PRICE PREDICTABILITY AND CAPITAL MARKET EFFICIENCY: LISTED PROPERTY TRUST INVESTMENT STRATEGIES

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ABSTRACT

This study focuses on weak form EMH and investigates whether the Australian Listed Property Trust (LPT) market and broader equity market (All Ordinaries) are efficient in the weak form. It examines the daily closing price indices of LPTs and All Ordinaries for the period of 1 June 1992 to 30 May 2003. The results suggest that Australian LPTs and the broader equity markets are efficient in the weak form, and securities prices are not predictable based on historical price movements.

The evidence of weak form efficiency has significant implications for investment strategies. It questions the relevance of technical analysis in the process of formulating investment/trading strategies. In the wake of questionable significance of technical analysis, this study provides active managers with suggestions for formulating investment strategies and investment decision making.

INTRODUCTION

The concept of the Efficiency Market Hypothesis (EMH) in relation to securities' pricing is one of the central paradigms in financial economics. EMH was first introduced about half a century ago (Kendall, 1953), and was rigorously developed about three decades ago (Roberts, 1967; Fama, 1970).

The EMH states that in the capital markets, securities' prices utilise all available information instantaneously and reflect it correctly; that is, all securities' prices reflect all relevant information. Based on the infusion of such information, market efficiency takes three forms: the weak form, the semi-strong form and the strong form (Fama, 1970).

The weak form efficiency suggests that current prices fully reflect all past information concerning the securities. That is, past prices contain no information about future changes and price changes are random. In the practical sense, this refers to 'price predicability'. If weak form efficiency holds, securities' prices should follow a random walk, and tomorrow's price can not be predicted by studying today's price, rendering the importance of technical analysis.

The semi-strong form efficiency states that securities' prices reflect all public information. In the practical sense, this relates to 'events' and 'calendar anomalies'. If this form efficiency holds, prices should only change with the infusion of new market information such as announcements, and patterns of anomalous regularities should not exist, such as calendar anomalies.

The strong form efficiency implies that securities' prices reflect all information, including private information. In the practical sense, this means that abnormal returns from 'insider trading' should not exist.

EMH is built on the assumptions of investor rationality and that competitive activities such as arbitrage/speculation between investors will force prices to their efficient values. EMH has significant implications for investment strategies in the capital markets. An important question to active managers/investors is whether the market is efficient. If a market was proved to be inefficient, a good understanding of the causes and patterns of such inefficiencies would suggest opportunities for active managers to beat the market.

This study focuses on the weak form EMH and examines whether future prices are predictable by studying historical price movements. Studying securities' historical prices and projecting future price movements have long been a significant component to active managers in the process of formulating investment strategies. With little exception, investment houses with actively managed portfolios employ highly technical people to set up sophisticated models to predict securities' price movements in order to outperform the market. More often than not, investment decisions are influenced by recommendations into which such kinds of predictions are incorporated. In fact, not only less sophisticated retail investors, but also institutional investors often base their investment decisions on how certain securities have performed historically.

If a market was proved to be inefficient in the weak form, it would then be relevant for investment strategies to base investment decisions on price predictions modelled from historical information. However, if a market is efficient in the weak form, any attempts to predict securities' prices based on the information of historical prices will simply be a waste of time. If this is the case, investment strategies should better concentrate on other factors which may provide the true edge for managers/investors to outperform the market.

To inspect whether the weak form EMH holds in the LPT market, unit root tests and co-integration analysis are employed to examine the daily closing prices of LPTs for the period of 1 June 1992 to 31 May 2003. For comparison purposes, this study also tests the EMH for the broader Australian equity market.

The remainder of this paper is structured as follows. Section two reviews the literature relevant to this study. Section three describes the data and introduces the methodology used in this study. Section four provides results and analysis of unit root testing, co-integration analysis. Practical implications are illustrated and discussed in section five, and the last section provides concluding comments.

LITERATURE REVIEW

Unit root tests and EMH

The rationale of using unit root tests for the EMH is that if a price series follows a random walk process, then price movements will not follow any patterns or trends. For example, if a non-stationary series is found to have a unit root and is first difference stationary, the series is said to be integrated of order one I(1) and follows a process of random walk. In such a case, information on historical prices can not be used to predict future price movements, providing support to the weak form EMH.

