

**RESIDENTIAL RENTAL REAL ESTATE:
AN INVESTMENT IN NEED OF A THEORY**

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One: The importance of residential rental real estate investment (RRREI) in the Australian social framework

The demand for privately-provided residential rental real estate accommodation looks set to increase. Home ownership is slipping below its long-term level of seventy percent of the adult population and the federal government is reducing its investment in the direct provision of rental housing (Yates 1999:29). From the supply aspect, Australians will increasingly have to provide for the self-funding of their retirement income requirements. Residential rental real estate investment (RRREI) can provide an ideal investment vehicle, given its comparatively low risk and its inflation-hedging ability.

Risk in residential property is low, compared with the other major risk investment, the equity sharemarket. Housing is a necessity: people must have a dwelling to live in, either as owner-occupier, or as rent-paying tenant. This reduces the possibility of a major downturn in the residential market. Conversely, investment in equity shares is discretionary. Investors can withdraw from the sharemarket, triggering substantial price falls. The risk of market downturn is evidenced by major historical price slumps.

Risk-conscious investors seek to protect the real purchasing power of their investments. RRREI, because of its close relationship to owner-occupied housing, is an effective hedge against inflation. The seminal test of inflation hedging (Fama 1977) showed that in the United States, for the 18 years surveyed, equity shares - given the volatility of their returns - were not an effective hedge against inflation. Fama's study showed that of all the key investment assets examined, only residential real estate proved a complete hedge against inflation. United Kingdom studies, reported by Brown (2000:472) showed that over a period of 35 years, property investors received an average real return of 2.77% per annum, with a similarly high correlation with inflation. There is no reason to doubt the Australian experience would be the same.

Two: The lack of a theory in RRREI

Many RRREI investors are 'sold' a property through the marketing skills of real estate agents and their commission-driven ability to 'clinch a sale'. As a result, much RRREI investment takes place without adequate prior evaluation to establish the economic value of the property being purchased. RRREI lacks both a central market place and prompt publication of transaction prices. There is no established theory of real estate investment. RRREI is mainly deal-driven by private treaty. Public auctions, despite the publicity they attract, are the

exception. Most RRREI property changes hands through negotiation between vendor and purchaser, often heavily influenced by the agent.

However, a study of the relevant literature suggests that the analysis of RRREI investment could be linked into the formal framework of capital asset pricing theory. This theory holds that investment return is a function of market-based risk. The absence of a well-informed RRREI market has not occurred by chance. The lack of a conceptually sound economic basis for RRREI transactions reflects the content of the majority of real estate investment texts. These focus on two main topics:

One: The overwhelming majority are simplistic, claiming to enlighten the prospective investor on how to quickly increase his wealth by buying and selling RRREI with timing that maximises the investor's capital gain, and by relying on a 'motivated' seller and 100% financing. But they are one-dimensional in that they either downplay or entirely fail to consider risk. Unfortunately, in Australia, the authors of these texts and the presenters of like-seminars do not have to meet the licensing requirements of authorised financial planners, which would curb many of the unsustainable claims they make. Anecdotal evidence is that many RRREI investors do lose significant funds:

- either in a falling property market, because they have not allowed for market risk, or
- they have over-committed financially by borrowing too high a proportion of the RRREI's purchase price - because they have not understood financial risk and the variability of returns.

Two: The other aspect most often covered in the literature is the valuation of RRREI by qualified professional valuers. But these texts focus largely on the mechanics of valuation, relating to a point in time and a single site. They tend to lack a sound underlying economic basis in their approach. The preponderance of these texts is not because RRREI is a unique asset class. Nor does RRREI valuation require a separate body of theory. Valuation derives its emphasis because RRREIs change hands infrequently. Valuations are often required in the absence of market prices. But to be objective in establishing the value of a particular RRREI, valuation should draw on the principles of capital asset pricing theory.

