

# FINANCIAL ANALYSIS

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## REAL ESTATE METRICS

Cheat sheet

### BREAK-EVEN RATIO (BER)

You should know about the break-even ratio (BER) because it is a benchmark often used by lenders when underwriting commercial mortgages. Its purpose is to estimate how vulnerable a property is to defaulting on its debt should rental income decline. There is an old saying that when your outgo exceeds your income, your upkeep will be your downfall. Usually lenders look for a BER of 85% or less. If occupancy rates in a particular market are exceptionally low and your revenue is therefore a bit less certain, lenders may require a BER that is several percentage points less than the average occupancy rate.

### CAP RATE (OR CAPITALIZATION RATE)

Cap rate (or Capitalization rate) is the rate at which you discount future income to determine its present value. In practice, you will typically use cap rate to express the relationship between a property's value and its net operating income (NOI) for the current or coming year. You can use the cap rate formula to serve one of two most typical purposes: Obviously, you can use it to calculate a property's cap rate. You will want to do so when you know its NOI and what is presumably its value - probably a seller's asking price. What you are really doing in this situation is finding out if the property exhibits a cap rate that is in line with other similar properties in the area if you purchase it at the asking price. If you know what is an appropriate cap rate for this type of property in this area, then you can transpose the formula to calculate a reasonable estimate of value. In other words, forget about the seller's asking price; given the NOI and the prevailing cap rate, what should it be worth?

### CASH FLOW

To calculate a property's cash flow, you simply take all of the inflows and subtract all of the cash outflows during the relevant time period. For the calculation of cash flow, it is irrelevant if the cash item is considered a taxable income or not; and whether cash outflows are tax deductible. An example would be the treatment of mortgage payments. For cash flow purposes the entire mortgage payment is counted while for tax purposes only the interest portion is actually deductible. Further, cash flow does not include depreciation expenses as they are not actual cash expenses. When you speak about cash flow you usually mean cash flow before taxes (CFBT) which does not take into account the property's impact on the owner's income tax liability. Cash flow after taxes (CFAT) is the CFBT less any tax liability that arises from the operation of the property. You can think of cash flow as the equivalent of the property's checkbook. It accounts for all of the money that flows in and all that flows out. Inflows can include rent, loan proceeds, and interest on bank accounts. Outflows can include debt payments, operating expenses, and capital additions.

### CASH ON CASH

The cash-on-cash is the ratio between the property's cash flow in a particular year (usually before taxes) and the amount of the initial capital investments. It is expressed as a percentage. Although you can calculate the cash-on-cash return based on projections for any future year, investors tend to look at this measurement as it relates to the expected cash flow in the first year of ownership. Since this calculation doesn't take into account any time value of money, it probably does make sense to measure the cash flow that occurs soonest after you make the investment. The cash-on-cash return is not a particularly powerful tool, but it has always been popular as a quick read on an income property, probably because it allows an easy comparison to other types of investments. For example, you can say - This property will give me a 6% cash return on my investment in the first year. If I invest in a mutual fund instead, I'll get only 3%. You need to know about cash-on-cash return because sooner or later someone offering you a property is going to quote this statistic as if you should be impressed. Cash flow is a good thing, and if the property actually has it, fine. Just don't forget the other, better ways of taking the pulse of an income-property investment.

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### GROSS OPERATING INCOME (GOI)

The gross operating income (GOI) equals the property's annual gross scheduled income less vacancy and credit loss. GOI is not the property's potential income, but represents instead the actual income that you expect to collect every year. To understand this real estate metric, it is necessary to first learn about gross scheduled income and vacancy and credit loss. Then you should implicitly understand GOI as it is simply the difference between those two amounts. We won't belabor the term here, but just provide a quick review of the calculations.

