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## Non-parametric evaluation of Australian Listed Property Trusts


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## Non parametric evaluation of Australian Listed Property Trusts

This exploratory study is limited to the analysis of listed property funds currently (1998) traded on the Australian Stock Exchange. The questions raised here are related to the classical examination of the market efficiency and the relative performance of Australian listed property trusts (ALPT)[1]. Because of the qualitative nature of the data , the limited number of ALPT and the non-stationarity of the series, non-parametric instruments are preferred for this initial treatment.

### *1.1 The questions*

This article tries to answer three simple questions:

1. Are some ALPT performing better than some others on a year to year basis (issue of persistence of returns and selectivity)?

2. Are ALPT performing better than the "Market" (a notional portfolio of all traded securities) and do ALPT offer some timing advantages?

3. Are some ALPT performing better than some others on a holding period basis (issue of resilience of returns)?

### *1.2 The data:*

The analysis was performed on ALPT traded between 1988 to 1998[2] on the Australian Stock Exchange. The ALPT information had to be reconstructed from Datastream International data base returns as published data from specialised Australian sources appear to be somewhat different and subject to a higher level of informational noise[3].

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[1] The atomisation of risk bearing assets has a long tradition. The existence of investment syndicates can be traced back to the Mesopotamian legislation. Much later, in 13th and 14th Century Venice, sophisticated syndication schemes contributed to the City colonial and commercial expansion mostly in the form of Ship and Cargo financing. In Australia various forms of Property Syndicates have had a stormy and often inglorious tradition from the middle of the 19th century (Cannon 1966) Most recently, and not always more gloriously, the atomisation of property assets has taken the form of Property syndicates, Property Trusts and Property Securities Funds (portfolios of Property Trusts). The principal ALPT and their market characteristics are presented in Appendix 1.

[2] 1998 is a convenient end-date since the new Australian Management Investment Act was put in place in 1998. Under the new Act, the dual structure of governance (a Trust Manager controlled by an external Trustee) has been replaced by unitary governance (within the Trust). The Trust structure is now closer to the standard governance of other Companies and more similar to the control mechanism applicable to US Real Estate Investment Trusts. It may be assumed that the new rules will involve a different set of agency problems and, presumably, involve a different pricing of the ALPTs. It may be too early to observe significant effects of the new MIA at the time of this writing (January 1999).

[3] The most visible information about long term performance of ALPTs is provided in specialised publications (e.g. BRW publishes return indicators compiled by SBC Warburg, Dillion, Read). Another available source is the Independent Property Trust Review (published monthly by "Property Investment Research Ltd.) Based on the same information but using different benchmark periods. Since the construction of these return series is far from being transparent, we reconstructed the ALPT individual performances on the basis of DataStream daily price and dividend information. Monthly returns are used in the analysis to smooth out the noise created by the arbitrary choice of a transaction day in day to day index calculations. The difference between our data and published results is visible but not

The returns are computed to include the reinvestment of distributed profits (dividends for ordinary securities) in the same units of the Trust. Returns are computed on daily price information and averaged (geometric mean) over monthly and annual periods.

Very young ALPT (less than 12 month old) have been excluded. To facilitate the graphing and treatment of the index series of some "very heavy indexed" ALPT[4] have been dropped. Finally, two trusts that have changed their index basis[5] have also been eliminated from the data set. Initial verifications confirm that these exclusions do not affect the generality of the results.

The daily index values are computed on a continuous fashion on the basis of transaction date price information. The distribution of trust profits is added by applying the daily equivalent of the annual dividend yield. The ASX index is the Australian Stock Exchange accumulation index (Source Datastream International). This index includes the distribution of dividends.Redistributions are assumed to be reinvested to purchase additional units or shares at the redistribution day closing price of the unit or share.

The ALPT accumulated index is a value-weighted index of about 30 Australian listed property trusts. It has the same 1979 = 1000 base value as the ASX.

The risk free asset used in some computations is the Australian Treasury Bill, 3-Month, middle rate.

As will be clarified later the returns are also computed cumulatively from the date of acquisition of the units (holding life returns) using the same continuous derivation from the beginning of the study period.

In the first set of treatments, raw returns and Sharpe adjusted returns have been used to verify if performances are different when returns are adjusted for total risk.

