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# More than Interest Expected Rate of Return

By Wayne E. Etter

**W**hen selecting the best investment from competing alternatives having similar risk, an investor should prefer the one having the largest expected rate of return. Because the expected rate of return may be calculated in different ways, it is important to know how it was calculated when comparing alternatives. For direct comparison, each expected rate of return should be calculated in the same way.

What is a satisfactory measure of the expected rate of return? Consider, for example, the consequences of placing \$1,000 on deposit with a savings institution that promises annual interest of 6 percent compounded quarterly.

		<u>Balance</u>
Initial deposit	\$1,000.00	\$1,000.00
First quarter's interest	15.00	1,015.00
Second quarter's interest	15.23	1,030.23
Third quarter's interest	15.45	1,045.68
Fourth quarter's interest	15.68	1,061.36

If, at the end of the year, the depositor receives \$61.36 interest, has the depositor received a 6 percent return, compounded quarterly? Yes; however, if the investor received the \$61.36 interest but could not recover the initial \$1,000 deposit because the savings institution failed, what is the return? Although highly unlikely, under these circumstances the depositor would not receive a 6 percent return—in fact, the return is negative.

An investment's rate of return is a combination of *the return on* and *the return of* the investment. This *Instructor's Notebook* explains the principal rate of return measures used by real estate investors.

## Discounted Measures

An investor purchases a property for \$100,000 with the expectation of receiving \$10,000 from operations at the end of the first year, \$15,000 at the end of the second year and \$20,000 plus \$120,000 from the property's resale after three years' operation. The expected internal rate of return (IRR) on the \$100,000 investment is 19.9 percent. As the following illustration reveals, these cash benefits yield a 19.9 percent annual return on the funds invested and provide for the recovery of the initial investment.

<u>Year</u>	<u>Cash benefit</u>	<u>Return on investment</u>	<u>Return of investment</u>	<u>Invested funds</u>
0	(\$100,000)		\$100,000	
1	10,000	\$19,900	(\$9,900)	109,900
2	15,000	21,870	(6,870)	116,770
3	140,000	23,237	116,763	(7)*

\*Difference from rounding

Thus, the IRR, a discounted measure of the rate of return, is composed of both the return on and the return of the investment; all relevant cash flows during the planned holding period are taken into account. Because much of the return results from the property's appreciation that is recovered at resale, the annual cash benefits at the end of the first and second years are inadequate to provide a 19.9 percent return on the invested balance in those years. The difference between the required cash benefit and that actually received each year is added to the initial investment to be recovered from the resale at the end of the third year. Depending on the property's resale for the expected IRR is typical for most income property investments.

An income property's expected IRR for the holding period can be calculated by using the estimated

- annual net operating income (NOI) and the net resale price or the
- annual before-tax cash flow and the before-tax cash flow from resale or the
- annual after-tax cash flow and the after-tax cash flow from resale.

When the expected IRR is estimated using NOI, the return is calculated on the property's total cost; when either before-tax or after-tax cash flow is used, the estimated rate of return is calculated on the equity investment if mortgage financing is used.



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Next consider a ten-year, 10 percent, \$100,000 mortgage loan. The lender's expected IRR on the \$100,000 loan is 10 percent if the borrower receives the full amount of the loan from the lender. (If no points, fees or other charges are deducted by the lender, the mortgage interest rate equals the annual percentage rate [APR] and the IRR). As shown in the illustration, the level annual payment is sufficient for the lender to

- receive an annual return on the unpaid mortgage balance equal to the lending rate and
- recover the principal amount of the loan during the repayment period.

Year	Annual Payment	Annual Interest	Principal Payment	Unpaid Mortgage Balance
0				\$100,000.00
1	\$16,274.54	\$10,000.00	\$6,274.54	93,725.46
2	16,274.54	9,372.55	6,901.99	86,823.47
3	16,274.54	8,682.35	7,592.19	79,231.27
4	16,274.54	7,923.13	8,351.41	70,879.86
5	16,274.54	7,087.99	9,186.55	61,693.31
6	16,274.54	6,169.33	10,105.21	51,588.10
7	16,274.54	5,158.81	11,115.73	40,472.37
8	16,274.54	4,047.24	12,227.30	28,245.06
9	16,274.54	2,824.51	13,450.03	14,795.03
10	16,274.54	1,479.50	14,795.04	(0.01)

Other business investments and bonds can be similarly illustrated. The estimated IRR on income properties and other business investments, therefore, is directly comparable with bond and mortgage yields. Bonds and mortgages, however, are contracts to pay specified amounts at particular times. Income properties and other business investments involve estimated cash flows from future operations, not contractual obligations to pay. Accordingly, some investors are wary of using the IRR and prefer nondiscounted measures.

### Nondiscounted Measures

**N**ondiscounted measures of the rate of return are used widely and provide excellent information when they are used properly. These measures express the relationship between a single year's cash benefit (some investors may substitute an annual average for two years or more) and the property's cost or the equity investment. The principal nondiscounted measures include the:

- overall capitalization rate or the free and clear rate of return (net operating income/property's total cost)
- before-tax, cash-on-cash return or equity dividend rate (before-tax cash flow/initial equity)

- after-tax, cash-on-cash return (after-tax cash flow/initial equity)

These rate of return measures indicate the estimated percentage of the initial investment or total cost to be received in a particular or an average year. They do not consider other year's cash benefits from operations or the cash benefits from resale expected at the end of the holding period. Thus, they measure only the current return on investment; for this reason, nondiscounted measures are best used when a stable cash flow is expected during the holding period.

Investors who rely on nondiscounted measures consider the relationship between a property's annual cash benefits and the property's cost to determine the sufficiency of the property's long-run rate of return, given the risk and similar property investments. By studying the property's market area and other relevant factors in the same manner as investors who use discounted measures, they determine the property's prospects for continued cash flow and appreciation. Unlike investors who use the discounted measures, however, these opinions are not quantified and included in the rate of return calculation.

Although these rate of return measures may provide good information for a skilled user, they cannot be compared directly with the IRR, with bond yields or with mortgage yields because of the differences in their calculation.

### Using Multipliers to Value Property

Rather than requiring a specific rate of return, an investor might be willing to pay \$10 for every \$1 a property generates in annual NOI. If so, the investor would be using the NOI multiplier to value the property. The gross income multiplier and the net income multiplier also are used by investors to estimate value. Multipliers are not rates of return; they are used to express the relationship between a property's income stream and its value.

The market capitalization rate is the reciprocal of the NOI multiplier. Although it is expressed as a percent and may appear to be the same as the overall capitalization rate or the free and clear return, it is not a rate of return. Like the NOI multiplier, the market capitalization rate expresses the relationship between a property's income stream and its value and is used to convert an income stream into value. Standards for using multipliers and the market capitalization rate are derived from the market by examining comparable properties.

Both discounted and nondiscounted measures are used to estimate a real estate investment's expected rate of return. Discounted measures include all relevant cash flows for the investment's planned holding period; accordingly, they are particularly

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useful when cash flow variations are expected during the property's planned holding period. Nondiscounted measures focus on a single year's cash flow and are most suitable when stable cash flows are during its planned holding period. Either method, when used proficiently, can serve as a yardstick for comparing

proposed investments. Care must be taken, however, when comparing expected returns if they were not calculated in the same way. ☒

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