Three: The fundamentals of modern finance theory

• To increase his wealth, the RRREI investor needs to buy property that has greater value to the investor than its purchase cost. To achieve this by design rather than by chance, the RRREI investor needs a formal theory of value to indicate to him what a property is worth. Points central to the theory of capital asset (investment) pricing are that:

- Positive net present value represents an increase in the RRREI investor's wealth.

- In a well-functioning market, the present value of net future cash flows - discounted to account for risk - is equal to market value.
- This discount rate should be the market-based opportunity cost of capital.
- Given the reality of risk in investment markets – ie the uncertainty of future returns - RRREI valuations should be drafted in terms of expectations.
- An RRREI property might have a higher value to the purchaser than it's negotiated transaction price, because the prospective investor has prior knowledge of RRREI value-enhancing local developments that the vendor lacks.
- Gearing up the returns on a property with increased borrowings will increase the financial riskiness of the RRREI investor's returns.

The above list shows that the principles of capital asset pricing can be applied to RRREI. The latter is not so different that it requires a whole new theory of investment.

- Portfolio theory, an early development in modern finance theory, is based on the thesis that diversification reduces risk. Building on the pioneering work of Markowitz (1959), and using equity sharemarket data, Sharpe (1963) developed a model for share portfolio investment that related the returns on individual shares to the performance of a market index. He postulated that the return on any share could be determined solely by random factors plus its relationship with some common (market) index.

- The relationship between portfolio size and risk-reduction has been well documented for equity share portfolios. One of the most quoted research studies, that of Evans (1968), showed that by maintaining equal outlays in each equity share, most of the reduction in unsystematic (specific share) risk had occurred by the time a portfolio reached 15 to 20 shares.

- Risk-bearing investments carry two risks - systematic (market-wide), and unsystematic (specific to the individual investment). Systematic risk is the only risk that remains after diversification across a sufficiently large number of randomly selected investments. The assumption made by portfolio theory is that unsystematic risk can be diversified away entirely in sufficiently large portfolios. All that remains is systematic, market wide risk. In equilibrium, the expected return on an investment will be a positive linear function of its covariance of returns with the market. As systematic risk is a measure of covariance, it becomes the appropriate measure of risk to use for pricing individual investments. Accordingly it determines the opportunity cost of capital to use when assessing an investment. It is this relationship between systematic risk and expected return that is identified by the security market line (SML). The security market line will slope upward to the right, with the 'return' shown on the vertical axis dependent on the 'risk' measured on the horizontal axis

- The expected return on an investment $E(R_j)$ can be related to the security market line using the following equation, where R_f equals the risk free (ten year government bond) rate, R_m equals the overall market return and b_j the risk of investment j relative to the market risk:

$$E(R_j) = R_f + b_j[E(R_m) - R_f]$$

This is known as the capital asset pricing model (Capm). It relates the expected return of an investment to the risk-free rate of return, plus a premium for bearing risk.

- The investor's suite of risk indifference curves can be applied to the security market line. The investor will maximise his utility by moving onto his highest risk indifference curve touching the security market line. If an investment is correctly priced in relation to the market, it will lie on the security market line. The expected return derived from this line will result in a net present value of zero when used to discount the investment's cash flows. If, on the other hand, the investor purchases an investment for which the systematic risk and return intersect at a point above the security market line, the investment will be under-priced for that investor. He will be able to move to a higher personal indifference curve and thus maximise his utility: the investor's wealth will be increased because the investment will generate a positive net present value.

In summary, modern finance theory holds that investment decisions should consider both risk and return. Ideally portfolios should be constructed in a way that maximises the trade-off between the two. Because modern finance theory has been developed essentially by researching equity shares, there are numerous publications which offer conceptually sound theory on the economics of sharemarket investment. The gap between finance theory and equity share investment has been largely bridged. Given that RRREI is an important investment, the attempt must be made to similarly bridge the gap between theory and application in RRREI investment. As with other risk-bearing investments, the concept of a risk-return trade-off does have application in RRREI. Investment property should be valued using the combined yields of expected rental returns and capital growth. For wealth-generating RRREI investment, it is essential to know how these expected returns are determined.

