PROPERTY PERFORMANCE MEASUREMENT

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Abstract

In its traditional and generally accepted sense, investors are more keen on the proper management of their property investments This is because property investment generate positive or negative returnees. This paper attempts to discuss the usefulness of the principal measures are produced. The shortcoming of the available of property performance measurement will also be considered.

1.0 INTRODUCTION

Property investment market has grown substantially over the past few years. As the proportion of investment funds invested in property increased, property investors became very keen on the proper management of their property investments. For this reason, property performance measurement has a very important role to play as an analytical tool, to assess the performance of property investments.

There is no standard definition of property performance measurement. According to Hall, performance measurement is a mathematical means of assessing the effectiveness of an investment decision. This definition however, does not include the word property because it is not until recently that performance of direct property investment.

In property portfolio performance measurement as in other investment media, it is the performance of the investment fund or fund manager which should be the subject of examination. Individual property performance measurement, on the other hand, serves the more specific purpose of aiding decision to sell or retain an investment.

2.0 THE USEFULNESS OF PROPERTY PERFORMANCE MEASUREMENT

The primary purpose of property performance measurement (PPM) is to evaluate the achievement of the property investor in his investment by quantifying previous performance against some set of targets. This is assist the investor to identify whether the targets set for his investment are being attained or whether the progress of his investment in moving towards meeting those targets. It also shows whether previous result or performance have been above or below average performance.

The technique also enables the individual property or the property portfolio to be compared with other investments media such as gilts and equities. Judgements can be made as to wheather property was a satisfactory investment form and this contributed a fair return to the overall portfolio.

Comparison of performance can also be made between different property sectors. This may help decisions to be made as to the proper balance of different sectors in the property portfolio. In comparing the performance of one fund with the other, it would permit the trustees or controlling body to judge the effectiveness of the decisions taken by their investment managers and also assist the investment managers to appreciate the underlying reasons for their under or over performance against other funds, that is, the investors should be able to identify those critical factors that have contributes to the returns achieved in the past

The information derived from PPM is useful in making decisions concerned with the acquisition of potential investments and the development or redevelopment or disposal of existing investments. Decision for increasing the sector or locational spread of a portfolio can be properly made with such information. This can also help to reallocate funds away from competing investments, for example equities and bond.

PPM is useful for reporting purposes. It provides an analysis giving an overan picture of how property values are spread between different sectors and locations. This kind of information in important in determining future investment strategy. It provides information upon which decision on investment and management can be based in order to plan for action to maintain or improve the investment performance.

Finally, PPM is important in terms of meximising portfolio returns. The relationship between the performance arising from the sectors or individual properties within the portfolio and the overal return of the portfolio will largely depend on the proportion which each investment or sector bears to the whole. Clearly the maximum return from a portfolio will be achieved only by maximisingg return from the individual investment. Since, PPM can be used to measure the totality of return following from the return measurement, it indicates how retrurns can be maximised by identifying the source of the performance and its strength relative to the overall portfolio return.

3.0 MEASURES FOR MEASURING PROPERTY PERFORMANCE

There are various measures available for measuring property performance, such as income yield on cost, income yield on value, rental growth and so on. For the purpose of this article, discussion will be based on three principal methods of measuremant namely, time weighted rate of return (TWRR), money weighted rate of return (MWRR) and internal rate of return (IRR).

3.1 Time Weighted Rated Of Return (TWRR)

According to Hall, TWRR assesses performance by measuring in a single calculation, the amount of income and capital appreciation generated by an investment or portfolio over a given period. This series of return is for the sub periods, as it has to be calculated each time a new investment is added to the portfolio. Therefore, for any given period, the return is :

$$\frac{\text{Increase in value} + \text{income}}{\text{Capital value at commencement}} \quad \text{x} \quad \text{percentage} \tag{1}$$

TWRR can be produced as follows :

Assumptions :

1)   Value at start of 1st period   = RM100,000

Value at the end of 1st period   = RM110,000

Value at the end of 2nd period   = RM115,000

Value at the end of 3rd period   = RM120,000

2)   Income in 1st period   = RM2,000

        Income in 2nd period   = RM3,000

        Income in 3rd period   = RM3,000

3)   TWRR is based on annual basis.

$$TWRR = \frac{(V1 - VO) + 1}{V0} \tag{2}$$

$V1$ = capital value in period 1
$V0$ = capital value at commencement
1 = income
$V1 - V0$ = increase in value

1st period $TWRR = \frac{(RM110,000 - RM100,000) + RM2,000}{RM100,000} = 12\%$

2nd period $TWRR = \frac{(RM115,000 - RM110,000) + RM2,00}{RM110,000} = 6.36\%$

3rd period $TWRR = \frac{(RM120,000 - RM115,000) + RM3,000}{RM115,000} = 6.96\%$

TWRR for the whole period   = (1.12)(1.0636)(1.0696)
                                         = 1.274

TWRR = 27.4%

In calculating the TWRR, the whole period of measurement is split into number of shorter periods equally. In case of property asset in the portfolio, the calculation remains the same. The sub-period can be a quarterly or annual basis, however in practice quarterly basis is doubtful, since valuation used to be carried out at the end of the year. In measuring the TWRR for an entire or portfolio, the income and capital value for individual properties are aggregated before the calculation is carried out.