The Sharpe adjustment is preferred here for at least two reasons:

- the Sharpe index has interesting statistical properties that can be used to validate inferential results(Achour, Brown et al. 1984)
- The Sharpe adjustment does not require any endorsement of the capital asset pricing model (CAPM)[6] which may be a relief since an orthodox application of the CAPM hypothesis is problematic in our field.

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sufficiently large to raise issues about the informational content of the published data on investor's decisions.

4 Heavy indexes have a very high base value. Most of the ALPT indexes are ranging between 100 and 500. However some have a much higher index basis: General Property Trust ranges between 2000 and 3000. Stockland Trust ranges from 1000-1500.

5 Amstrong Jones UTS changed its basis in September 93. Paladin Industrial Trust changed its basis in March 95

6 In this treatment, the Sharpe adjustment is very similar to the normalisation from a distribution in N (x,s) to a N(0,1). Here the Mean = 0 is equivalent to the return on the risk free asset and the Sharpe index could be interpreted as the number of standard deviations away from $R_f$. Of course, this would apply only to a normal distribution, but we do need to qualify this restriction since the point was simply to draw the analogy between a Sharpe adjustment and a standardisation of a normal distribution.

It was concluded that the Sharpe adjustments did not modify the rankings sufficiently to justify the use of all the risk-adjusted returns. Thus most results are based on raw returns in order to maintain a clearer intuitive interpretation of the returns and, incidentally, to save an extra 12 months of useable information.

### *1.3 The concepts*

Some concepts used in this paper may need to be clarified:

**Persistence:** the concept of persistence has been widely used in the Finance literature[7] to describe the capacity of fund managers to overperform from one period to the next. The year to year returns will be used to evaluate the short-term performance of ALPT portfolios and their persistence.

**Resilience (or perenniality):** this concept is suggested here to differentiate the short-term consistency of performance (persistence) from the long-term consistency over the life of the portfolio. The holding returns will be used to evaluate the "life" performance of the portfolio and its resilience above and beyond periodic fluctuations.

**Selectivity:** the capacity to select the "right" shares or units is sometimes described as security analysis or microforecasting (Fama 1972).The selectivity component of the performance of Fund managers describes their success or failure in anticipating the relative evolution of individual shares.

**Market timing:** This component of a Fund manager's performance has also been called macroforecasting (Fama, art. Cit). It describes the capacity to forecast price movements of the general share market relative to fixed income securities.

This distinction has been widely used in the literature since(Treynor and Black 1973) have provided some empirical evidence of the separability of the two performance components.

### *1.4 The answers:*

1. **Are some ALPT overperforming on a year to year basis (Persistence of returns)?**

If ALPT returns were persistent, this would imply that the past performances of some funds are good predictors of their future performances. In other words winners would remain winners and, unfortunately, losers would remain losers. This question was answered using two simple non-parametric treatments: Winner-Loser contingency tables and ranking correlations.

***- Winners-Losers contingency tables***

Winners are defined as ALPT whose returns are above the median return for a given period and losers exhibit returns that are below the median. Following a procedure suggested in (Goetzmann and Ibbotson 1994) and applied by (Tan 1996) winners and losers are put in their respective quadrants to form a two by two con-

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[7] (Jensen 1968; Chang and Lewellen 1984; Admati, Bhattacharya et al. 1986; Chen and Stockum 1986; Lee and Rahman 1990; Ippolito 1993; Goetzmann and Ibbotson 1994; Grinblatt and Titman 1994; Corgel, McIntosh et al. 1995; Ed, Brown et al. 1995; Fletcher 1995; Han and Liang 1995; Elton, Gruber et al. 1996)

Unfortunately, Austalian Listed Property Trusts have received much less attention (Robson 1986; Newell and MacFarlane 1996),(Newell, Chiu et al. 1998)

tingency table to separate the repeat winners (WW from one period to the next), the repeat losers (LL), and the non persistent players (WL and LW)

If the funds exhibit a perfect persistence the number of "hot-hands" funds (WW) and the number of "cold-hands" funds (LL) will be equal. In this situation, only the two diagonal quadrants (WW and LL) will be loaded, the chi-square statistic will be equal to the number of observations and the p-value are equal to zero. In parametric treatments, these results would be confirmed by a +1 coefficient of a simple regression between two period's series of returns.