Four: The commonly used methods of appraising RRREI, and their shortfalls in terms of finance theory

- The simplest of the commonly used forms of RRREI investment appraisal is residual analysis. This forecasts the difference – ie the residual - between the selling price and the combined costs of buying, holding and selling an RRREI property. But this approach to RRREI analysis fails to answer two critical requirements of finance theory:

- The residual approach does not discount future cash flows to properly compare them with outlays made at an earlier point in time.

- In the absence of a discount rate, the analysis does not factor in risk.

Accordingly, residual analysis, although widely used by RRREI investors, cannot be considered a valid method of RRREI investment analysis in terms of modern finance theory.

• Other simple methods of RRREI investment analysis covered in the literature, and widely used in practice, presumably because of their simplicity, are:

- Payback , and
- Return on investment.

But each of these relies on arbitrary decision rules that have no close link with finance theory. Indeed they pose a danger of accepting investments which promise high rates of return, without acknowledging that such returns may be more than out-weighted by greater than commensurate risks - which both of these methods ignore.

• Among valuers, the equivalent yield model is widely used in investment property valuation, because of its transparency and simplicity. It requires estimates of only two inputs:

- the rental value, and
- the yield.

Evidence of these can be found in the market place. By stipulating V as equal to property value, y as equal to equivalent yield, R as the present estimate of future rental value, a as current rental income and n as the number of years to the next review, the property valuation is expressed as:

$$V = a/y + [(R - a)/y(1 + y)^n]$$

As with the above methods, the simplicity of the equivalent yield model does result in conceptual limitations which raise doubts about its validity in terms of finance theory. It expresses rental value in present day terms, whereas the rent review takes place at a date which may be some years into the future. The current rent level is expressed in nominal terms, but given the economic norm of positive inflation, it will be declining in real terms. The meaning of equivalent yield therefore becomes ambivalent. But it does mathematically equate to the internal rate of return of an RRREI property's net cash flows.

Five: Problems of applying modern finance theory to RRREI

• There is no consensus view within the literature on RRREI investment as to how properties should be defined in terms of being mis-priced. It is not enough for a valuer to suggest that an RRREI is under-valued merely on the basis of yields and intuition. There needs

to be some economic reference point, based not only on expected returns - which is the point at which the majority of real estate investment texts stop - but also on a formalised evaluation of the individual RRREI's risk. Without a formal theory of market equilibrium, it is doubtful that qualified valuers, let alone potential RRREI investors, could identify under-priced properties, other than by chance.

- Performance measurement in the equities market began in the early 1970s and has advanced to sophisticated levels of risk evaluation. This is still not commonplace in RRREI, where the lack of quality data which has given rise to poor measures of risk. This is a serious shortcoming, as RRREI investors ought to be able to compare returns of individual RRREI properties and their respective risks, and should be able to rationalise why one RRREI investment has performed better than another.

- To utilise the Capm for RRREI investment appraisal, the prospective investor needs to estimate the market risk for each investment. For sharemarket securities, time series are available, so that β (beta) can be determined by regression analysis. However, for RRREI, time series of returns are generally not available.

- The perceived benefits of diversification are understood intuitively by investors. But sharemarket research on portfolio diversification reported above does not appear to have been emulated with similar quantitative studies into risk reduction for RRREI investments. Trying to replicate this methodology for an RRREI portfolio would introduce two further complications:

- limited data, and
- indivisibility of each RRREI

- In RRREI, there are noticeably more of the unsystematic risk factors than there are systematic:

Systematic risk

- general economic conditions
- changes in interest rates
- taxation

Unsystematic risk

- location
- covenants
- construction
- neighbourhood
- building quality
- its general condition
- age of property
- depreciation

tenant
lease structure

This accords with the frequently quoted cliché that the three most important factors affecting RRREI performance are

- location
- location
- location

This is an abbreviated way of saying that RRREI returns are strongly influenced by non-systematic factors specific to each property. Hence the incidence of low correlations between RRREIs. If an RRREI portfolio carries a high proportion of specific risk, uncertainty will remain as to portfolio returns. This means that, dependent on the number of properties held, the performance of an RRREI portfolio is more likely to be influenced by specific rather than market-wide factors.