TWRR measures the performance of an asset as an isolated entity and it is not concerned with how much money was invested at a particular time. Thus, in seeking to eliminate the distorting effect of new money, the market value of the asset will be determined each time there is a new cash flow.

4.0 MONEY WEIGHTED RATE OF RETURN (MWRR)
The calculation of MWRR takes explicit account of both the magnitude and timing of cash flows. This is to say that it does take into account the effect of new money as well as the time in which injections take place. MWRR is a measures of rate of return on the investment over a total period. The measure does not take into account the fluctuations in the capital value or market value of an investment within the period of measurement. It only acknowledges the market value at the commencement and at the end of the period.

According to Newell, (1988) the formula for MWRR is :

$$MWRR = \frac{P + I}{M_0 = 0.5C} - \frac{Mn - Mo - C}{M_0 = 0.5C} \qquad (3)$$

Where,

Mo = market value of fund at Atari of period

Mn = market value of fund at end of period

C = total new money received through period

P = realized and unrealized capital profits

I = gross income received

Newell (1988) assumed that new money will be distributed symmetrically throughout the period. That is why the weighting of new capital is placed at 0.5. The reason is that if the cash injection take place unevenly throughout the period, the formulation can be improved by weighting each injection according to the proportion of time they have contributed to the investment during the period and the this is in line with Han's formula.

According to Hall, however, the formula of MWRR is given by:

$$MWRR = \frac{Mn + I - C - Mo}{Mo + (C \times t)} \qquad (4)$$

Where,

Mn = fund value
Mo = start value
I = income
C = money added
t = proportion of time for which C was invested

In Hall formulation of M, money added is weighted corresponding time proportion. The incomes are summed together with capital gains throughout the period and new money injections are assumed not to be affected by such distribution. Besides, the incomes are treated as of equall value regardless of which sub period the fall into.

Calculation of MWRR is based on Hall's formula. Consider the assumptions in figure one, the MWRR is :

$$MWRR = \frac{Mn + I - C - Mo}{Mo + (C \times t)} \qquad (5)$$

$$= \frac{RM120,000 + RM7,000^* - 0 - RM100,000}{RM100,000 + 0}$$

$$= 27\% \qquad \text{* total income}$$

Suppose new money say (RM50,000) is invested at the beginning of 2nd period then C will be RM50,000 and t is 0. Since in above case no money is injected both C and t equal to zero.

5.0 INTERNET RATE OF RETURN (IRR)

IRR is defined as the rate of discount which reduces the NPV (net present value) of a series of cash flows to zero. This rate of return measure accurately reflects timing of all cash flows whether positive or negative, over the period and automatically accounts for the compounding effects of time. The formula is as follows:

$$NPV = -I + \frac{C1}{(1+d)} + \frac{C2}{(1+d)} + \frac{C3}{(1+d)} + ... \frac{(Cn+R)}{(1+d)} \tag{6}$$

where,

NPV	=	Net Present Value
I	–	Total purchase costs of an investment
C	=	annual cash returns in period 1,2, ... n
R	=	net realised value of investment at end of period
D	=	discount rate

IRR also can be easily calculated using financial calculator or computer. The IRR which is also known as Discounted Cash Flow rate is the most widely used method of measuring property performance. As similar to MWRR, IRR fully reflects the results of investment timing. The IRR can be produced as follows.

Consider the assumptions in Section 3.1 (TWRR)

Period		Cash Flow	
1st	beginning	-100,000	
	end	+2,000 + 110,000	IRR = 12%
2nd	beginning	-110,000	
	end	+3,000 + 115,000	IRR = 6.36%
3rd	beginning	-115,000	
	end	+3,000 + 120,000	IRR = 6.96%

IRR for 1st to 3rd period = (1.12) (1.0636) (1.0696) = 1.274 (equivalent 27.4%)

For the Financial Management Rate of Return (FMRR), the following calculation shows that all interim sub-period positive cash flows re assumed to be reinvested at a realistic, safe rate of return and subsequently used either to finance future sub-period cash outlays or where any surplus mount up to accumulate towards the end-period asset value.