On the contrary, in the absence of persistence, one observes a quasi equirepartition of the shots among the different quadrants. In this situation, one would count an approximately equal number of WW, WL, WW and LW results. The chi-square results on an evenly loaded contingency table are small and the p-value are large.

To simplify the interpretation of the results, a persistency ratio is proposed here. This ratio compares the coefficient of contingency of and the maximum value that could be obtained for this coefficient. A high level of persistency would lead to persistency ratio equal or close to 1 (and conversely).

Further, to mitigate the effect of the survivorship bias[8], we have restricted the analysis to one year to the next. The youth of most Australian LPT precludes, for the time being, a satisfactory analysis of long series of relative performances.

An example of the treatment is illustrated below (table 2) and the whole set of persistency ratios is presented in table 3 for Sharpe adjusted data and raw data.

[8] Investment funds also obey the laws of natural selection... they disappear if they do not perform adequately. Thus the sample of existing ALPT is mostly a sample of survivors. Furthermore, since the Australian Listed Property Trust is young and still growing rapidly, we also have a problem of peri-natality: some ALPT are still too young to have been subjected to the rigor of natural selections.

These problems of fund perenniality and ephemerality raises difficult (and unsolved... ) theoretical problems and in, our limited Australian LPT market, they raises a very simple practical one: we have very few funds that can be tracked back over more than five years... and not that many that can be traced back over more than 2 years. The thinness of our market is one of the reasons of the choice on non-parametric solutions.

**Table 2: An illustration of the Winner-Loser contingency table**

| ***ALPT annual Sharpe adjusted returns*** | ***1997*** | ***1998*** | ***Winners (W) and Losers (L) contingency table*** | | | |
|---|---|---|---|---|---|---|
| ARMS.JONES REC.UTS.AUDI | 6.39% | 6.21% | | **W** | **L** | |
| BT OFFICE TRUST | 4.34% | 2.82% | **W** | 8 | 6 | ***14*** |
| BT PR.TST.UTS.AUD1,50 | 6.49% | 4.64% | **L** | 6 | 8 | ***14*** |
| CAPCOUNT PR.UTS.AUD1 | 4.03% | 3.57% | | ***14*** | ***14*** | ***28*** |
| CAPITAL PR.TST. | 2.08% | 0.92% | | | | |
| CENTRO PROPS.GROUP | 1.22% | 2.55% | ***Expected results*** | | | |
| COLO.1ST.STE.RET.PR. | 3.59% | 5.13% | | 7.00 | 7.00 | *14.00* |
| GENERAL PR.TST. | 1.65% | 3.37% | | 7.00 | 7.00 | *14.00* |
| MIRVAC PR.TST. | 4.65% | 1.05% | | ***14.00*** | ***14.00*** | *28.00* |
| PRIME INDUSTRIAL PR. | 7.06% | 3.68% | | | | |
| SCHDR.PR.FUND | 2.19% | 2.44% | ***Chi square computation*** | | | |
| STOCKLAND TRUST | 2.19% | 2.44% | | 0.1428 | 0.1428 | 0.2857 |
| WESTFIELD TRUST | 1.83% | 3.75% | | 0.1428 | 0.1428 | 0.2857\ |
| PROPERTY INC.INV. | 1.87% | 3.84% | **Chi square** | | | **0.5714** |
| INDUSTRIAL PR.UTS. | 3.79% | 3.86% | **p-value** | | | **0.4496** |
| AMP INDUSTRIAL TRUST | 2.12% | 2.24% | | | | |
| GANDEL RETAIL | 3.46% | 4.30% | **Coefficient of contingency** | | | **0.1414** |
| PRIME CREDIT PR.UTS. | 1.03% | 4.65% | **Maximum value** | | | **0.707** |
| THAKRAL HDG.GP. | 1.96% | 7.19% | **Persistence ratio** | | | **0.20** |
| GOODMAN HARDIE PR.TRUST | 10.73% | -3.76% | | | | |
| COLO.1ST.STE.COML.PR. | 2.81% | 1.93% | | | | |
| PALADIN COMMERCIAL TRUST | 2.00% | 2.68% | | | | |
| NAT.MUT.PR.TRUST | 2.23% | 5.22% | | | | |
| COLO.1ST.STE.IND.PR. | 1.57% | 4.02% | | | | |
| BT HOTEL | 5.12% | 0.28% | | | | |
| TOURISM ASSET HOLDINGS | 1.72% | -5.08% | | | | |
| GRAND HOTEL GROUP | 4.43% | 2.88% | | | | |
| COUNTRYWIDE RETAIL | 0.57% | 2.28% | | | | |
| **Median** | **2.21%** | **3.13%** | | | | |

