



# Real Estate Investment Rates and Valuations in Vietnam November 2008

Session 1

Presented by Colin Wood



CB RICHARD ELLIS

## Introduction

Purpose

- To understand various other methods available
- To understand the relationship between the various rates
- Offer some guidance on the selection of rates
- Need for transparency, and applying the rule of “Duty of Care”
- Commercial Property is a long term investment, requiring a long term view
- The accuracy of the rate makes for a more accurate valuation



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## Valuation Basics

Profession

A valuer is a **professional** who:

- executes feasibility studies and provide expert advice on property-related matters.
- provides impartial and motivated reports on the value of the asset.
- has a thorough knowledge and understanding of the interacting influences which create, maintain or diminish the value of property.
- does not invent or create value.
- determines the value of property for various purposes.
- is qualified to undertake valuations in all classes of properties.
- cannot change the market - they are merely the messengers.



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## Standard of Ethics

- Valuer must not engage in any corrupt or otherwise improper conduct.
- Valuer must carry out valuation work with diligence and competence and impartiality.
- Valuer is required to be objective, and to undertake them independently and without collusion.
- Valuer must not accept instructions to undertake valuations that are contingent upon a predetermined result.
- Valuer must protect the confidential nature of the valuer-client relationship.



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## Definition of Value

- In accordance with the International Valuation Standards Committee: Market Value is described as follows:
- ***“The estimated amount for which a property should be exchanged on the date of valuation between a willing buyer and a willing seller in an arm’s-length transaction after proper marketing, wherein the parties had each acted knowledgeably, prudently, and without compulsion.”***
- It must be stressed that the ‘willing buyer, willing seller’ situation **must be assumed.**



## Difference between commercial and residential

- Commercial property is regarded as an investment instrument.
- Residential property investment has boomed over the last few years worldwide.
- There are critical differences.
- Residential tenants typically commit to relatively short leases, while commercial is longer
- Commercial tenants are normally liable for repairs
- The returns on residential property come mainly from increases in capital value, whereas a large part of the commercial property return is the income.
- Commercial properties usually cost significantly more.



## What Commercial property offers:

### ▪ A secure and stable cash flow

On average, commercial property leases provide a contracted income stream of 7.1 years, based on the period to the expiry of the lease, but ignoring break options.

The length of new leases has been shortening over the last 10 years. Nevertheless, those granted in 2005/6 were, on average, over 10 years for retail property, more than seven years for offices and slightly less than seven years for industrials.

As noted earlier, a significant part of the return from commercial property comes as income. In a low-inflation environment, this relatively high yield is one of commercial property’s attractions.



## What commercial property offers:

### ▪ Risk

It is not easy to classify the various products according to their level of risk. We can, however, make some general observations about risk and these are expanded in a later section on the subject.

First, an investment in a single building is likely to be more risky in general than investment in a portfolio of properties,

But the most important consideration is the impact of the investment on the client’s total portfolio.

A high net-worth individual with millions invested across four different geared property partnerships/unit trusts, representing 10% of his portfolio, may well have lower overall risk than an investor with 50% of his portfolio in one property partnership/unit trust.

Risk, as ever, is a function of individual circumstances as well as the characteristics of the asset.



## What commercial property offers:

- **When assessing the risk inherent in property, there are five points to consider:**
  - Credit worthiness of the tenant
  - Length of the lease
  - Investment horizon
  - Term of the loan
  - Assumed rental growth
- **Property is regarded as long term, and therefore HIGH RISK.**
  - High Risk = High Return
  - Low Risk = Low Return
  - Property is very illiquid.



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## What commercial property offers:

- **In the Income Approach, an income stream is projected based on:**
  - Historical audited financial income and expense statements, vacancy rates, rent rolls in terms of existing leases, and the potential to derive an income once a project is complete.
  - Value is derived by converting the actual or proposed net income/cash flow projections to present value using an applicable technique.
  - Care should be taken to justify and support projections of income and expenses.
  - Adjustments to income and expense data should be made.
  - All discount/capitalisation rates should be justified with reliable market data or market supported technical methodology.



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## What commercial property offers:

- **Beware of the 'Value Trap'** - Don't be fooled by judging stocks on price alone. Just because a former high-flying stock is selling for half-price doesn't mean it's a good value.
- **Know the True Value - Price is what you pay, value is what you get.** Cash flow is the real health of the business. As Warren Buffett says, "Intrinsic value is simply: The discounted value of the cash that can be taken out of a business during its remaining life."



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## What commercial property offers:

- **Don't Overpay for Growth** - It's not true that value stocks can't be growth stocks. Growth is a component of value. Value investors minimize risk by looking at the worst case first. They choose investments with a built-in margin of safety. That's why value stocks are the best way to follow Warren Buffett's famous rules:
  - *Rule No. 1: Never lose money. Rule No. 2: Never forget rule No. 1.*
- Remember: Cost is not Value.



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## Commercial Property types

- The three principal sectors of the commercial investment market are:
  - **Retail** (shopping centers, retail warehouses, standard shops, supermarkets and department stores)
  - **Offices** (standard offices and business parks)
  - **Industrial** (standard industrial estates and distribution warehousing, or logistics facilities).
- In addition, there are several smaller sectors such as leisure (leisure parks, restaurants, pubs and hotels), student accommodation and healthcare properties.



