries. Focus is on active decision-making in a small number of relatively large positions.

Adapted: Alford *et al* 2003, El-Hassan and Kofman 2003

In documenting the different investment styles, Alford *et al* (2003) contended that institutional investors can blend the different investment styles to improve the optimal allocation to a specific asset class. This is dependent on the institutional investor's assumptions about the ability of active managers to outperform their benchmark index and by how much the active manager's information ratio exceeds those of passive managers.

In real estate, index portfolio construction is still relatively new, with Brown and Matysiak (2000) covering the benefits of tracking error and information ratio analysis. On practical application, Newell and Acheampong (2002) demonstrated that Australian securitised property funds over the 1994-2000 period, held more property trusts than was required for an optimum allocated A-REIT portfolio. This, in part, was due to constraints such as tracking error, compliance and limiting exposure to individual property trusts.

3. Data and Methodology

3.1 Data

Until recently, the Australian Real Estate Investment Trust (A-REIT) market had grown rapidly, from less than AU\$20 billion in 1996 to AU\$115 billion in 2006. Like other financial asset classes, the global credit crisis has affected the A-REIT market and is now valued at AU\$75 billion (October 2008). The rapid growth in A-REITs has been accompanied by a commensurate increase in the number of dedicated securitised property funds. As at December 2007, there were over 160 securitised property funds valued at AU\$45 billion which ranged from less than AU\$1 million to over AU\$6.5 billion (PIR 2008).

Whilst the numbers of securitised property funds have grown, the market has seen significant consolidation activities where managers seek to increase economies of scale to gain a competitive advantage. To measure similar securitised property funds, this research selected the net returns from wholesale securitised property funds. Of the 20 wholesale securitised property funds that have been in existence since January 2000, 16 were selected and provided 34 quarterly data points. The selected securitised property funds are shown in Table 2.

Table 2

Composition of Selected Australian Securitised Property Funds

Name	AU\$ Million	% of Total
AMP Capital LP Trust Composite	3,765	23.5%
CFS W'sale Property Securities	3,483	21.8%
UBS Property Securities	1,916	12.0%
BGI Aust Active LPT 300	1,281	8.0%
BT Institutional Enhanced Property	1,281	8.0%
Macquarie Property Securities	846	5.3%
Legg Mason Property Model Composite	796	5.0%
SSGA Aust Listed Property Composite	559	3.5%
Challenger Listed Property	557	3.5%
CSAM Property	519	3.2%
MLC Property Securities Fund	298	1.9%
United Property	263	1.6%
BT Institutional Property Sector Trust	203	1.3%
Principal Property Securities	171	1.1%
ANZ Listed Property Trusts	42	0.3%
ING Listed Property Trusts	32	0.2%
	16,012	

Source: PIR 2008

Table 2 illustrates the selected securitised property funds with continuous return data from January 2000. These 16 wholesale securitised property funds represent approximately 36% of the current Australian securitised property fund market. The

S&P/ASX 300 A-REIT series was selected for the performance of the overall A-REIT market. For further information on the securitised property funds and the A-REIT index, please see Higgins and Boon (2009).

3.2 Methodology

At the core of modern investment strategies is a framework of empirical analysis. Investment evaluation has evolved to provide in-depth performance and risk analysis, which is now being applied to real estate and specifically securitised property funds. The starting point for the research methodology is based on the equation Sharpe (1964) developed for the Capital Asset Pricing Model (CAPM) and is shown in equation one:

$$E_i = \alpha_i + R_f + (E_m - R_f) \beta_i \quad \text{equation one}$$

where:

- E_i = Expected return on asset i
- α_i = Alpha of asset i
- R_f = Risk-free rate
- E_m = Expected return on the market
- β_i = Beta of asset i

The equation is relatively straightforward. The Alpha “ α ” is the asset return in excess of the returns of a benchmark, whilst the Beta “ β ” is how much the asset moves in sympathy with the market. In a more practical sense, CAPM is usually estimated by performing a regression of the asset historical returns to the market returns. Beta is the ratio of the individual asset returns to the market returns and Alpha is the residual of the regression calculation (Bernstein 2007 p92).