The overall property market has been shown to explain only a minor proportion of the variation in returns for the individual RRREI (Brown 2000:339). What Brown found is that the overall market explains less than 10% of the variation in returns for individual properties. By contrast, the sharemarket explains about 30% of the variation in returns for individual shares. From Brown's study, it is clear that to achieve this in RRREI investments, it would be necessary to hold an equal proportion of funds in each of about two hundred properties. But RRREIs are unlikely to be of equal value. Thus, with unequal investments, the number of RRREIs required is likely to be much higher - conceivably in the thousands. This makes it an impossibly large portfolio for the private investor. The portfolios of individual landlords, most of whom hold no more than six RRREIs, are almost certain to be poorly diversified. What this shows is that RRREI portfolios can show rapid reduction in risk with relatively few properties. But they usually require very large numbers of properties to be highly diversified, something which is far beyond the scope of individual investors in RRREI. As a result, RRREI investors will find it a practical impossibility to create an RRREI portfolio that is capable of tracking an index. This means that two portfolios following identical policies in terms of investing strategies could well find that their returns differ substantially because of differences in specific risk. The benefits of diversification achieved in the equity sharemarket are not emulated in property.

- Apart from the higher - but more volatile - returns, another of the appeals of sharemarket investing is the ready availability of market information. Unlike the sharemarket, where turnover is high and prices are promptly 'published' on the internet and in the media, RRREI changes hands without publication of the price at which the property sold. This can be obtained from local government records, but it can take up to two months from date of sale until the price is made available for public perusal. Aggregate sales by suburb, separated into houses and flats, are provided at year end in State Valuers' Generals annual reports.

- Financial performance models are typically framed in terms of rate and variance of returns: the financial performance of an investment can be summarised by its rate and distribution of returns. Unlike the equities sharemarket, little is known about the rates and the distribution of RRREI returns. Statistical research in this area have been hampered by the private nature of most realty sales, and the resulting delay in the publication of prices. This is a severe limitation to market competition. Informed RRREI investment analysis requires an awareness of the distribution of returns, for a proper assessment of investment risk.

- The mean-variance capital asset pricing model can be used to allocate asset investment for the maximization of wealth. This requires unbiased estimates of the risk of each investment. For those markets where assets are freely traded this presents no problem. Unfortunately, the limited number of traded prices in the RRREI market means that risk has to be inferred from valuations that are estimated from known recent market transactions, or based on yields of comparable properties. The RRREI investor must be able to predict financial performance to determine the value of an RRREI, so he can compare it with the vendor's asking price. He should also be monitoring the financial performance of his current holdings. Given the high transaction costs – up to five percent or more when buying or selling RRREI property - it is not feasible to liquidate an RRREI portfolio to measure its performance. The investor therefore has to rely on valuations. Research indicates that in an equilibrium market, valuations are a close proxy of price (Miles 1982, Newell 1998, Brown 2000) But valuations tend to lag price changes in rising and falling markets and to average or 'smooth' the variations of actual prices, which can be jagged by the competitive imperfections of the RRREI market.

Furthermore, the valuer is engaged either by the vendor or the purchaser - or more often, the purchaser's mortgage-providing financial institution. This is a principal-agent relationship, so that any 'bias' in the resulting valuation could be expected to favour the party paying the valuer's fee. The valuer's report becomes the private property of the party who employed the valuer: it is not made known to the market. Hence the valuation procedure does not foster an open, informed RRREI market.