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## Method of Valuation and Process

- These properties are valued on the income approach and the various derivatives such as:
  - Direct Capitalisation (Cap)
  - Discounted Cash Flow (DCF)
- In order to understand and apply the process of Capitalisation and Discounting, a clear understanding of the following is required:
  - Inflation and Escalation Rates
  - Borrowers Equity and Debt
  - Mortgage Finance Rates
  - Property Cycle



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## Inflation and Escalation Rates

- **Inflation = Rental growth**
  - In an inflation environment, the purpose of contractual rental escalation rates is to obviate the need to renegotiate the contractual rental.
  - In a hyper-inflation environment, this could be monthly, or yearly
  - Instead, the periodic in-lease rental escalation is an attempt by the parties to forecast the growth path over the duration of the lease.
  - The market escalation rate on rentals is at any one time nothing but a forecast by the market of the probable growth rate of market rentals over the duration of the lease.
  - With the above as a background, it is, therefore, not surprising that many property practitioners blandly assume that the market rental growth rate over the duration of the lease will be equal to the market escalation rate at inception of the lease.



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## Inflation and Escalation Rates

- Quite often, market escalation rates are even compared with the inflation rate.
  - Escalating rentals (as per market escalation rates at the lease entry)
  - market rentals.
- In this article we differentiate between an *escalation* rate and *escalating* rentals (as in leases) and *growth* in market rentals.
- We use the American word *escalation* for contractual in-lease rental adjustments.
  - Put differently, market rentals do not *escalate*, but they *grow*. We urge delegates and valuer's similarly to make this distinction in order to prevent confusion, and take a long term view, ignoring short term fluctuations in the market, as has happened recently. Monitor Government prediction of forward rates



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## Escalation Rates

- Two examples are provided:
- One at a fair rental of \$45.00 per month escalating at 10% for 3 years discounted at 23%

ANALYSIS OF INVESTMENT DECISION					
DISCOUNT RATE 23 \$45.00 per m <sup>2</sup> per month for 3 years escalating at 10%					
YEAR	CASH RECEIPTS	CASH EXPENDITURES	NET CASH FLOW	NET PRESENT VALUE	DISCOUNT FACTOR
			TOTAL:	\$1,182.77	
1	\$540.00	\$0.00	\$540.00	\$439.02	0.813008
2	\$594.00	\$0.00	\$594.00	\$392.62	0.660982
3	\$653.40	\$0.00	\$653.40	\$351.13	0.537384

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## Escalation Rates

- An initial asking rental, of say \$60.00 with no escalation, discounted at 33%, bearing in mind that in property valuation, if the rental, is higher than market, a market related rental should be applied, or apply a higher cap or discount rate.

ANALYSIS OF INVESTMENT DECISION					
DISCOUNT RATE 33 \$60.00 per m <sup>2</sup> per month for 3 years escalating at 0%					
YEAR	CASH RECEIPTS	CASH EXPENDITURES	NET CASH FLOW	NET PRESENT VALUE	DISCOUNT FACTOR
			TOTAL:	\$1,254.43	
1	\$720.00	\$0.00	\$720.00	\$541.35	0.751880
2	\$720.00	\$0.00	\$720.00	\$407.03	0.565323
3	\$720.00	\$0.00	\$720.00	\$306.04	0.425055

- From the above it can be seen that the present value is approximately the same, obviously in the second case, the money now is preferred, but at the detriment of the property, where a higher exit cap rate would be applied because no escalation is evident.

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## Escalation Rates

- The downturn in market rentals will be a result of a cyclical oversupply of office, retail or industrial space.
- To conclude, the movement in market rentals, tell us that the market escalation rate is very slow in picking up a change in the direction of market rentals. Put differently, the escalation rate is not a good predictor of the future movement

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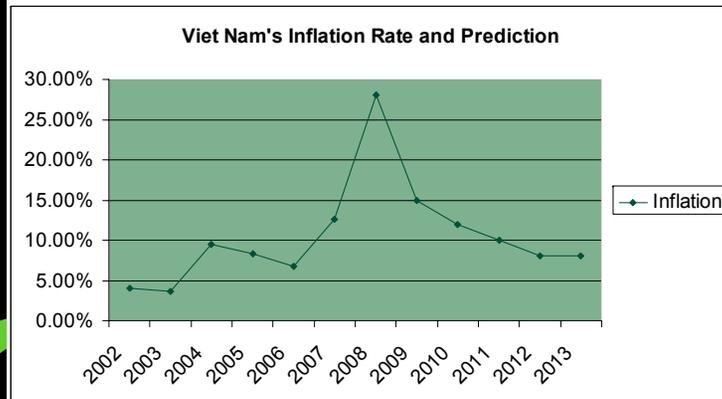
## Escalation Rates

- The value of any income producing property can be defined as the discounted value of its future income stream.
  - In equities, the income stream comes as dividends;
  - in property it is the rental income.
- The value of a property will reflect market expectations as to the growth of its rental income, just as equities mirror expected growth in dividend income. Changes in these expectations for rental growth will have a profound effect on the value of a property. If an investment is made expecting that rents will grow by a certain amount and that does not happen, then the returns from that property will inevitably be lower than anticipated.