Examples of studies that utilise the unit root methodology to test for random walks in the stock markets include Long, Payne and Feng (1999) and Huang (1995). In the real estate markets, unit root tests have been used for examining the characteristics of real estate data series; for example, the stationarity of real estate data in Myer, Chaudhry and Webb (1997). In the context of EMH, only one study was found using unit root tests for the EMH for the US real estate markets (Kleiman, Payne and Sahu, 2002).

Based on monthly data, Kleiman, Payne and Sahu (2002) performed unit root tests for international real estate markets utilising stock market indices (real estate share prices) for Europe, Asia and North America. They found evidence that all indices have a unit root and follow a random walk process, supporting the weak form EMH.

In the literature search, no previous study was found that employs unit root tests for the EMH for the Australian LPTs market and no previous study was found that combines unit root tests and daily transaction-based data in the context of EMH for the real estate markets.

Co-integration analysis and EMH

In markets other than real estate, justifications of utilising co-integration analysis for testing the EMH have been well documented (Yang and Leatham, 1998; Chan, Gup and Pan, 1997; Lajaunie, MacManis and Naka, 1996; Lajaunie and Naka, 1992; Chan, Gup and Pan, 1992a; Chan, Gup and Pan, 1992b; Copeland, 1991; Baillie and Bollerslve, 1989; MacDonald and Taylor, 1989; MacDonald and Taylor, 1988; Engle and Granger, 1987).

The rationale is that if the k price series are co-integrated, they can be represented by a unique expression of a vector error correction model (VECM). A unique expression of the VECM implies that price changes in some of these k markets can be predicted by employing historical price information from other markets. This immediately suggests the rejection of the weak form EMH of the concerned markets.

In real estate markets, co-integration tests have been widely used to examine market segmentation/integration and diversification benefits, including Kleiman, Payne and Sahu (2002); Wilson, Okunev and Webb (1998); Wilson, Gerlach and Zurbruegg (2003); Chaudhry, Myer and Webb (1999); Myer, Chaudhry and Webb (1997); Eng (1995).

Shilton (2000) attempted to link co-integration analysis with the EMH for the US real estate markets. Shilton (2000) examined the American Council of Life Insurers (ACLI) commercial real estate underwriting data and the National Council of Real Estate Investment Fiduciaries (NCREIF) data. He found that the ACLI capitalisation series and the NCREIF return series were co-integrated at the national level, suggesting that underwriters are obtaining the NCREIF information, which he used as the evidence for supporting the EMH. He also found that this co-integration relationship was not always hold at the level of smaller geographic regions, suggesting the existence of inefficiencies at such level.

The study by Shilton (2000) has two limitations. Firstly, if two data series are proved to be co-integrated, they can be represented by a unique expression of a VECM. The movements in one series can thus be predicted, to some extent, by employing historical information from the other series, suggesting the violation of the weak form EMH.

Secondly, to test the EMH, the data series under examination should be market pricing of tradeable securities/assets, and this pricing is driven by competition from a large number of rational investors who are seeking to maximise profits. It is the competitions from rational investors that eliminate any arbitrage opportunities and lead to market efficiency. However, in Shilton (2000), both the series under examination (ACLI and NCREIF) are appraisal based and not tradeable. For such series, there does not exist the mechanism for actively competing and market pricing, a mechanism that is key to the EMH. Also, the appraisal process leads to smoothing and inter-temporal correlation in the data series (Newell and Webb, 1996). As a common factor in the ACLI and NCREIF series, this appraisal effect may contribute to the co-integrating relationship found in Shilton (2000).

Okunev, Wilson and Zurbruegg (2002) inspected the inter-linkages between the property and stock markets. Incorporating structural breaks and using non-linear techniques, they concluded markets were integrated based on Ganger causality tests, although they could not easily specify the functional relationship between the markets under investigation. They concluded that the markets under inspection were inefficient. Key departures of Okunev, Wilson and Zurbruegg (2002) from the framework introduced in this paper include the following three aspects.

Firstly, the rationale of using co-integration analysis for testing EMH is simple and straightforward. The only requirement for violating the EMH under the framework, as introduced in this study, is the existence of a co-integrating relationship between the series, so that the relationships between the series can be specified by the VECM. The conclusion of inefficiency, however, was based on Granger causality tests in Okunev, Wilson and Zurbruegg (2002). More complicated techniques, such as the incorporation of structural breaks and the utilisation of non-linear techniques, have not helped in specifying any functional relationship between the markets inspected by Okunev, Wilson and Zurbruegg (2002).