. RRREI investors will not have the benefit of an accurate time series of returns that can be used to estimate the market risk for individual RRREI properties. Presuming such an index did exist, the investor would still be faced with evaluating the investment risk on new properties that would have no time series history. And it is new properties which are most likely to attract investors, bearing in mind tax considerations, because new properties offer the maximum tax-deductible depreciation allowances.

- The inference is that the returns for individual RRREI properties are likely to have originated from non-normal distributions. This impinges on portfolio theory, where an assumption of normality is required.

- The RRREI market is competitively inefficient. There are a number of characteristics that limit it being priced in an efficient manner. RRREI

- is lumpy
- cannot be sold in small units like shares
- is difficult and slow to sell, ie illiquid
- incurs high transaction costs

Based on the work of Quan (1989) the RRREI market has four competitive limitations that differentiate it from other markets:

One: Incomplete information about the attributes and future returns for individual RRREIs means that ‘buy’ and ‘sell’ decisions are made with only partial – and often unequal - knowledge between vendor and buyer.

Two: Time-consuming and possibly costly search incurred by potential investors.

Three: Lack of an informed central marketplace, as prices are usually the result of private negotiation between buyers and sellers.

Four: The use of valuations in lieu of prices, but with the valuation not available to the market

These imperfections can lead to market prices which differ from what would be expected in a competitive market. Accordingly, prices at which RRREI changes hands for identical properties may well differ.

Six: Methods of analysing RRREI which accord with modern finance theory

The above problems of applying modern financial theory to residential rental real estate investment do not invalidate the use of the capital asset pricing model (Capm) in RRREI investment analysis. Property is a sector of a universal investment market. The theory of risk, expected return and equilibrium applies as much to RRREI as to any other investment sector. The Capm approach to estimating the opportunity cost of capital holds for all risk-bearing investments. The capital asset pricing model (capm) is a general equilibrium investment-asset-pricing model and is quite capable of accommodating RRREI – with adjustment for specific property risk. Otherwise the RRREI investor’s estimation of expected return will lack conceptual validity - with an increased chance of error.

Given the unlikelihood of investors achieving ‘well-diversified’ RRREI portfolios, risk cannot be calculated via portfolio theory. If, as is likely, the portfolio is poorly diversified, it needs to be actively managed, with emphasis on forecasting abnormal returns to increase the RRREI investor’s wealth. The RRREI investor should use an appropriate RRREI

investment model in unison with RRREI market and localised information to seek under-priced properties.

Such a valuation model is needed, because it:

One, formalises the process by which value is assessed, and identifies the critical modelling factors. It draws on market-place variables and defines the economic relationship between those variables that are critical to the model.

Two, establishes equilibrium market value, which can then be used to determine whether a property is fairly valued or incorrectly-valued.

The importance of establishing equilibrium market value is that markets are seldom, if ever, in equilibrium. If an RRREI investor, having modelled the equilibrium market value for an RRREI property, is able to buy the property below this equilibrium value, he should proceed to buy it, as it will generate a rate of return higher than that required to compensate for its level of risk. Thus, the role of the valuation model is to estimate equilibrium market value against which the negotiated market price can be compared. Where equilibrium 'price' (P_e) exceeds market price (P_m)

$$P_e > P_m$$

the investor has identified an RRREI opportunity to earn a positive (wealth-increasing) abnormal return.

The expected cash flow of an RRREI can be estimated by carrying out a detailed survey of the property, having regard to:

- its location
- its physical and qualitative attributes, and
- expectations about its future as an investment

Consistent with finance theory, the rate of return used to discount the RRREI cash flows will reflect the fact there is a trade-off between risk and return: higher-risk RRREIs will require higher expected returns than lower-risk investments.