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## Escalation Rates



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## Escalation Rates

- Rental growth can be affected by many factors: the global and national economy, interest rates, local trading conditions, relative scarcity of alternative space, construction costs, scarceness of suitable zoned and proclaimed land, as well as inflation expectations.
- Most leases concluded have an escalation clause.
- The expected future few years inflation target as set and reported by the State Bank of Vietnam (SBV) is 15%, then 12% followed by 10% and down to 8% for the following 2 years.
- This indicates an average of 10.49% over the next 5 years. We would thus recommend that new leases be concluded with an escalation rate ranging from 9 to 10.5%.

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## Borrowers Equity and Debt

- Any property acquisition has to be paid for, normally in cash. This cash can come from
  - a prospective buyers own funds (in which case there is a loss of interest) or
  - borrowed funds (in which case there is interest payable)

### Debt vs Equity Financing

- There are two types of financing: equity and debt financing.

When looking for money, you must consider your company's financial strength.

The more money owners have invested in their business, the easier it is to attract financing. If your firm has a high ratio of equity to debt, you should probably seek debt financing.

However, if your company has a high proportion of debt to equity, experts advise that you should increase your ownership capital (equity investment) for additional funds. That way you won't be over-leveraged to the point of jeopardizing your company's survival.

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## Borrowers Equity and Debt

### Equity

- Equity equals Ownership (Share Profits and Control)
- Most small or growth-stage businesses use limited equity.
- As with debt financing, additional equity often comes from non-professional investors such as friends, relatives, employees, customers, or industry colleagues.
- However, the most common source of professional equity funding comes from venture capitalists.
- Equity financing requires that you sell an ownership interest in the business in exchange for capital. The most basic hurdle to equity financing is finding investors who are willing to buy into your development; however, the amount of equity financing that you undertake may depend more upon your willingness to share management control than upon the investor appeal of the business. By selling equity interests in your business, you sacrifice some of your autonomy and management rights.

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## Borrowers Equity and Debt

The effect of selling a percentage of the ownership interest in your business may mean that your own investment will be short-term, unless you retain a majority interest in the business and control over future sale of the business.

Many small business operators are not necessarily interested in maintaining their business indefinitely, and personal motives for pursuing a small business will determine the value placed upon ownership.

The bottom line is whether one would rather operate a successful business for several years and then sell your interests for a fair profit, or be repeatedly frustrated in attempts at financing a business that cannot achieve its potential because of insufficient capital.



## Borrowers Equity and Debt

### Debt

- Debt: Money You Owe (Profits and Control are maintained)
- There are many sources for debt financing: banks, savings and loans, commercial finance companies. State and local governments have developed many programs in recent years to encourage the growth of small businesses in recognition of their positive effects on the economy.
- Debt financing refers to what we normally think of as a loan. A creditor agrees to lend money to a debtor in exchange for repayment, with accumulated interest, at some future date. The creditor does not obtain any ownership claim in the debtor's business, but as a mortgage loan would traditionally have secured an interest in the property.
- Interest on the loan is deductible, and the financing cost is a relatively fixed expense.
- The most important aspect here, is the ability to service



## Application for Investment or Finance

- Data and information to be provided by the client
- In order to be able to perform a financial assessment of a potential investment transaction, all prospective investors will request basic documents and information concerning the project
- A detailed description of the project
- The borrower's basic legal and business documents, including financials information that sheds light on the financial standing of the sponsors of the project (e.g. annual reports, references, assets and liability statement)



## Application for Investment or Finance

- A detailed engineering plan of and a time scheduling for the capital investment,
- Market analyses, financial plans and feasibility studies prepared by the client or external experts,
- Contracts concluded or to be concluded in connection with the project, and
- any other information linked to the project.
- Legal documentation, indicating status of ownership



## Table of Historic Rates

An in depth study and constant updating of the rates, graphs with the moving averages is required.

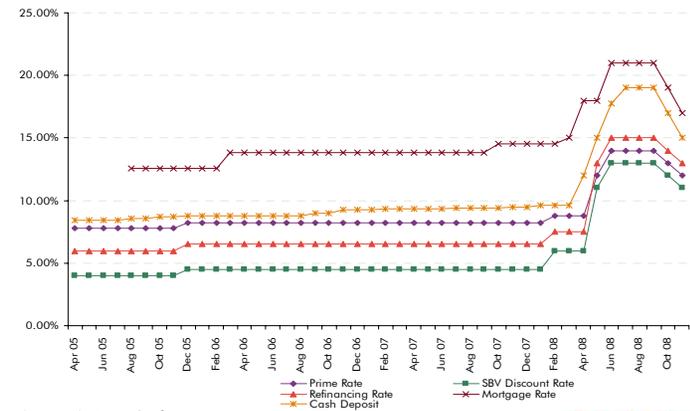
These records are to be maintained so that they can be referred back to, at a later stage.