### GROSS RENT MULTIPLIER (GRM)

The gross rent multiplier (GRM) is a simple method by which you can estimate the market value of an income property. The GRM is a market-driven measurement. You presume that, if buyers have recently been paying X times gross income for properties in a certain location, the the market value of a property you are considering for purchase should work out to that same "X times" its gross income. The advantage of the GRM is that it is so easy to calculate. You don't need a computer; you probably don't even need the back of an envelope, but ether can do the math in your head. The disadvantage is that nothing so basic is likely to be extraordinarily accurate or reliable. GRM ignores the time value of money and it makes no differentiation between properties where tenants may pay all, some, or none of the operating expenses. This measurement can serve as a useful precursors to a serious property analysis, however. For example, if you see that a property is offered for sale at a GRM significantly higher than chat is typical in the market, you can expect that a detailed analysis is probably not going to make this investment look more appealing, except at a substantially lower price. You can then decide if you want to spend the time doing research and making projections in a case where the GRM warns you that the property is probably greatly overpriced. Because the GRM is market-driven, there is no universally correct number - but there are reasonable limits. Realistically, you would probably be surprised (and suspicious) to see a GREM below 4 and on the other hand to see one higher than 10.

### DISCOUNTED CASH FLOW OR (PV)

The Gross Scheduled Income (or sometimes called potential gross income) is the annual income of a property if all rentable space were in fact rented and all rent collected. In short, it is the maximum potential income without regard to any possible vacancy or credit losses. What, on the surface, should be an unremarkable calculation, does provoke some debate among appraisers and analysts. Do you count occupied units at their actual rents or at their potential rents (which should be higher or even lower than actual if the market has changed)? Do you figure the value of vacant units at market rent, at a rental rate comparable to your own rented units, or at that will minimize vacancy? These questions are interesting, but ultimately academic. Gross scheduled income is an estimate. In reality you should be reminded that you need to subtract out a vacancy and credit loss in order to convert your potential rent income into your actual rent income, the gross operating income (GOI). The GOI is a real, it's what you really collect so whatever approach you use to state the gross scheduled income, you'll then use the vacancy and credit loss to adjust it to actual amount collected. Here at Invst Australia, we have a tendency to stick as close to reality as possible – it's simpler, it's practical, and it's easier to defend when showing your members to most sellers, buyers, and lenders. Describing the property's „scheduled“ rent in terms of the actual rent to occupied units and the potential rent for vacant units makes sense for your purposes as an investor.

### INTERNAL RATE OF RETURN (IRR)

Internal rate of return (IRR) is probably the rate-of-return measurement most widely used by real estate professionals. It allows you to take into account both the timing and the magnitude of cash flows produced by your income-property investment. It's not a silver bullet; no approach to investment decision-making is. And by no means should you use it to the exclusion of other measurements discussed in Zilculator's LEARN section. Those others run a range from the simplistic to sophisticated, but virtually all of them can help fill in the whole picture. A property's operating expense ratios, for example, may not give you enough information by themselves to guide you to a purchase decision, but they still may tell you something you absolutely need to know.

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### IRR

If you read the section about Discounted Cash Flow or Net Present Value, then you know that you can apply a particular discount rate - your required rate of return - to a series of future cash flows to determine what that income stream is worth today. If you rearrange that process, you can re-characterize the present value (PV) as your known present cost (i.e., the amount of cash you have to invest in order to make this purchase) and treat the discount rate (the rate of return) as your unknown. In discounted cash flow you estimated the future cash flows and the proper discount rate and then used that information to calculate the PV of your cash investment. Now, if you forecast the future cash flows and the PV (i.e., the amount) of your actual cash investment, you can calculate the discount rate, which you call the internal rate of return.

### NET OPERATING INCOME (NOI)

Net operating income (NOI) is a property's income after being reduced by vacancy and credit loss and all operating expenses. When this is calculated, we will use the current sum of operating expenses and subtract it from the property's total gross operating income. Net operating income serves as the representation of the property's profitability before considerations of taxes or financing. Perhaps it is easier for readers to think of this in terms of the number of dollars that the property is going to be able to return in a given year if the property is purchased for all cash and if there is no consideration of income taxes or depreciation. Net operating income is going to be one of the most important calculations that you will ever make when it comes to any real estate investment. Net operating income remains at the center of almost every discussion that a landlord will participate in when it comes to the future of their property. It also represents an essential component of many further calculations you will find in this Cheat Sheet. In order to calculate NOI correctly, you must be clear about what is and what is not an operating expense. An operating expense is one that is necessary for the maintenance of a piece of real estate property and ensures its continued ability to produce income. Loan payments, depreciation, and capital expenditures are not considered operating expenses.