On knowing the Alpha, the information ratio can be calculated and shows the level of active returns from an asset to that of an appropriate benchmark. The information ratio can be either positive or negative. The formula is illustrated in equation two:

$$IR_i = \alpha_i / TR_i \quad \text{equation two}$$

where:

- IR_i = Information ratio of asset i
- α_i = Alpha of asset i
- TR_i = Standard deviation of the Alpha of asset i

The information ratio is a popular measure of risk-adjusted return performance for active investment styled funds. It defines the degree by which a fund consistently outperforms/underperforms the appropriate benchmark. When evaluating funds, this

persistent performance measure can define the active skills of the fund manager. The information ratio is commonly recognised as a key investment analysis tool (Gupta *et al* 1999).

Alongside the information ratio, tracking error can be defined as the degree of deviation from the appropriate index. There are various “*ex-post*” tracking error models, the most common is shown in equation three:

$$TE = \sqrt{\frac{\sum_{p=1}^N (R_P - R_B)^2}{N - 1}} \quad \text{equation three}$$

where:

- TE = Tracking Error
- R_P = Return of asset
- R_B = Return of index
- N = Number of return periods

Tracking error is a key measure used by investors to see how closely a fund follows an appropriate index. A tracking error of zero details a fund that exactly matches the performance of the selected index. The variation above zero can be used to determine the investment style of a fund and provide an optimal allocation approach across a range of funds offering different investment styles.

According to Travers (2004), another effective type of performance analysis is to measure the cumulative up/down movement of the asset to that of the benchmark returns. Overall, this can illustrate the negative and positive fund performance and demonstrate the impact of market outliers on the performance of the individual funds.

4. Empirical Findings

The first step to examine the investment performance of the securitised property funds is to compare and rank the return, risk, and sharpe ratios with the S&P/ASX A-REIT 300 index. This is shown in Table 3

Table 3

Securitised Property Funds Investment Performance: 2000-2007

	Mean	Ranking	Risk	Ranking	Sharpe Ratio	Ranking
AMP Capital LP Trust Composite	3.80%	7	4.96%	7	0.49	6
ANZ Listed Property Trusts	3.79%	8	4.96%	8	0.49	7
BGI Aust Active LPT 300	3.65%	14	5.03%	12	0.45	13
BT Institutional Enhanced Property	3.75%	10	4.84%	3	0.49	5
BT Institutional Property Sector Trust	3.82%	5	4.51%	1	0.54	2
CFS W'sale Property Securities	3.72%	12	6.31%	17	0.37	17
CSAM Property	3.85%	3	4.91%	5	0.51	4
Challenger Listed Property	3.75%	11	5.08%	14	0.47	11
ING Listed Property Trusts	3.79%	9	4.99%	9	0.49	9
Legg Mason Property Model Composite	3.80%	6	5.00%	11	0.49	8
MLC Property Securities Fund	3.82%	4	4.76%	2	0.52	3
Macquarie Property Securities	3.50%	17	5.57%	15	0.38	16
Principal Property Securities	4.20%	1	5.04%	13	0.56	1
SSGA Aust Listed Property Composite	3.59%	16	4.96%	6	0.45	14
UBS Property Securities	3.93%	2	6.27%	16	0.41	15
United Property	3.71%	13	4.88%	4	0.48	10
S&P/ASX A-REIT 300 index	3.63%	15	4.99%	10	0.45	12
Summary Statistics						
	Mean	3.77%	Minimum	3.50%		
	SD	0.15%	Maximum	4.20%		
			Range	0.70%		

Table 3 presents the quarterly risk/return profile of the securitised property funds. The S&P/ASX A-REIT 300 index recorded an average quarterly return of 3.75% for the 8 years to December 2007. Overall, 14 securitised property funds outperformed the index, with the worst fund underperforming the index by 0.13%. The quarterly performance range of 0.70% indicated the relatively close movement between the funds and the index. This can be examined further by detailing individual fund Alpha and Beta values on the quarterly returns.