It gives a clearer understanding of where inflation is going to, rising or falling mortgage lending rates and the availability of funding for new projects



## Mortgage Finance Rates

STATE BANK OF VIETNAM ANNUAL INTEREST RATES



Source: State Bank of Vietnam

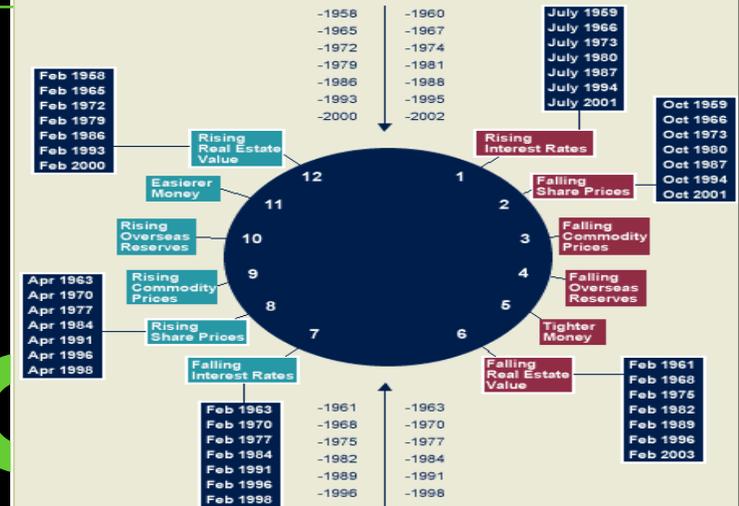


## Mortgage Finance Rates

Annual Interest Rates						
	Prime Rate	SBV Discount Rate	Refinancing Rate	Mortgage Rate	Cash Deposit	Long term bond rate
	Lãi suất cơ bản	Lãi suất chiết khấu của SBV	Lãi suất tái cấp vốn	Lãi suất cho vay mua nhà	Lãi suất tiết kiệm	Lãi suất trái phiếu chính phủ
Jan 07	8.25%	4.50%	6.50%	13.80%	9.30%	
Feb 07	8.25%	4.50%	6.50%	13.80%	9.36%	
Mar 07	8.25%	4.50%	6.50%	13.80%	9.36%	
Apr 07	8.25%	4.50%	6.50%	13.80%	9.36%	
May 07	8.25%	4.50%	6.50%	13.80%	9.36%	
Jun 07	8.25%	4.50%	6.50%	13.80%	9.36%	
Jul 07	8.25%	4.50%	6.50%	13.80%	9.40%	
Aug 07	8.25%	4.50%	6.50%	13.80%	9.40%	
Sep 07	8.25%	4.50%	6.50%	13.80%	9.40%	
Oct 07	8.25%	4.50%	6.50%	14.52%	9.40%	
Nov 07	8.25%	4.50%	6.50%	14.52%	9.48%	
Dec 07	8.25%	4.50%	6.50%	14.52%	9.48%	
Jan 08	8.25%	4.50%	6.50%	14.52%	9.60%	
Feb 08	8.75%	6.00%	7.50%	14.52%	9.60%	
Mar 08	8.75%	6.00%	7.50%	15.00%	9.60%	
Apr 08	8.75%	6.00%	7.50%	18.00%	12.00%	
May 08	12.00%	11.00%	13.00%	18.00%	15.00%	
Jun 08	14.00%	13.00%	15.00%	21.00%	17.80%	
Jul 08	14.00%	13.00%	15.00%	21.00%	19.00%	7.70%
Aug 08	14.00%	13.00%	15.00%	21.00%	19.00%	
Sep 08	14.00%	13.00%	15.00%	21.00%	19.00%	
Oct 08	13%	12%	14%	19%	17%	15.00%
Nov 08	12%	11%	13%	17%	15%	
Dec 08						

	l	m	n	p	q	c
Average Rate:	9.27%	6.14%	7.46%	14.85%	10.27%	9.70%
			11.73%	18.19%	15.93%	

## TOP OF THE BOOM



## DEPTH OF RECESSION

## Property Cycle

- For the past 150 years investment analysis has been producing forecasts on the world's financial health.
- No matter how much strategic thinking goes into their work, the old-fashioned investment clock continues to be a very interesting signpost on the investment cycle.
- The box at 2 o'clock is always a talking point. It records the stock-market corrections of the past 10 years, including the most memorable crash of October 1987 as well as more recently.
- The good news for property investors is the cycle of rising interest rates, falling share prices and falling commodity prices has historically generated movement into property, leading to interesting demands, values and returns.
- It remains to be seen what happens as the clock ticks on. But it's always good to reflect and by following the boxes you can draw your own conclusions on what lies ahead. We are currently moving around the bottom of the cycle, and hope the looming recession is short.



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## Real Estate Investment Rates and Valuations in Vietnam November 2008

### Session 2

Presented by Colin Wood



## VALUATION METHODS

### Direct Capitalisation

**A capitalisation rate** is the factor that converts the stabilised Net Operating Income (NOI) to a present value.

**The capitalisation rate** is the ratio of net income to value or sale price. (Stabilized refers to removing of expenses not related to the property and smoothing abnormal expenses, in line with other properties). This is by far the most common and preferred method.