### NET PRESENT VALUE (NPV)

If you read our earlier section of present value and discounted cash flow, then you need to take only a small step to understand net present value (NPV). Recall that you performed a discounted cash flow analysis to find the present worth of all of the property's future cash flows at a given discount rate. Let's say that you require a 10.5 % rate of return on your investment. When you discount all of the expected future cash flows back at that rate, the PV that you find as your answer is the amount of cash you need to invest at 10.5 % to achieve those future cash flows - with exactly the same timing and amount that you predicted. The discount cash flow analysis tells you what the future cash flows are worth at a given rate of return, but that isn't necessarily how much you are going to pay for them. This is where NPV comes in. NPV is the difference between the PV of all future cash flows and the amount of cash you invest to purchase those cash flows. That's why it's called "net" present value. If you invest exactly what the future cash flows are worth at a given discount rate (rate of return), then your investment is earning exactly that rate. If the PV of the cash flows is greater than the amount of your investment, you have a positive NPV, which is another way of saying that you're really doing better than the specified rate of return because you're getting more than you expected from your investment. If the PV of the cash flows is less than the amount of your investment, you have a negative NPV. That means that you're not doing as well as the specified rate of return.

### OPERATING EXPENSE RATIO

Operating expense ratio is the ratio of individual operating expenses or of total operating expenses to the gross operating income (GOI). Recall that the GOI is the revenue after vacancy and credit loss. Think of GOI not as the amount that you ought to collect, but rather the amount that you really collect. In that context, operating expense ratios tell you how the money you spend to operate the building relates to the money you receive. You can use a property's expense ratios to decide if the operation of a particular investment opportunity appears typical, based on your knowledge of other similar properties. These ratios can also alert you to possible problem areas, both in regard to how the property has been run and to how accurate are the seller's representations. It's important to look at the individual ratios of each operating expense and not just the ratio for total expenses. The total could appear entirely plausible while some of the individual items raise red flags.

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### PROFITABILITY INDEX (PI)

The profitability index (PI) is similar to the NPV (Net Present Value) method to measure the return on an investment. When calculating NPV, the purchase price is subtracted from the asset's present value (PV) of future cashflow. If the number is zero or a number is positive, you have exceeded or equaled the rate of return that is required (your discount rate). The profitability index instead calculates the ratio between the initial investment and the present value of future cashflow. If the initial investment and the present value of future cash flow are exactly equal, the index is 1.0. This means that with PI of 1.0 your investment achieves exactly the rate of return you aimed for; or simply that your internal rate of return (IRR) equals your discount rate set in the calculation of present value. If it is above 1.0, you have exceeded the rate of return goal. However, if your ratio is under 1.0, this means that you have not reached the goal and your internal rate of return is lower than your discount rate. From a glance, it is easy to think that the profitability index is the same as NPV as it also uses present value of future cashflows and the purchase price. However the profitability index makes it easier to compare properties that have a different purchase price. This is because the profitability index is a ratio, showing us each investments proportion for the dollar that is returned vs. the dollar invested initially.

### RETURN ON EQUITY (ROE)

There are two ways of approaching the topic of return on equity (ROE) as it applies to real estate investments. In each of them, "return" has the same meaning: cash flow after taxes (CFAT). What differs is the meaning of "equity". In the traditional method, the equity is your initial cash investment, this is then very similar to Cash-on-Cash return calculation, with the difference of Cash Flow before Taxes in the Cash-on-Cash return. In the alternative technique, it is you initial cash plus the additional equity that has built up due to ammortization of the mortgage and to increase in the value of the property. The ROE is expressed as a percentage and typically is calculated for the first year only, however it can tell some interesting information in the following years as well. Vacancy and credit loss is the potential rental income that is lost due to space that lies unoccupied or due to nonpayment of rent by tenants.