Table 4

Securitised Property Funds Alpha and Beta Values: 2000-2007

	Beta	Alpha
AMP Capital LP Trust Composite	0.99	0.00
ANZ Listed Property Trusts	0.99	0.00
BGI Aust Active LPT 300	1.00	0.00
BT Institutional Enhanced Property	0.97	0.00
BT Institutional Property Sector Trust	0.89	0.01
CFS W'sale Property Securities	1.23	-0.01
CSAM Property	0.98	0.00
Challenger Listed Property	1.01	0.00
ING Listed Property Trusts	0.99	0.00
Legg Mason Property Model Composite	0.99	0.00
MLC Property Securities Fund	0.95	0.00
Macquarie Property Securities	1.10	-0.01
Principal Property Securities	0.98	0.01
SSGA Aust Listed Property Composite	0.99	0.00
UBS Property Securities	1.15	0.00
United Property	0.96	0.00

Table 4 illustrates, not surprisingly, the Beta values for the securitised property funds are very close to one. This shows that the funds exhibit volatility that is equal or close to the selected S&P/ASX A-REIT 300 index. Similarly, as the funds predominately follow the index, the Alpha values are close to zero. This can be examined in more depth by looking at the fund's information ratio and tracking error.

Table 5 shows the information ratio for the complete 2000-2007 data set and the data excluding outliers.

Table 5

Securitised Property Funds Information Ratios: 2000-2007

	All Data		Data excluding Outliers	
	Information Ratio	Ranking	Information Ratio	Ranking
AMP Capital LP Trust Composite	0.62	4	0.38	8
ANZ Listed Property Trusts	0.36	7	0.01	13
BGI Aust Active LPT 300	0.00	12	0.30	9
BT Institutional Enhanced Property	0.88	2	0.65	5
BT Institutional Property Sector Trust	0.72	3	0.43	7
CFS W'sale Property Securities	-0.59	16	-0.06	15
CSAM Property	0.53	6	0.46	6
Challenger Listed Property	0.14	11	0.15	11
ING Listed Property Trusts	0.33	8	-0.03	14
Legg Mason Property Model Composite	0.26	10	0.70	3
MLC Property Securities Fund	0.90	1	0.80	1
Macquarie Property Securities	-0.59	15	0.04	12
Principal Property Securities	0.54	5	0.72	2
SSGA Aust Listed Property Composite	-0.07	13	-0.10	16
UBS Property Securities	-0.11	14	0.65	4
United Property	0.26	9	0.29	10

Table 5 analyses the information ratio performance of the securitised property funds. Those funds with a high information ratio indicate the consistency in outperforming the defined index. This appears to link with funds exhibiting good returns and associated low volatility, as shown in Table 3. On removing the outliers, some funds that exhibited high volatility (for example, Legg Mason and UBS Property Securities) have substantially better information ratio readings and moved into the top performance quadrant. This would indicate that they were overweight in specific property trusts when the A-REIT market was most volatile.

Table 6 details the tracking error of the securitised property funds compared to the S&P/ASX A-REIT 300 index.