**Table 3: Summary of the persistence ratio for the non-adjusted returns**

| | 95-96 | 96-97 | 97-98 | 98-98 | Combined results for the 5 years |
|---|---|---|---|---|---|
| **Coefficient of contingency** | 7.12% | 23.16% | 35.60% | 23.16% | 0.60% |
| **Maximum value** | 70.71% | 70.71% | 70.71% | 70.71% | 70.71% |
| **Persistence ratio** | **10.08%** | **32.76%** | **50.35%** | **32.76%** | **0.84%** |

The interpretation of the results is straightforward: none of the ALPT can be shown to display a year to year superiority to any other fund. (With a marginal exception of 97-98).

In others words "you win a few, you lose a few" and in no particular order... This result is not surprising: it confirms that investors do not seem to be able to perform micro-forecasting miracles in an efficient market.

***- The ranking approach***

Very coherent conclusions can be obtained by simple ranking techniques. The ALPT are ranked by order of decreasing performance and the rankings are compared year to year. A Spearman Rank coefficient is then computed to judge the coherence of the rankings. Persistence would be indicated by a high Spearman coefficient and conversely. Clearly the results of table 2 confirms the very poor reproduction of winning performance from one year to the next.The summary is presented below for Sharpe adjusted and raw returns.

**Table 3: Spearman rank correlation for ALPT Raw and Sharpe adjusted returns**

| ***Year to year Sharpe adjusted returns*** | | | | |
|---|---|---|---|---|
| | 1995 | 1996 | 1997 | 1998 |
| Spearman rank correlation coefficient | -0.0857 | 0.1684 | -0.0782 | |
| Test statistic Z | -0.3736 | 0.7341 | -0.3408 | |
| Two tails p-value | 0.7087 | 0.4629 | 0.7332 | |
| ***Year to year non risk adjusted returns*** | | | | |
| Spearman rank correlation coefficient | *0.0813* | 0.0154 | 0.156 | 0.1604 |
| Test statistic Z | *0.2932* | 0.0555 | 0.5626 | 0.5785 |
| Two tails p-value | *0.7694* | 0.9558 | 0.57 | 0.5629 |

## 2. Do ALPT offer some timing advantages?

The timing ability is the capacity to macro-forecast the evolution of some benchmark (fixed securities, risk free assets, share market, etc) and to time the acquisition of specific assets in order to "beat the benchmark".

The timing issue may be interesting to raise since graph 1 shows that both indexes are moving along very similar trend lines and the results shown in appendix 2 confirms that, statistically, the average returns and risks of the two indexes are identical, thus in the long term, an investor should be indifferent between the ASX and the ALPT

Nevertheless, the graph does illustrate that the series may appear to be cointegrated[9] but that the timing of the moves may offer some arbitrage advantages: from one day to the next, can a sharp investor be able to beat the market? (by buying a unit which will bring a higher return than if had bought a unit of the ASX portfolio).

Many avenues have be suggested to tackle this timing problem[10] and here the Henriksson and Merton[11] model (later: HMM, see appendix 4 for a simplified description) has been chosen because it offers a non-parametric solution to our problem. The HMM model was initially formulated by Merton (Merton 1981) to compare the timing advantages of investing in the stock market instead of investing in bonds. A parametric solution is offered in the general CAPM formulation and then a non-parametric model is also suggested to treat a more qualitative approach. Here the forecaster is simply asking whether she beats the benchmark (success) or not (failure). The more difficult questions raised in the CAPM based models[12] also ask how much better (in %) will the performance be. We will limit our results to the "easy question" and the results will suggest that the question may not justify a fuller treatment.