The recognition, evaluation and quantification of risk – the lynchpin of finance theory - must be incorporated in selecting a target return. This is something the RRREI investor needs to do, recognising and evaluating local (specific) and market (systematic) risk. If, for property j an RRREI investor is able to input this risk evaluation into a security market line (SML) analysis he can derive the expected risk-adjusted return, $E(R_j)$. The investor can compare this with the internal rate of return (R_j) he has forecast for investment $RRREI_j$. If there is no difference,

$RRREI_j$ is fairly priced (located on the SML). But if it is not, the difference will be a measure of the abnormal return, A_j . If the investor's forecast rate of return for the RRREI investment exceeds the expected return, based on the market price, the investment will be under-priced and the abnormal return will be positive:

$$A_j = R_j - E(R_j)$$

This process can be formalised in three steps, which make use both of traditional RRREI valuation and modern investment technique, together with the knowledge and skill of the investor:

Step 1: Estimate the current RRREI property value: This can be determined by using the standard equivalent yield model. However, on its own, this estimate cannot indicate whether the property is correctly valued or whether it is under- or over-valued.

Step 2: Estimate the market risk and expected return for the RRREI property: This provides the investor with a benchmark return against which to evaluate a prospective RRREI investment.

Step 3: Estimate future rental growth and capital gain for the specific RRREI. Substitute this into a cash flow model for the property to derive its internal rate of return. This should give the same present value as that which would be estimated using the equivalent yield. But it is a more direct and controllable analysis.

By subtracting the expected return in step 2 from the rate of return from step 3, the investor can determine if there is a positive abnormal return. The ability of the investor to predict the effect of expected future events on the subject RRREI property will influence the reliability of the analysis, as will his entrepreneurial ability to enhance the future value of the property to achieve an increase in wealth.

Having arrived at an assessed value V_j for the RRREI property available for purchase, the investor will compare this with the vendor's asking price, P_j . Providing non-financial factors are not unfavourable, the decision to purchase will be made where the investor's assessed value exceeds the purchase price:

$$V_j \geq P_j$$

This would indicate that the investor believes the property is worth more than the negotiated market price. This ought to be an ongoing process, even after the RRREI investment is purchased, and especially given the need for active management in light of the low level of RRREI portfolio diversification. Because most RRREI portfolios tend to be small, it becomes impractical to track an index (unlike the sharemarket, where index funds are in vogue). There is no significant risk reduction from diversifying. Most of a property's performance will come from

the specific risk of the individual RRREI investment. The investor therefore needs to focus on individual RRREI selection as opposed to investment fund allocations. Identifying whether an individual RRREI property is under-priced is likely to be more important than ensuring that the commitment of funds fits in with the output of a financial allocation model.

The RRREI market is competitively imperfect, given

- the lack of a central market place
- significant transaction costs
- lack of prompt price information, and
- the 'indivisibility' of RRREI investments

But this can give the RRREI investor who goes to the effort of gathering relevant information on specific risk a competitive advantage. In the sharemarket, acting on 'insider' information is illegal. However, in the RRREI market, private or privileged information can be legally used to advantage. For example, an individual who buys a site having discerned that the local government authority will shortly re-zone the site to a higher value use can legitimately capitalise on that information, knowing that such a change in use can trigger a substantial increase in land value.

On the other hand, the RRREI market is operationally efficient. For the most part RRREI is fairly valued. Given future uncertainty, there will always be some mis-pricing, so that abnormal returns can be achieved, at least in the short run. Finding mis-priced RRREIs is not likely to be easy, and depending on the degree of efficiency in the market, the time and effort and research involved in finding them may be considerable. But if investors can capitalise on this information, they have the potential to unearth RRREI investments that will earn them abnormal returns.

If this analysis is carried out against an RRREI holding period horizon, the results will represent an approach which is defensible – both conceptually and practically – to the problem of RRREI selection. Whether the investor's selection achieves his goal of an increase in wealth will, of course, depend on the quality of the forecasts used in formulating the model for the specific RRREI investment and the reliability of his forecasting skill, which will be a function of the efficiency of the RRREI market.