Secondly, while this study focuses on the weak form EMH and its practical implications regarding the predictability of securities prices, Okunev, Wilson and Zurbruegg (2002) attempted to investigate the market efficiency on the total return basis by including a dividends component into their analysis. Since dividends were captured only partially, the series used in their study are in effect neither pure price movements nor accumulative total returns.

Thirdly, this study uses higher frequency data, daily closing prices as opposed to the weekly data used in Okunev, Wilson and Zurbruegg (2002). This enables the capture of more information.

In the literature search, no study was found that inspects the EMH for real estate markets with co-integration analysis and daily transaction-based data and no previous such study was found for the Australian equity markets.

DATA AND METHODOLOGY

Data

Data used in this study are the market daily closing price series for the LPT 300 and All Ordinaries over the period of 1 June 1992 to 31 May 2003, sourced from the Australian Stock Exchange (ASX).

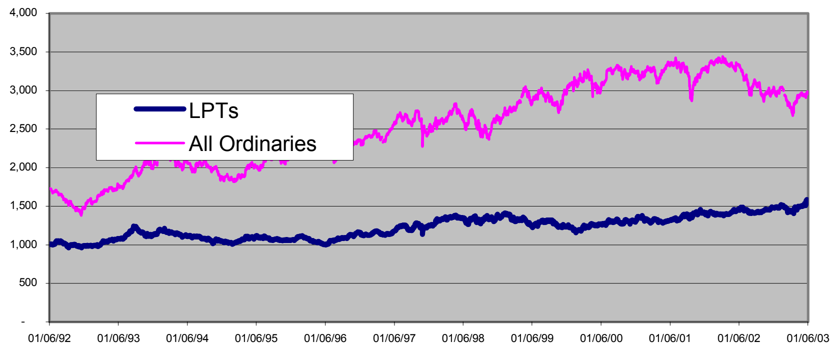
The selection of this period is mainly based on the considerations of normality and representativeness. The LPT sector started to grow around 1992 - 1993. Before that, the sector is very thin, consisting of a small number of LPTs with a total market capitalisation of less than $5 billion. Since June 2003, the LPT sector has experienced a period of significant consolidation, characterised by mergers and acquisitions (M & A) as well as internalisation/stapling, introducing too much noise to this study. This is because price movements influenced by activities such as M &

A are more relevant to 'event' studies and behavioural finance, which is beyond the scope of this study that focuses on testing the weak form EMH; i.e., predictably derived from historical prices.

The use of daily data, instead of weekly or monthly data, makes the tests more rigorous, because it utilises more information and investigates the EMH at a daily interval rather than at a weekly or monthly interval. That is, for the EMH to hold, this requires any inefficiency to be eliminated within a day rather than a week or a month[1].

Chart 1 presents the price movements of LPTs and All Ordinaries over the study period. Table 1 provides descriptive statistics for LPTs and All Ordinaries daily returns. As expected, LPT returns have a lower mean and are less volatile than All Ordinaries returns due to the defensive nature of LPTs. Generally speaking, LPT investments are largely a yield play, although recent trends such as internalisation/stapling add a growth element into LPT investments.

Chart 1: Price movements of LPT and All Ordinaries (1 June 1992 - 30 May 2003)



METHODOLOGY

This study employs unit root tests and co-integration analysis to examine the weak form EMH in the Australian LPT and the broader equity markets.

[1] The superiority of using higher frequency data in this kind of time series analysis has been well documented in previous studies; for example, Okunev, Wilson and Zurbruegg (2002) and Yang and Leatham (1998).

Table 1: Summary of LPT and All Ordinaries daily returns (1 June 1992 - 30 May 2003)

	Mean	Maximum	Minimum	Standard Deviation	Observations
LPTs	0.000179	0.051198	-0.044701	0.006232	2786
All Ordinaries	0.000230	0.059066	-0.067646	0.008292	2786

Unit root tests

Unit root tests are used to analyse two univariate time series, daily closing price series for LPT 300 and All Ordinaries, to identify whether each of the series follows a random walk process.

A standard Augmented Dickey-Fuller (1979) unit root test (ADF) employing equation (1) is first estimated.

$$\Delta Y_t = (\rho - 1)Y_{t-1} + x_t^{'}\delta + \sum_i^n \beta \Delta Y_{t-i} + \varepsilon_t \tag{1}$$

where Y_t is the price series under examination; x_t are optional exogenous regressors which may consist of constant, or a constant and trend; and the ε_t denotes the error process with zero mean and constant variance (white noise). The null hypothesis of a unit root is $\rho - 1 = 0$ against the alternative hypothesis $\rho - 1 < 0$. The lag length in equation (1) is determined by Akaike's Information Criterion (AIC) and is sufficient to eliminate serial correlation in the error terms.