The summary of binomial tests is presented below. The results for the ALPT full index are almost embarrassing ... since we have a perfect coin flipping performance. The results for individual LPT are more diversified but clearly indicate that, in general ALPT investors cannot enjoy any particular timing advantages. Some may be consistent losers; some may be consistent winners. Again, this conclusion should not be surprising. What must be kept in mind though is that, over a fairly long period of observation, the ALPT Index is flipping exactly like the market and, as noticed before the mean returns and variance are almost identical, whilst no particular unit seems to be consistently doing better or worse than any other share on a period to period basis.

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[9] To be covered in (Achour-Fischer and Monsingh 1999)

[10] (Treynor and Mazuy 1966; Treynor and Black 1973), (Jensen 1968; Ippolito 1993; Grinblatt and Titman 1994)

[11] (Henriksson and Merton 1981)

[12] (Jensen 1972)and scores of others.

**Table 4: Results of the HMM test on the binomial timing performance**

| ALPT name | Number of observations | Number of wins (LPT beats the market) | Winning proportion | z value | P-value |
|---|---|---|---|---|---|
| ASX All ord returns | 2044 | | | | |
| ALPT Index returns | 2044 | **1022** | 50.0% | 0.00 | 0.00 |
| AMP INDUSTRIAL TRUST | 638 | 315 | 49.4% | -0.32 | 0.62 |
| ARMS.JONES REC.UTS.AUDI | 1110 | 552 | 49.7% | -0.18 | 0.57 |
| BT OFFICE TRUST | 885 | 443 | 50.1% | 0.03 | 0.49 |
| BT PR.TST.UTS.AUD1.50 | 1233 | 623 | 50.5% | 0.37 | 0.36 |
| CAPCOUNT PR.UTS.AUD1 | 1266 | 627 | 49.5% | -0.34 | 0.63 |
| CAPITAL PR.TST. | 1639 | 833 | 50.8% | 0.67 | 0.25 |
| CENTRO PROPS.GROUP | 1266 | 625 | 49.4% | -0.45 | 0.67 |
| COLO.1ST.STE.COML.PR. | 194 | 103 | 53.1% | 0.86 | 0.19 |
| COLO.1ST.STE.IND.PR. | 110 | 56 | 50.9% | 0.19 | 0.42 |
| COLO.1ST.STE.RET.PR. | 2044 | 1050 | 51.4% | 1.24 | 0.11 |
| GANDEL RETAIL | 625 | 295 | 47.2% | -1.40 | 0.92 |
| GENERAL PR.TST. | 2044 | 995 | 48.7% | -1.19 | 0.88 |
| GOODMAN HARDIE PR.TRUST | 301 | 148 | 49.2% | -0.29 | 0.61 |
| INDUSTRIAL PR.UTS. | 677 | 348 | 51.4% | 0.73 | 0.23 |
| IPOH | 1639 | 817 | 49.8% | -0.12 | 0.55 |
| MIRVAC PR.TST. | 1065 | 507 | 47.6% | -1.56 | 0.94 |
| NAT.MUT.PR.TRUST | 172 | 82 | 47.7% | -0.61 | 0.73 |
| PALADIN COMMERCIAL TRUST | 180 | 85 | 47.2% | -0.75 | 0.77 |
| PALADIN INDUSTRIAL TST. | 860 | 395 | 45.9% | -2.39 | 0.99 |
| PRIME CREDIT PR.UTS. | 597 | 288 | 48.2% | -0.86 | 0.80 |
| PRIME INDUSTRIAL PR. | 1234 | 643 | 52.1% | 1.48 | 0.07 |
| PROPERTY INC.INV. | 710 | 365 | 51.4% | 0.75 | 0.23 |
| SCHDR.PR.FUND | 2044 | 1001 | 49.0% | -0.93 | 0.82 |
| STOCKLAND TRUST | 2044 | 1039 | 50.8% | 0.75 | 0.23 |
| THAKRAL HDG.GP. | 574 | 284 | 49.5% | -0.25 | 0.60 |

***Interpretation:*** A zero z value and p value indicate that the winning-losing proportion are exactly equal to 50%. The $H_o$ hypothesis of equal proportion cannot be rejected. A negative **z** indicate a losing hand, a positive **z** indicates a winning hand. When the p-value is large (close to one) the $H_o$ hypothesis of equal proportion cannot be accepted (and conversely)

### 1.5 Are some ALPT performing better than some others on a holding period basis (Resilience of returns)?

Here we raise a quite different question than the one treated in persistence-timing papers that are so prevalent in the finance literature. We compare holding returns over compatible Trusts life times. The same treatments were effected on holding periods from one to five years. The results for the Winning-Losing contingency tables are presented in appendix 3. Table 5 only reproduce the ranking correlations (the conclusions are coherent with the Chi-square results).