Table 6

Securitised Property Funds Tracking Errors: 2000 - 2007

	All Data		Data excluding Outliers	
	Tracking Error	Ranking	Tracking Error	Ranking
AMP Capital LP Trust Composite	0.68%	3	0.60%	3
ANZ Listed Property Trusts	1.20%	7	0.98%	6
BGI Aust Active LPT 300	1.01%	5	0.97%	5
BT Institutional Enhanced Property	0.64%	2	0.51%	2
BT Institutional Property Sector Trust	2.05%	12	1.44%	11
CFS W'sale Property Securities	3.59%	15	2.18%	14
CSAM Property	1.25%	9	1.23%	9
Challenger Listed Property	1.07%	6	1.04%	8
ING Listed Property Trusts	1.21%	8	1.00%	7
Legg Mason Property Model Composite	1.62%	10	1.52%	12
MLC Property Securities Fund	1.00%	4	0.92%	4
Macquarie Property Securities	2.08%	13	1.33%	10
Principal Property Securities	2.34%	14	2.34%	15
SSGA Aust Listed Property Composite	0.38%	1	0.37%	1
UBS Property Securities	5.19%	16	3.60%	16
United Property	1.82%	11	1.80%	13

Table 6 showed the securitised property funds annualised tracking error to the benchmark index in both normal conditions (excluding outliers) and over the complete dataset. The securitised property funds rankings appear to be similar for all data and normal conditions (excluding outliers).

The main variation in the Table 6 tracking error columns is the data spread, where the complete dataset ranged from 0.38% to 5.19%. This compares to the data excluding outliers of 0.37% to 3.60%. The difference between the data spread primarily relates to securitised property funds with the highest tracking error.

Interestingly there appears to be no relationship between Table 6 tracking error ranking and Table 3 investment performance ranking. For example, the lowest tracking error ranked securitised property fund, SSGA Aust Listed Property Composite, had the 14th ranked Sharpe Ratio. Likewise, BT Institutional Property Sector Trust has a high ranked mean (4th) and a good low risk profile (ranked 1st) but an unrelated 11th tracking error ranking.

Based on the tracking error, the range of investment styles, as detailed by Alford *et al* (2003), appears to be evident with securitised property funds exhibiting passive, structured and active investment styles, see Table 7.

Table 7

Securitised Property Funds Investment Styles

Investment Style
Passive - less than 1.0% (0.5% or lower in normal conditions) SSGA Aust Listed Property Composite BT Institutional Enhanced Property
Structured - between 1.0% and 3.0% AMP Capital LP Trust Composite MLC Property Securities Fund BGI Aust Active LPT 300 Challenger Listed Property ANZ Listed Property Trusts ING Listed Property Trusts CSAM Property Legg Mason Property Model Composite BT Institutional Property Sector Trust United Property Macquarie Property Securities Principal Property Securities CFS W'sale Property Securities
Active - over 5.0% (3.0% or higher in normal conditions) UBS Property Securities

Table 7 illustrates the investment style categories for the securitised property funds, based on their tracking error to the S&P/ASX A-REIT 300 index. The analysis shows a grouping of securities property funds in the structured category. Generally those close to the top and bottom had a negative or close to zero information ratio reading.

There appears to be a nominal relationship of investment style to returns and risks rankings as shown in Table 3. This may dilute the Alford *et al* (2003) approach of blending the allocation between passive and active securitised property fund managers to enhance an institutional investor's performance to a defined asset class.

The variation in securitised property funds returns to investment style may relate to the allocation during highly volatile market conditions. This can be demonstrated by examining the securitised property funds upside and downside cumulative returns over the complete dataset and dataset excluding the outliers, please see Table 8 and Table 9.

Table 8

Securitised Property Funds - Cumulative Returns: 2000-2007

	Cumulative Returns			
	Upside	Ranking	Downside	Ranking
AMP Capital LP Trust Composite	7.63%	13	-2.20%	2
ANZ Listed Property Trusts	10.02%	8	-4.82%	7
BGI Aust Active LPT 300	6.43%	14	-5.99%	9
BT Institutional Enhanced Property	5.67%	15	-1.86%	1
BT Institutional Property Sector Trust	13.93%	4	-7.92%	12
CFS W'sale Property Securities	19.07%	3	-16.36%	15
CSAM Property	11.97%	6	-4.84%	8
Challenger Listed Property	8.12%	11	-4.46%	5
ING Listed Property Trusts	9.81%	9	-4.65%	6
Legg Mason Property Model Composite	13.25%	5	-7.72%	11
MLC Property Securities Fund	8.77%	10	-2.60%	3
Macquarie Property Securities	7.87%	12	-12.22%	14
Principal Property Securities	25.64%	2	-7.61%	10
SSGA Aust Listed Property Composite	1.74%	16	-2.99%	4
UBS Property Securities	32.65%	1	-23.13%	16
United Property	10.50%	7	-7.93%	13