- *For example, if a property sells for \$5 000 000, and has a stabilized NOI of \$500 000, the indicated capitalization rate is 10% (NOI / Sale Price = Capitalization Rate) ( $\$500\,000 / \$5\,000\,000 = 10\%$ ). Applying a similar cap rate to a building with a NOI of \$755 000 gives a value of \$7 555 000.*



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### Direct Capitalisation

- Real Estate capitalization rates are calculated before debt and depreciation expenses.
- Contrary to popular opinion, interest rates are only one of various factors that play a role in determining Capitalisation rates.
- Capitalisation rates – the rating of the physical property market – are determined over time by various factors in addition to interest rates, for example expected real-rental growth, and changes in investment demand.
- Capitalization rates and interest rates, therefore, are not highly correlated over time.



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## Direct Capitalisation

- Supply and demand and the cost of debt are two factors that affect cap rates in a market place as well.
- The cap rate is one of the primary determinates of pricing for investment property and there is a direct correlation between market capitalization rates and current available interest rates for debt on investment property.
- When interest rates are lower than cap rates, we end up in what we call a positive leverage market; the more you borrow the higher your return on investment will be.



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## Direct Capitalisation

- When interest rates are greater than Capitalisation rates, we are in what we call a negative leverage market scenario; the more you borrow against a property the lower your rate of return is on the investment.
- It is also important to understand that the primary advantages of real estate over other investment types are leverage and tax advantages.
- Most real estate investors want as high a **leverage** as much as possible as most of the advantages in owning real estate come with leverage.
- Any profit made, is expressed a return on the initial investment (ROI). Investors want as high a ROI as possible.
  - A \$1.00 return made for \$1.00 outlay represents a 100% ROI.
  - A \$10.00 return made for \$1.00 outlay represents a 1 000% ROI.
  - A \$100.00 return made for \$1.00 outlay represents a 10 000% ROI.
  - A \$ 1000.00 return made for \$1.00 outlay represents a 100 000% ROI.



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## Direct Capitalisation

- Just like in any other investment type, real estate is driven by supply and demand. Investors in real estate normally have a certain threshold of investment return they are willing to accept depending on the asset and the current market.
- As interest rates decline and the cost to borrow finances decreases, investors are willing to accept a lower rates of return on their cash because other investment vehicles offer lower returns.
- As interest rates decline, two market forces working to drive an increase in real estate prices:
  - (1) Cap rates decrease with interest rates and
  - (2) Investors are willing to accept a lower rate of return.
- Conversely, in a rising interest rate environment, the opposite is true. When there are more options for investors to achieve a greater rate of return and the cost of debt increases, cap rates increase and ultimately reduces the price an investor is willing to pay for a particular property.



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## Direct Capitalisation

- In conjunction with these effects, the market also plays an important role in CAP and interest rates. The higher market demand is in a particular market, the lower CAP rates tend to be.
- Lower cap rates have a positive affect on prices. Alternatively in a weaker market with lower demand, cap rates rise and values decrease.
- The object of property valuation is to provide a smooth valuation, one which increases with time in line with rental increase. Thus, short term fluctuations in the rates should be disregarded, and the overall rates should be based on averages over time.
- Sharp fluctuations in prices should be avoided. Market extracted capitalisation rates are the most accurate and preferred method.
- The availability of suitable comparable sales with accurate accompanying data is however very difficult to source, and thus most brokers will only give a ball park figure.



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## Discount Rate

- **A discount rate is a rate used to convert a fixed income stream over a certain period into a present day value.**
- **This will be discussed again at a later stage.**



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- In property analysis and valuation, the terms "discount rate" and "capitalization rate" are often used interchangeably. Such use is an error. The terms discount rate and capitalization rate, although related, are not synonymous. However, the terms (1) discount rate, (2) present value rate, (3) present value discount rate, and (4) yield capitalization rate are all synonyms.
- The experienced analyst / valuer should fully understand the important distinction between the terms **discount rate** and **capitalization rate** and how to properly use each "rate of return" within a selected analytical approach and method.



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- Within any income approach analysis, the analyst may use either a discount rate or a capitalization rate to convert some projected level of economic income to an estimate of value, value decrement (i.e., damages), or transfer price.
- Before we discuss how a discount rate or a capitalization rate is used in intellectual property analysis, we will first review
  - (1) how a discount rate differs from a capitalization rate and
  - (2) when it is appropriate to use each.
- Next, we will discuss the different methods for estimating discount rates and capitalization rates.



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- Both a discount rate and a capitalization rate represent a risk-adjusted rate of return that an investor would expect. Both rates of return take into account the risks and uncertainties associated with the economic income stream that is projected for the subject asset, property, or business interest. Although these two different rates of return are used in two different income-based analytical methods, the two methods should produce complementary results



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- A discount rate is often thought of in the context of a discounted cash flow analysis. In a discounted cash flow analysis, the analyst or valuer typically projects a stream of cash flow (or a similar measure of economic income) to be generated by the subject property.
- In the analysis of a going-concern business enterprise, the projection of the economic income stream may extend beyond a discrete projection period. This residual/terminal value calculation is intended to capture the incremental/decrement amount of economic income that extends beyond the discrete projection period. This residual or terminal value calculation assumes a perpetual life span.