In a competitive market, a strategy that is based on sound economic principles, but which is flexible enough to utilise any favourable information available to the RRREI investor, ought in the long run prove to be successful.

Seven: Requirement To Discount Future Cash Flows

To have validity in terms of finance theory, RRREI investment appraisal must recognise the time value of money by discounting future cash flows at a rate which incorporates an evaluation of risk - both market- wide and specific to the RRREI being analysed.

The two common approaches to discounting future cash flows which evaluate the risk of RRREI investments are:

- Net present value analysis (NPV), and
- Internal rate of return (IRR)

The NPV approach uses the market-determined opportunity cost of capital and is consistent with the primary investment objective of maximising RRREI investor wealth. But the drawback of using NPV is that the opportunity cost of capital cannot be objectively estimated for an individual RRREI project, especially if it is a new building. The practicality is that the IRR, by calculating the rate of return on the RRREI property being evaluated, needs to be substituted for NPV. Provided the RRREI investor can make an approximation of opportunity cost - which with market familiarity and experience he should be capable of doing - he can assess whether the IRR exceeds this rate, and will thereby will increase his wealth. Using IRR, he can achieve the same objective as the conceptually superior but impractical NPV approach.

Writings in RRREI investment do not provide reliable and robust reference points for formulating forecasts of abnormal returns - by identifying whether a property is incorrectly priced. But by adopting the IRR approach, the cash flows for a prospective RRREI property can be projected over the holding period of the investment and the internal rate of return derived. The RRREI investor can then make a comparison between the internal rate of return calculated and his target return.

The capm, as an equilibrium asset pricing model, must be adapted for RRREI to incorporate the specific risk of an individual RRREI:

$$E(R_{RRREIj}) = R_f + \mathbf{b}_{RRREIj} [E(R_{S_m} - R_f)] + E(Ru_{RRREIj})$$

Where: $E(R_{RRREIj})$ = expected return on residential real estate investment i

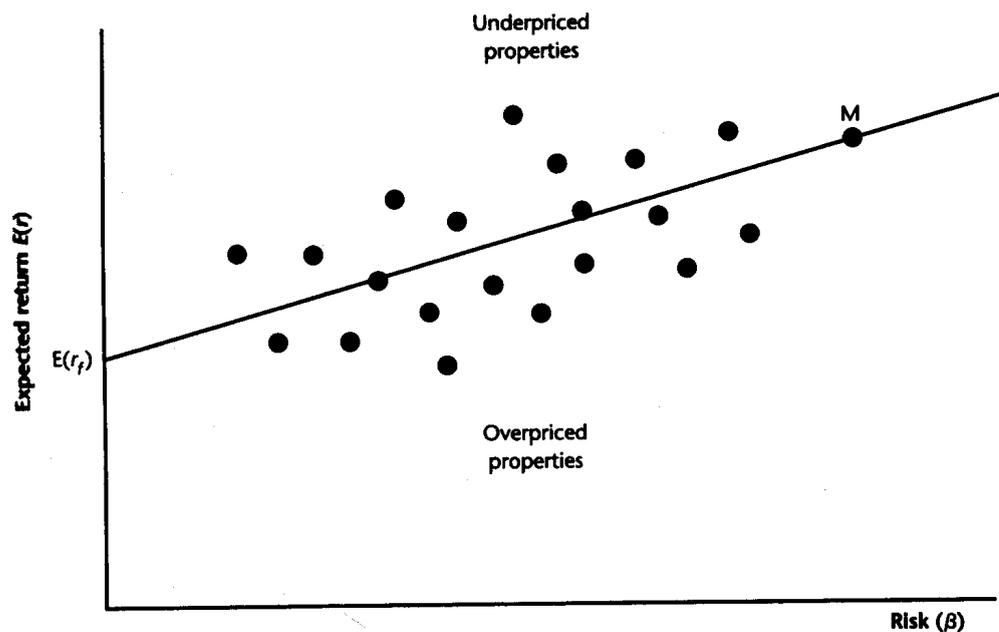
R_f = risk-free rate of return (donated by 10 year Treasury bonds)