The results are now completely different. The rank order correlation coefficients confirm what any cursory inspection of table 5 could have suggested. If, previously, we could not demonstrate any trace of persistence in year to year performance, we can, on the contrary demonstrate a very clear dominance of some ALPT over various holding periods. Some funds are more "resilient" than others.

The explanation of this apparent contradiction may require a cycling metaphor. No runner seems to be winning consistently the different stages of the Tour de France. As said above, "they win a few and they lose a few"

But, over the whole race, the minutes accumulated in the different stages make the difference. What matters are not only the stage per stage ranking but mostly the total racing time. If the advance of a runner is kept and increased from one stage to the next, he will win the Tour de France.

Here, clearly, some ALPT are winning the overall race over the years (Centro, Westfield, Gandel, etc.) even if they do not win all or even any of the stages.

This result confirms that non-parametric treatments are not able to provide information about the value added from one period to the next. A poor market timer may still be a good Trust manager if he favours assets that have a substantially higher rate of return. With the additional effects of compounding, a few early and substantial wins will be enough to overperform on a holding period basis.

***Table 5: Are some funds more resilient?***

| Returns over the full holding period | Ranks on 1 year | Ranks on 2 | Ranks on 3 | Ranks on 4 | Ranks on 5 |
|---|---|---|---|---|---|
| CENTRO PROPS.GROUP | 1 | 2 | 4 | 6 | 1 |
| WESTFIELD TRUST | 2 | 1 | 1 | 1 | 4 |
| GANDEL RETAIL | 3 | 3 | 6 | 11 | |
| COUNTRYWIDE RETAIL | 4 | | | | |
| MIRVAC PR.TST. | 5 | 13 | 7 | 14 | 10 |
| NAT.MUT.PR.TRUST | 6 | 5 | | | |
| SCHDR.PR.FUND | 7 | 15 | 11 | 9 | 8 |
| BT PR.TST.UTS.AUD1,50 | 8 | 7 | 5 | 5 | 5 |
| GENERAL PR.TST. | 9 | 8 | 9 | 7 | 11 |
| PRIME INDUSTRIAL PR. | 10 | 9 | 3 | 2 | 2 |
| STOCKLAND TRUST | 11 | 10 | 12 | 8 | 9 |
| PALADIN COMMERCIAL TRUST | 12 | 11 | | | |
| PRIME CREDIT PR.UTS. | 13 | 4 | 10 | 13 | |
| INDUSTRIAL PR.UTS. | 14 | 12 | 13 | 17 | |
| ARMS.JONES REC.UTS.AUDI | 15 | 6 | 2 | 3 | 6 |
| AMP OFFICE TRUST | 16 | | | | |
| AMP INDUSTRIAL TRUST | 17 | 16 | 14 | 18 | |
| COLO.1ST.STE.RET.PR. | 18 | 14 | 8 | 4 | 3 |
| PRIME RETAIL GP. | 19 | | | | |
| CAPITAL PR.TST. | 20 | 23 | 20 | 19 | 13 |
| GOODMAN HARDIE PR.TRUST | 21 | 18 | 19 | | |
| DARLING PARK TST.(PP) | 22 | | | | |
| PROPERTY INC.INV. | 23 | 17 | 16 | 12 | |
| COLO.1ST.STE.COML.PR. | 24 | 19 | | | |
| COLO.1ST.STE.IND.PR. | 25 | 22 | | | |
| BT OFFICE TRUST | 26 | 20 | 17 | 15 | 7 |
| THAKRAL HDG.GP. | 27 | 26 | 15 | 10 | |
| CAPCOUNT PR.UTS.AUD1 | 28 | 21 | 18 | 16 | 12 |
| GRAND HOTEL GROUP | 29 | 24 | | | |
| TOURISM ASSET HOLDINGS | 30 | 25 | | | |
| BT HOTEL | 31 | 27 | | | |