This study also employs an alternative method proposed by Phillips and Perron (1988) when testing for a unit root, as illustrated by equation (2).

$$\Delta Y_t = (\rho - 1)Y_{t-1} + x_t^{'}\delta + \varepsilon_t \tag{2}$$

The desirable feature of the Phillips-Perron (PP) procedure is that, as a non-parametric method, it allows for a weaker set of assumptions concerning the error process; specifically, the presence of dependence and heterogeneity in the error term. The bandwidth in equation (2) is determined by Newey-West using Bartlett kernel.

Co-integration analysis and vector error correction model

This study employs Vector Auto-regression (VAR) based co-integration tests using the methodology developed by Johansen (1991, 1995), as illustrated by equation (3).

$$\Delta y_t = \Pi y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta y_{t-i} + \mathrm{B} x_t + \varepsilon_t \tag{3}$$

where y_t is a k-vector of non-stationary $I(1)$ variables, x_t is a d-vector of deterministic variables, p is the order of the VAR, and ε_t is a vector of error terms with zero mean and constant variance. The Π matrix contains information about the long-run relationship among the variables in the vector. If Π matrix has reduced rank, $r < p$, then there are r nonzero co-integrating vectors among the elements of y_t and $p - r$ common stochastic trends. The presence of a co-integrating relation will form the basis for the Vector Error Correction Model (VECM).

In the case of this study, co-integration of the two price series (LPT 300 and All Ordinaries) would imply the following VECM:

$$\Delta y_{1,t} = \alpha_1 (y_{2,t-1} - \beta_1 y_{1,t-1}) + lagged \ (\Delta y_{1,t} and \Delta y_{2,t}) + \varepsilon_{1,t}$$

$$\Delta y_{2,t} = \alpha_2 (y_{2,t-1} - \beta_2 y_{1,t-1}) + lagged \ (\Delta y_{1,t} and \Delta y_{2,t}) + \varepsilon_{2,t}$$

While β represents the co-integrating vectors, the elements of α are known as the adjustment parameters in the VECM. If y_1 and y_2 deviate from the long run equilibrium, each variable will adjust to partially restore the equilibrium relation, with α measuring the speed of this adjustment.

The existence of the VECM representation guaranteed by the co-integrating relationship would imply that current prices are at least partially predictable by $(y_{2,t-1} - \beta_1 y_{1,t-1})$ or $(y_{2,t-1} - \beta_2 y_{1,t-1})$, which are the historical prices of the other series. Therefore, the presence of a co-integrating relationship between the price series of LPT 300 and All Ordinaries would immediately suggest the violation of weak form EMH.

RESULTS AND ANALYSIS

Unit root tests and random walk

Unit root tests are performed to investigate whether the price indices for LPTs and All Ordinaries follow a random walk process. If they follow a random walk process, then price changes are not predictable by employing historical price information and the weak form EMH will hold.

Table 2 displays the results of the ADF unit root tests, both with constant and without trend and with constant and with trend.

Table 2: Unit root tests for LPTs and stock markets (1 June 1992 - 30 May 2003)

LPTs				All Ords			
With Constant and without Trend				*With Constant and without Trend*			
Levels		First Differences		Levels		First Differences	
t-Statistic	0.61081	*t-Statistic*	-9.56257***	*t-Statistic*	-1.262707	*t-Statistic*	-50.89262***
Lag [1]	27	*Lag* [1]	26	*Lag* [1]	0	*Lag* [1]	0
MacKinnon (1996) critical values				*MacKinnon (1996) critical values*			
*** 1% level (-3.43427)		*** 1% level (-3.43427)		*** 1% level (-3.43256)		*** 1% level (-3.43261)	
** 5% level (-2.86316)		** 5% level (-2.86316)		** 5% level (-2.86240)		** 5% level (-2.86243)	
* 10% level (-2.56768)		* 10% level (-2.56768)		* 10% level (-2.56727)		* 10% level (-2.56729)	
With Constant and with Trend				*With Constant and with Trend*			
Levels		First Differences		Levels		First Differences	
t-Statistic	-1.49709	*t-Statistic*	-9.64513***	*t-Statistic*	-2.78253	*t-Statistic*	-50.88385***
Lag [1]	27	*Lag* [1]	26	*Lag* [1]	0	*Lag* [1]	0
MacKinnon (1996) critical values				*MacKinnon (1996) critical values*			
*** 1% level (-3.96385)		*** 1% level (-3.96385)		*** 1% level (-3.96141)		*** 1% level (-3.96149)	
** 5% level (-3.41265)		** 5% level (-3.41265)		** 5% level (-3.41146)		** 5% level (-3.41150)	
* 10% level (-3.12829)		* 10% level (-3.12829)		* 10% level (-3.12758)		* 10% level (-3.12761)	