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- In contrast, a property frequently has a finite life span (80 years). A property income approach may incorporate a residual/terminal value analysis. However, that analysis should reflect the intellectual property finite life instead of the business enterprise infinite life.
- Unlike a discount rate, a capitalization rate is used in the analysis of economic income that is projected either to (1) remain constant or (2) increase at a constant rate over time.
- In instances where the projected income is expected to increase at a constant rate over time, the capitalization rate is equal to the discount rate minus the expected growth rate, (or escalation rate).



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

- **For example**
  - If the discount rate appropriate to the analysis is 23 percent, and the expected economic income growth rate is 10 percent, then the corresponding capitalization rate is 13 percent.
  - In other words, the algebraic relationship between these two rates is: discount rate - expected growth rate = capitalization rate.
  - In this example, the algebraic relationship is expressed as: 23% - 10% = 13%.



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## Estimating Discount, Hurdle and Capitalization Rates

### Introduction

In instances when the projected income is expected to decrease at a constant rate over time, the capitalization rate is equal to the discount rate minus the negative growth rate.

In other words, the algebraic relationship between these two rates is: discount rate minus negative expected growth rate equals capitalization rate.



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## Estimating Discount, Hurdle and Capitalization Rates

For example, if the appropriate discount rate is 20 percent and the expected economic income growth rate is minus 5 percent (meaning an annual depreciation of 5 percent due to the property becoming obsolete), then the corresponding capitalization rate is 25 percent.

In this example, the algebraic relationship is expressed as:  $20\% - (-5\%) = 25\%$ . In instances when the projected income will remain constant over time, then the capitalization rate is equal to the discount rate, as indicated in the initial high lease with no escalation at \$60.00 under the discussion of escalation.



## Estimating Discount, Hurdle and Capitalization Rates

### ■ Estimating Discount and Capitalization Rates

- The empirical market data used to estimate the discount rate or capitalization rate will influence the selected measure of economic income.
- In other words, if the discount rate is extracted from market data regarding the net cash flow of sale transactions, then it is appropriate to apply the selected discount rate to the net cash flow of the subject property.
- In contrast, if the discount rate is extracted from market data regarding the net income of sale transactions, then it is appropriate to apply the selected discount rate to the net income of the subject property.



## Estimating Discount, Hurdle and Capitalization Rates

- When analyzing property, it is common to focus on net cash flow as the appropriate measure of economic income. This is because most of the empirical market evidence used to estimate discount rates and capitalization rates is calculated based on net cash flow.
- To develop a better understanding of how these empirical market data are used in estimating discount rates and capitalization rates, we will next discuss various methods for estimating a discount rate.



## Estimating Discount, Hurdle and Capitalization Rates

- If a market-extracted discount rate (i.e., a rate extracted from arm's-length property sale transactions) is not available, the discount rate applicable to a business enterprise is often used as a proxy for the appropriate rate of return.
- The intellectual property and the business enterprise owner/operator are assumed to be similar in that much of their value (in the case of the intellectual property, all of its value) is intangible in nature.
- In order to compensate an investor for the level of risk associated with owning an intellectual property, analysts often use either a business enterprise cost of equity capital or weighted average cost of capital as a proxy for the appropriate intellectual property discount rate.



## Estimating Discount, Hurdle and Capitalization Rates

- A discount rate can be obtained from the financial market based on long bond yields.
  - In America these are referred to as T Bonds, while in South Africa it is the R150.
  - In Vietnam, it was recently reported that the Government had raised VND85 Billion from the selling of 15 Year Bonds at 15%, through the SBV in September 26. The next auction will be held on October 24.
- The required three and five year yields were in the region of 16.48 to 16.83. Property worldwide historically carries a 3 to 6% risk premium above long term bond yields, confirming the sentiment that discount rates would range between 19% and 23%. (16.5 + 3 and 16.8 + 6).
- Investors surveyed stated that they were of the opinion that discount rates were in the upper 20%, indicative of the current risk premium being placed on property, which is higher than the calculated rate.



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## Other Methods which could be used

- **Mortgage Equity Finance**
- **Debt coverage Ratio**
- **Capital Asset Pricing Model**



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## Mortgage Equity Finance

This technique utilizes lender and real estate investor investment criteria to develop, or synthesize a capitalization rate.

There are **five** key inputs necessary for this method:

- The loan-to-value ratio (LTV) (Use of Equity and Debt)
- The mortgage interest rate
- The loan term
- The equity yield rate
- Property value change over the period



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## Mortgage Equity Finance

- The loan-to-value ratio. This is expressed as a percentage and reflects the amount lenders will usually loan relative to the value of a property. This information is readily available from local lending institutions. For small income property, most lenders will usually loan 75% of a property's sale price or value (Financial Institutions can alter the rate dependant on the properties location). We understand that in Vietnam, financial institutions restrict this rate to 70%
- The mortgage interest rate. Again, this information is readily available from local lending institutions and is a function of current interest rates.
- The Loan Term. This is the length of the loan term, or amortization period. Obtain this information when researching interest rates and loan-to-value ratios. Terms typically vary from 10 to 30 years, while the norm for commercial lending is around 15 years.