| Returns over the full holding period | Ranks on 1 year | Ranks on 2 | Ranks on 3 | Ranks on 4 | Ranks on 5 |
|---|---|---|---|---|---|
| *Correlation Coefficient* | 0.69 | | | | |
| *Test Statistic: Z* | 3.8 | | | | |
| *Two-tail P-Value* | 0.0001 | | | | |
| *Correlation Coefficient* | | 0.78 | | | |
| *Test Statistic: Z* | | 4.2 | | | |
| *Two-tail P-Value* | | 0 | | | |
| *Correlation Coefficient* | | | 0.94 | | |
| *Test Statistic: Z* | | | 5.19 | | |
| *Two-tail P-Value* | | | 0 | | |
| *Correlation Coefficient* | | | | 0.83 | |
| *Test Statistic: Z* | | | | 4.55 | |
| *Two-tail P-Value* | | | | 0 | |

## *1.6 Conclusions*

1. Australian Listed Property Trust do not offer any particular timing or selectivity advantages among each other and, more importantly they do not provide any advantage over the Market Portfolio. This of course raises the standard question. Why do investors buy ALPT?... a good question, which does not have yet a very clear answer[13].

2. Some Listed Property Trusts do offer long term advantages over some others. Resilient performers have significantly better results. Which now raises a much more interesting question... why?

13 It is often argued that ALPT provide a clientele advantage to low marginal rate investors. One of the principal fiscal trait of ALPT is their tax transparency. In other words, the Trust is not taxed, the unitholders are. Since 100% of assessable profits (Income and capital gains) are distributed by the Trust, the Trust profits are entirely taxable in the unitholders' hand at their individual marginal rates. Since part of the distribution may include capital gains, these gains can be offset by eventual unitholders' capital losses. Compared to the treatment of company taxation, the unitholders enjoy the benefits of indexation in the calculation of the capital gains. (only the " real " capital gain is taxed)

Furthermore, since the Trust distribution include some non-assessable elements (Allowance on buildings and depreciation on plant), the unitholder may defer this part of the distribution until the assets are disposed of by the Trust. At disposition, part of the allowed depreciations may be clawed back on plant and may reduce the indexed cost base for the calculation of capital gains on building (From section 104-70 of the 1997 Australian Income Tax Assessment Act). Thus this tax benefit is contingent and delayed until disposition of the assets.

Thus, indeed low-marginal tax investors may be favoured by this treatment. But the reality is a bit different since the main beneficiaries (and thus price makers) are of course tax-exempted institutions. Indeed the majority of ALPT assets are held by Trustees, Superannuation Funds and other financial institutions. They are not held by the metaphoric retirees that are used each time the LPT tax status is threatened, as is the case in 1999. A recent study (Newell, Chiu et al. 1998) confirms that tax

This question will be tackled in further research but it must be noted that it does not, in any way, cast doubt about the market efficiency hypothesis. The good relative performance of some Trusts is only observed ex-post... not ex ante and, obviously it is already incorporated in the pricing of those star performers.

3. Probably the useful conclusion of this exploratory investigation is a warning against "Mutual Fund Studies mimicry". Most of the (abundant) US literature on REIT performances tries to replicate the traditional treatments of Mutual Fund analysis that have occupied the Finance Journals for the last 20 years. This mimetic treatment does not appear to be appropriate. The performance of a mutual fund is related to the timing and selective skills of its manager who has to balance and rebalance her portfolio continuously to maximise her returns. Her management skills can be periodically be evaluated with the instruments used for timing and selectivity studies. The performance of Listed Property Trust has very little to do with this tightrope style of management. The managers of LPT acquire, develop and manage Properties... they have a different time horizon and, in theory at least they are less concerned by periodic returns on their units values.

Investors in ALPT are certainly investing in shares but most of them are "buyers and holders"; they are more concerned with long term holding period results than by periodic performances (this is confirmed by (Newell, Chiu et al. 1998).

Consequently, securitised-property academic research should thus focus less on persistence and more on resilience and its explanations.

consideration are an important determinant for Australian LPT investors.

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## *Appendix 1: List and size of most ALPT*

***Appendix 2: Comparing the mean-variance traits of the ASX and the ALPT index.***

## *Appendix 3: Periodic returns comparisons*

## *Appendix 4: The Henriksson-Merton Model*

***Appendix 5: Ranking of returns for a 5 year holding period.***