1. Determined by Akaike Information Criterion (AIC).

As shown in Table 2, the ADF tests fail to reject the null hypothesis of a unit root for both the LPTs and All Ordinaries price indices in levels, indicating both indices in levels are non-stationary with the presence of a unit root. However, the ADF tests reject the null hypothesis of a unit root for both the LPTs and All Ordinaries price indices in first differences at 1% significance level.

Table 3: Unit root tests for LPTs and stock markets (1 June 1992 - 30 May 2003)

LPTs				All Ords			
With Constant and without Trend				*With Constant and without Trend*			
Levels		First Differences		Levels		First Differences	
Adj t-Statistic	-0.82992	*Adj t-Statistic*	-51.47019***	*Adj t-Statistic*	-1.23660	*Adj t-Statistic*	-50.93845***
Bandwidth [1]	22	*Bandwidth* [1]	23	*Bandwidth* [1]	16	*Bandwidth* [1]	16
MacKinnon (1996) critical values				*MacKinnon (1996) critical values*			
*** 1% level (-3.43256)		*** 1% level (-3.43261)		*** 1% level (-3.43256)		*** 1% level (-3.43261)	
** 5% level (-2.86240)		** 5% level (-2.86243)		** 5% level (-2.86240)		** 5% level (-2.86243)	
* 10% level (-2.56727)		* 10% level (-2.56729)		* 10% level (-2.56727)		* 10% level (-2.56729)	
With Constant and with Trend				*With Constant and with Trend*			
Levels		First Differences		Levels		First Differences	
Adj t-Statistic	-2.99906	*Adj t-Statistic*	-51.48091***	*Adj t-Statistic*	-2.72184	*Adj t-Statistic*	-50.92986***
Bandwidth [1]	20	*Bandwidth* [1]	23	*Bandwidth* [1]	13	*Bandwidth* [1]	16
MacKinnon (1996) critical values				*MacKinnon (1996) critical values*			
*** 1% level (-3.96141)		*** 1% level (-3.96149)		*** 1% level (-3.96141)		*** 1% level (-3.96149)	
** 5% level (-3.41146)		** 5% level (-3.41150)		** 5% level (-3.41146)		** 5% level (-3.41150)	
* 10% level (-3.12758)		* 10% level (-3.12761)		* 10% level (-3.12758)		* 10% level (-3.12761)	

1. Determined by Newey-West using Bartlett kernel

Table 3 presents the results of PP unit root tests, both with constant and without trend and with constant and with trend.

Similarly to the ADF results, the PP tests fail to reject the null hypothesis for both series in levels, but reject the null hypothesis for both series in first differences (at 1% significance level).

The above results suggest that both the LPT and All Ordinaries price indices are first difference stationary with one unit root. That is, both indices are integrated of order one, $I(1)$. In other words, the LPT and All Ordinaries price indices follow a process of a random walk.

In a practical sense, this means that today's prices do not contain any predictable power for tomorrow's prices, providing support to the weak form EMH in LPTs and the broader equity markets.

Co-integration analysis

Co-integration analysis is performed to investigate whether LPTs and All Ordinaries are co-integrated. If they are co-integrated, the price changes in one market are at least partially predictable by employing historical price information from the other market. It is thus possible to profit by trading across the two markets. Therefore, the existence of a co-integrating relationship across the markets implies a direct violation of the weak form EMH.

Table 4: Cointegration tests for LPTs and the stock market (1 June 1992 - 30 May 2003)

	Trace Test		
No. of CE(s)	*Statistic*	*5% Critical Value*	*1% Critical Value*
None	6.11740	15.41000	20.04000
At most 1	1.89807	3.76000	6.65000
	Maximum Eigenvalue Test		
No. of CE(s)	*Statistic*	*5% Critical Value*	*1% Critical Value*
None	4.21933	14.07000	18.63000
At most 1	1.89807	3.76000	6.65000

Trace test indicates no cointegration at both 5% and 1% levels
Max-eigenvalue test indicates no cointegration at both 5% and 1% levels

Table 4 shows the results of cointegration analysis. Both the Trace test and

Maximum Eigenvalue test indicate that LPTs and All Ordinaries are not co-integrated.