\mathbf{b}_{RRREIj} = the systematic risk of $RRREIj$ relative to overall market risk

$[E(R_{S_m} - R_f)]$ = the expected overall systematic market risk less the risk free rate, ie the market premium

$E(R_{u_{RRREIj}})$ = the expected unsystematic risk (risk specific to $RRREI_j$)

The above model enables the informed RRREI investor to identify under-priced RRREI properties which lie above the security market line. In accordance with capital asset pricing theory, this line represents the trade-off between risk and return for correctly priced RRREI investments. The upwardly sloping security market line (SML) indicates the RRREI investor would expect to be compensated with higher returns by taking on higher levels of risk. The capital asset pricing theory behind the SML holds that once the investor has estimated the expected market risk of undertaking an RRREI investment, he can use the SML approach to calculate expected return, and thereby price an RRREI investment in terms of its expected risk and the return ensuing from that risk:



(Brown 2000:177)

In the above graph, the rate of return is the internal rate of return. Those RRREI investments that lie on the SML line are correctly priced. Any abnormal return will be the difference between what the market expected, as denoted by the vendor and purchaser's negotiated price, and what the investment is expected to return over the RRREI investor's holding period. RRREI investments that lie above the SML are those the investor should be seeking. As their net present value is positive, the expectation is they will increase the RRREI

investor's wealth. They are priced at an amount which is less than that at which the investor values them. In terms of the RRREI investor's assumptions regarding investment outcome, these properties are under-priced in terms of risk and return. Based on the Capm premise of a trade-off between risk and expected return, the RRREI investor's strategy should be that of continuously seeking out under-priced assets that lie above the SML.

In summary, there is no established body of theory that ties RRREI property into capital market (finance) theory, which hypothesises that return is a function of risk. In the absence of a central market, RRREI tends to be deal-driven, with the emphasis on the prudent selection of specific properties. RRREI portfolios tend to be small and not well diversified, limiting the applicability of portfolio theorems. The localised specific risk element of RRREI investment is significant. But the capital asset pricing model should at least be followed in principle in undertaking RRREI investments. To ensure continuing success in building investor wealth in RRREI, the investor needs to:

- Have sufficient understanding of capital market theory that he can develop and apply the concepts of risk and return in a theoretically valid RRREI model.
- Be well informed on the RRREI market in the locality in which he is investing, as well as having an in-depth awareness of the overall RRREI market
- Seek to apply entrepreneurial skill, where feasible, to enhance the value of the RRREI
- Develop his forecasting skill, so that he acquire RRREI property which offers the expectation of yielding abnormal returns.

Eight: Future Research

For the RRREI market selected, there is a need to build a historical data base of property prices and rentals by locality, so that locational yields can be compared with the aggregate market yield. This will enable the construction of an RRREI index. Previous research by the author on the Melbourne RRREI market, reported to the 2001 PRRES conference, showed there is sufficient difference between houses and flats (given that houses are largely for owner-occupancy and flats for tenant rental) that separate indices are required for each. This will provide the model input for the calculation of systematic risk.

Hedonic analysis - determining the price of an RRREI from locational, physical and qualitative attributes of the individual RRREI (Abelson 1991, Hopkins 2001) - can in turn be drawn on to explain a major portion of specific risk.

Beyond this, the RRREI investor will require to draw on his property specific knowledge to enhance the specific risk variable of the capm-adjusted model.

There is likely to remain an error factor, e , among the independent variables, as the competitively imperfect nature of the RRREI market renders it unlikely that a model can fully explain the variations in actual prices:

$$E(R_{RRREIj}) = R_f + b_{RRREIj} [E(R_{S_m}) - R_f] + R_{URREIj} + e$$

The above capm-adjusted RRREI pricing model will next be tested against Melbourne flats and houses prices to determine its validity.

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