Assumptions (A):

1)   A three year project with cashflow as follows:

Year	0	1	2	3
Cash Flow	-10,000	5,000	-2,000	12,000

IRR = 18.53%

2)   For FMRR – reinvestment rate is assumed to be 10.0%

Year	Cash Flow
0	-10,000
1	5,000
2	-2,000 + 5,500 (*1) = 3,500
3	12,000 + 3,850 (*2) = 15,850

FMRR = 16.6%

(*1) 5,500 = (5,000 X1.1)

(*2) 3850 = (3,500 X 1.1)

Assumption B:

1)   A three year project with cashflow as follows:

Year	0	1	2	3
Cash Flow	-10,000	5,000	-7,000	20,000

IRR – 23.86%

2)   For FMRR – reinvestment rate is assumed to be 10.00%

Year	Cash Flow
0	-10,000
1	5,000
2	–7,000 + 5,500 (*1) = -1,500
3	20,000

FMRR = 22.13%

-978 (*2) = - 10,978

(*1) 5,500 = (5,000 X 1.1)

(*2) 978 = (15,00 X 1)

91 + 23.86%)

The above calculation shows that where insufficient funds have accumulated forward to finance any sub-period cash flows, the shortfall is discounted back at a realistic opportunity cost rate to the start period, thus removing the negative cash flow from the sub-period and inserting it as a (discounted) cash outflow at the start period.

6.0 THE SHORTCOMONGS OF THE AVAILABLE SYSTEM OF PROPERTY PERFORMANCE MEASUREMENT

General

Problem of PPM are subjected to the imperfection of the property market. Lack of information, confidentiality of data, and complication of transaction procedure, are an contributed to the problem of carrying out an analysis on property. This leads to the problem is the unique characteristics of each individual property. This leads to the problem of selecting sample, which could represent the whole portfolio. If the sample is bias that, the performance measurement that being carried out is not fully reflected the whole portfolio.

Since property transaction does not take place frequently, measurement of property performance has to be made based on valuation. It has been argued that valuation is only an estimation of current market value based on an opinion of value by the value therefore not reflects that exact or actual market value. Therefore accurate measurement of property performance cannot be obtained easily.

TWRR

Since the calculation of TWRR is splited foe each sub-period, it will not be convenient particularly if a buyer performance period is required, that is, it may not be appropriate to use the TWRR methods for longer period assessment.

In practice valuation used to be carried out on annual basis, whereas rents are usually received as quarterly or monthly. Thus, quarterly valuations need to be produced before TWRR can be calculated.

Another problem of TWRR is associated with its characteristics of eliminating the effect of new money. There are cases in which this elimination is inappropriate, for example, where a property had major additional investments such as extensive renovation and refurbishment made or where some interest in the property have been sold. The application of TWRR in such cases may result in a distorted picture of the property actual performance relative to the total amount of financial resources invested in it. Therefore in this case, TWRR fails to show the actual performance of the property.

MWRR

This method of property performance measurement fails to account accurately for the compound interest nature of financial returns. It is not as satisfactory as the IRR as it is merely on approximation. Unlike the MWRR, the IRR will measure the precise return.

As mentioned earlier, the TWRR seeks to eliminate the effect of new money, so that comparisons can be made between two or more individual properties or property portfolio performance, although various net cash inflows had occurred at each sub-period. But, this is not the ease of MWRR, so different time on the injection of new money will give different MWRR. In fact, eliminating the effect of new money itself is an important subject. Without it, it would not be clear whether the overall return was the sole responsibility of the investment manager, or whether it was affected by the timing of the new money over which he (the investor) has no control.

IRR

While it reflects timing of cash flows accurately, IRR is very sensitive to the timing and amount of cash flows. For a complex cash flows and performance is required for longer periods, calculation of IRR can only be carried out on a computer.

Rental Growth
It provides no meaningful assessment of past performance. The figures do not reflect either actual income received or actual movements in capital value.

Capital Appreciation
It measures only part of the performance of an investment. It ignores the income derived from that investment which may be a critical factor in the investment overall performance. The accuracy of performance depends on the accuracy of valuation.

Income Appreciation
It ignores changes in the capital value of the underlying assets during measurement period. It measures only part of the total performance. The measurement is limited to the movement between income at two points in time and does not relate this to either cost or value.

7.0 CONCLUSION

The performance of any type of investment, will be the major consideration to investors, thus enable them to plan whether to invest further or withdraw from their investment. Some investment such as equities, gift and so on, their performance can be easily identified and monitored. However, this is not the case with property investment. Furthermore, PPM is a new system, which was introduced only recently, that is, at a time of rapid growth in property investment

Several techniques have been developed to measure the performance of property investment, such as TWRR, MWRR and IRR. Each of these techniques has their own merits and elements. All of these techniques have emphasized the rate of return as their key indicator. Eventhough, there is no perfect method available, none the less above method had provided useful information to investor in property sector.

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