The fact that there is no co-integrating relationship between the LPT and All Ordinaries price indices provides further evidence to the weak form EMH in the LPT market and the broader equity market.

PRACTICAL IMPLICATIONS

Whether the weak form EMH holds is of key relevance to investment strategies in the capital markets, including the Australian LPT and the broader equity markets.

Technical analysis, which evaluates securities by relying on the assumption that historical data can help predict future market trends, has long played an important role in the investment/trading strategies. Technical analysts believe that they can accurately predict the future price of a security by looking at its historical prices and other trading variables. Managers who have faith in technical analysis believe that securities' prices are predictable by studying the information of historical price movements. They also believe that by studying historical prices and predicting future prices, they will have the edge to outperform the market and achieve superior returns. Therefore, studying securities historical prices and predicting future price movements have long been a significant component to active managers in the process of formulating investment strategies. More often than not, investment decisions are heavily influenced by such kinds of predictions.

However, if weak form EMH holds, then any efforts on predicting future prices by simply studying historical prices will eventually be a waste of time, and any attempt to outperform the market based on such efforts will effectively be a game of luck rather than skill.

The results of the unit root tests in this study prove that the prices of LPTs and All Ordinaries follow the process of a random walk. That is, LPTs and the broader equity markets are efficient in the weak form and price changes are not predictable by employing historical price information.

The absence of a long-run relationship between the LPT prices and All Ordinaries prices from the co-integration analysis implies that price changes in each of the LPT and the broader equity markets are not predictable by employing the historical information from the other market, suggesting that it is impossible to profit by trading across the two markets. This provides further evidence that LPTs and the broader equity markets are efficient in the weak form.

The evidence of weak form efficiency in LPTs and the broader equity markets provided by this study explains the inconsistent performance of technical analysts in the marketplace. As illustrated earlier, in a market where weak form EMH holds, accurately predicting future price based on studying historical information is impossible.

However, it is worth noting that, even though the findings from this study raise questions on the relevance of technical analysis, they do not suggest undermining the importance of active management.

An interesting phenomenon regarding the EMH is that market efficiency depends on the belief that markets are not efficient, and is driven by the attempt to outperform the market by market participants who believe the market is inefficient. If every investor believed that a market was efficient (a case for passive management/investing), then the market would not be efficient because no one would analyse securities and it would be unlikely for securities' prices to fully reflect all available information.

In fact, the weak form efficiency in LPTs and the broader equity markets may simply result from the competition by rational investors seeking outperformance in the presence of semi-strong form inefficiency such as the calendar anomalies evidenced in Peng (2004). In this sense, it is actually the active management that ultimately drives the market efficiency.

Since information of historical prices itself has limited predicting power, active managers should better focus on other factors; for example, fundamental analysis and the intrinsic value of the security in attempting to outperform peers. Also, the existence of calendar anomalies evidenced in Peng (2004) and other likely patterns of semi-strong form inefficiencies may all provide opportunities for active managers to beat the market. A good understanding of the above factors shall prove to be an area of value and significance to active managers in their formation of investment strategies and the decision making process; an area with the potential for active managers/investors to outperform the market.

CONCLUSION

This study combines daily transaction-based data with unit root tests and co-integration analysis in the context of EMH for real estate markets.

The results from the unit root tests suggest that both the LPT and All Ordinaries price series follow a random walk. That is, today's prices can not be used for predicting tomorrow's prices, implying that LPTs and the broader equity markets are efficient in the weak form.

The results from co-integration analysis suggest that there is no co-integrating relationship between the LPT price series and the All Ordinaries price series. That is, the price changes in one market are not predictable by employing historical price information from the other market, providing further evidence to the weak form EMH in the LPTs and the broader equity markets.

The results from this study explain the inconsistent performance of technical analysis. It questions the relevance of technical analysis in the formation of investment strategies and trading decisions in an efficient market.

However, this study does not suggest undermining the importance of active management/investing. It suggests that it is the active managers/investors who are driving this weak form market efficiency.

In the wake of questionable significance of technical analysis, this study provides active managers with suggestions on areas of focus in the process of formulating investment strategies and investment decision making; areas with potential for active managers/investors to outperform the market. These focuses include fundamental analysis, as well as areas where inefficiencies may exist, such as calendar anomalies, patterns and causes of such inefficiencies.

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