Table 9

Securitised Property Funds - Cumulative Returns: (excl. outliers) 2000-2007

	Cumulative Returns excluding Outliers			
	Upside	Ranking	Downside	Ranking
AMP Capital LP Trust Composite	6.11%	14	-2.20%	2
ANZ Listed Property Trusts	7.11%	10	-4.82%	7
BGI Aust Active LPT 300	6.43%	13	-5.08%	9
BT Institutional Enhanced Property	4.28%	15	-1.86%	1
BT Institutional Property Sector Trust	9.05%	7	-7.92%	13
CFS W'sale Property Securities	17.47%	3	-8.72%	15
CSAM Property	10.82%	5	-4.84%	8
Challenger Listed Property	7.25%	9	-4.46%	5
ING Listed Property Trusts	6.89%	12	-4.65%	6
Legg Mason Property Model Composite	13.25%	4	-6.23%	10
MLC Property Securities Fund	7.60%	8	-2.24%	3
Macquarie Property Securities	6.92%	11	-7.78%	12
Principal Property Securities	24.50%	2	-7.61%	11
SSGA Aust Listed Property Composite	1.65%	16	-2.79%	4
UBS Property Securities	32.65%	1	-13.12%	16
United Property	9.37%	6	-7.93%	14

Table 8 and Table 9 clearly shows how some securitised property funds returns were seriously affected by their exposure to specific A-REITS during volatile market conditions. The upside returns remained relatively constant compared to substantially improved (lower) downside returns on removing market outliers. This is particularly evident in the active investment styled securitised property funds and those structured investment styled securitised property funds with high tracking error readings. For example, UBS Property Securities downside returns went from -23.13% to -13.12% when excluding outliers and likewise CFS Wholesale Property Securities downside returns improved from -16.36% to -8.72%.

The disparity between some securitised property funds downside cumulative returns, with and without outliers, would suggest that the performance of different investment styles vary with diverse market conditions. The magnitude and impact on the investment performance of securitised property funds can form a future research project.

5. Conclusion

Relative return data is particularly important to passive fund managers, as tracking an index can be a useful tool to categorise a fund's investment style. By defining acceptable tracking parameters, funds can either replicate the index or actively manage their portfolio in an attempt to outperform the index and provide lower ongoing index rebalancing costs.

To evaluate the investment style of funds, this research looked at a specialised investment class, specifically securitised property funds which control over 35%, AU\$45 billion of the Australian REIT market. The investment style of 16 Australian securitised property funds were examined with reference to a range of investment analysis tools over the total dataset and in normal conditions (excluding outliers).

Based on tracking error analysis, a spectrum of investment styles were evident in the selected 16 wholesale property funds, and could be grouped in the three Alford *et al* (2003) categories; passive, structured and active. Interestingly, there appeared no obvious trends when comparing the ranking of the securitised property funds across the different investment performance measures. This, in part, could be due to the performance of the active and some structured securitised property funds during times of high market volatility. For example, when removing the outliers from the data, one securitised property fund (UBS Property Securities) information ratio ranking moved from the bottom quartile (14th) to the top quartile (4th) position. Likewise, similar percentage movement was evident on examining the cumulative downside returns for the same securitised property funds.

This research shows how tracking error can be a useful way to categorise a fund's investment style. Placed alongside the information ratio and other investment measures, funds can be identified which consistently outperform the benchmark index. Further research is recommended as to the impact of different market conditions on investment performance measures, however, these techniques do provide valuable decision making tools for an astute investment into securitised property funds.

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