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## Mortgage Equity Finance

- **The equity yield rate.** The rate reflects the total return the investor requires in order to undertake the risk of the investment. It is typically at least the cost of capital and usually 2 to 5 points higher. This rate is determined by interviews with real estate agents and investors.

The equity yield rate differs from the equity dividend rate, which is the annual return to the investor after debt service. The dividend rate does not reflect property appreciation or mortgage pay down, while the equity yield rate is comprehensive measure of investment performance, including equity dividends (positive or negative), mortgage pay down and property appreciation (or depreciation).

- **Property value change.** This is simply the anticipated property value change over the holding period. The mortgage equity analysis assumes a holding period of 8 years as stated previously which is the average holding period for an income producing property.



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## Mortgage Equity Finance

- Investment Set Codes (ISCs) are overall capitalization rates and the components to create them using the Band of Investment Formula and the Mortgage Equity Analysis (Elwood Formula). ISCs reflect the economic expectations of the marketplace.

Band of Investment Formula  $R_o = (M \times R_m) + ((1 - M) \times R_e)$

Where,  $R_o$  = Overall Capitalization Rate

$M$  = Loan to Value Ratio

$R_m$  = Mortgage Constant

$(1-M)$  = Equity to Value Ratio

$R_e$  = Equity Dividend Rate



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## Mortgage Equity Finance

- Mortgage Equity Analysis (Elwood Formula)
- $R_o = Y_e - M (Y_e + P(1/S n - R_m) \pm \Delta o (1/S n))$

### Where

$R_o$  = Overall Capitalization Rate

$Y_e$  = Desired Equity Yield Rate

$M$  = Loan to Value Ratio

$P$  = Part of Mortgage Paid-Off

$1/S n$  = Sinking Fund Factor

$R_m$  = Mortgage Constant

$\Delta o$  = Overall Change (Appreciation or Depreciation)



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## Mortgage Equity Finance

- Mortgage constant, also called "mortgage capitalization rate" is the capitalization rate for debt. It is usually computed monthly by dividing the monthly payment by the mortgage principal. An annualized mortgage constant can be found by multiplying the monthly constant by 12, or dividing the annual debt service by the mortgage principal.

A mortgage constant is a rate that appraisers determine for use in the band of investment approach. It is also used in conjunction with the debt-coverage ratio that many commercial bankers use. The mortgage constant is commonly denoted as  $R_m$ . The  $R_m$  is higher than the interest rate for a fully amortized loan because the  $R_m$  includes consideration of the principal as well as the interest. The  $R_m$  could be lower than the interest for a negatively amortizing loan.

- The formula is as follows:

$$R_m = (\text{Pmt}(\text{Int Rate}/12, \text{Period} \times 12, 1))^{-1} \times 12$$

- Example: If a 12% \$100 000 Mortgage loan is to be repaid in 25 Years, the annual payment is \$12 750 (Use table or Calculator)
- Calculating :  $\$12\,750 / \$100\,000 = .1275 \%$



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## Mortgage Equity Finance

- **Equity Yield (Ye):** The annualized total return an investor would desire from the property (required rate of return on and of equity capital).
- **LTV (Loan to Value) (M):** The loan or debt portion of the property investment in terms of a percentage.
- **Part of Mortgage Paid-Off (P):** The portion of the mortgage paid off at the end of the holding period.
- **The Sinking Fund Factor (1/S n):** The level periodic investment or deposit required to accumulate one in a given number of periods including the accumulation of interest at the effective rate. The effective rate of the sinking fund factor in the ISCs is at the equity yield rate.
- **Overall Change (Δo) - Appreciation or Depreciation:** The overall change in value (+ or -) of the property over the holding period. Appreciation or depreciation (Δo) is treated as a reviewer entry. For purposes of the formula, this term is treated as zero in the ISCs.
- **Holding Period:** The length of time the typical investor expects to hold the property. For the ISCs, the holding period is set at 10 years.
- Based on market norms a rate in the region of 14.5% is indicated.



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## Mortgage Equity Finance

### Capitalization Rate Tools

Mortgage Equity Analysis					
Mortgage Constant*		Loan Ratio		Contributions	
0.163860	x	65.0%	=	10.65%	
Equity Yield Rate		Equity Ratio			
20.00%	x	35%	=	7.00%	
				17.65%	
Less Equity Buildup:					
Loan ratio x percent paid off* x sinking fund factor (SFF)					
65.0%	x	28.20%	x	0.06061	= -1.11%
Adjustment for Depreciation or Appreciation:					
Plus depreciation (or minus appreciation) x SFF					
		-32.0%	x	0.06061	= -1.94%
				<b>Capitalization Rate</b>	<b>= 14.60%</b>



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## Mortgage Equity Finance

- Debt coverage Ratio
- Debt Coverage Ratio Method indicates a Rate in the region of 14%

The formula for the debt coverage ratio method is as follows:

$$RO = DCR \times LTV \times RM$$

Where:

- RO = Capitalization Rate
- DCR = Debt Coverage Ratio
- LTV = Loan to Value Ratio
- RM = Mortgage Constant

The first four items have been described above. The mortgage constant calculation is the same as described before.



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## Mortgage Equity Finance

- Loan to Value Ratio: This indicator should be consistent with area lending terms. Loan terms specific to a particular deal or investor should be ignored and terms typical of the market applied.
- Annual Debt Service: This is the amount of principal and interest paid annually, based on the indicated value and mortgage terms defined previously.
- After Debt NOI:
  - This is the amount of cash the investor keeps after all expenses and debt services are paid.
  - This is an important figure and should pass a common sense test of whether it is enough to motivate the investor to undertake the investment.
  - With lower value properties, the dollar amount tends to be higher, as low dollar returns, even if they are high on a percentage basis, tend to be unimpressive.



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## Mortgage Equity Finance

- **Debt Coverage Ratio:**
  - Typical debt coverage ratios should be researched while researching area lending terms.
  - It is the amount the NOI exceeds the annual debt service.
  - Most lenders require a minimum of 110% (DCR: 1.1) up to 150% (DCR: 1.5). Typically, lenders look for Ratios of 1.2 to 1.3. The lower the DCR, the narrower the margin is to cover the mortgage. Therefore, as DCR's decrease, risk increases.



## Mortgage Equity Finance

Debt Coverage Ratio Analysis					
Debt Coverage Ratio x Loan to Value Ratio x Mortgage Constant**					
1.3	x	65.0%	x	0.16386	= 0.13846
Capitalization Rate					= 13.85%
* Investment Holding Period: 8					
** Mortgage Constant Variables: Rate: 14.50% Term: 15					



## Mortgage Equity Finance

Valuation Analysis					
Prepared By: Demo User					
Analysis Date: 10/11/2008					
Property Address: 1 Income Place, MyCity, MyState 01234					
Number of Units: 118 45,001					
Unit	Income	Calculation Method	# Units or m <sup>2</sup> Size	Annual	% of PGI
Retail Areas	\$70.00	\$/m <sup>2</sup>	3,400	\$238,000	11.8%
Furnished Apartments	\$1,350.00	\$/Mo.	30	\$486,000	24.1%
Furnished Apartments	\$1,200.00	\$/Mo.	65	\$936,000	46.4%
1 Bedroom Units	\$1,000.00	\$/Mo.	23	\$276,000	13.7%
Motorbike Parking	\$35.00	\$/Mo.	110	\$46,200	2.3%
Garaging	\$110.00	\$/Mo.	25	\$33,000	1.6%
Basement Stores					
Potential Gross Income (PGI):				\$2,015,200	100.0%
Vacancy and Collection Loss: 5.00%				\$100,760	
Other Income:					
Effective Gross Income (EGI):				\$1,914,440	95.0%
Expenses	Amount \$ or %	Calculation Method	Annual	\$/Unit	
Audit Fees	1.00%	% of EGI	\$19,144	\$162.24	
Building Maintenance	\$8,000.00	Lump Sum	\$8,000	\$67.80	
Lift and Aircon Maintenance	\$5,000.00	Lump Sum	\$5,000	\$42.37	
Garden Maintenance	\$1,500.00	Lump Sum	\$1,500	\$12.71	
Insurance	0.20%	% of Value	\$42,600	\$361.02	
Lift and Aircon Maintenance	\$5,000.00	Lump Sum	\$5,000	\$42.37	
Management Fees	\$75,000.00	Lump Sum	\$75,000	\$635.59	
Operating Costs	\$24,000.00	Lump Sum	\$24,000	\$203.39	
Reception Areas	\$12,000.00	Lump Sum	\$12,000	\$101.69	
Refuse and Cleaning	\$10,000.00	Lump Sum	\$10,000	\$84.75	
Operating Costs	\$6,000.00	Lump Sum	\$6,000	\$50.85	
Security	\$5,000.00	Lump Sum	\$5,000	\$42.37	
<b>Total Expenses:</b>			<b>\$213,244</b>	<b>\$1,807.16</b>	
Expense Ratio (Expenses/EGI):				11.1%	
Reimbursable Expenses:					
Net Operating Income (NOI):				\$1,701,196	\$14,416.91
Capitalization Rate:				14.50%	
Value:				\$11,732,383	\$99,426.98
Rounded:				\$11,700,000	\$99,152.54



## Mortgage Equity Finance

- **Annual Rate of Return:**
  - This is the After Debt NOI discussed above, expressed as a percentage.
  - It is particularly important financial measure with higher value properties.
  - It should be an amount adequate to motivate an investor to invest in the subject property.
  - This figure does not reflect the final return on the initial investment (down payment), rather it is the annual cash back to the investor, or Hurdle Rate expressed as a percentage of the down payment.
  - It is also referred to as the equity dividend.
  - The overall return (equity yield rate) earned by the investor is a function of three factors:
    - Equity Dividends
    - Property Appreciation
    - Equity Build-up (Pay down of the mortgage)



## Mortgage Equity Finance

### Value Tests

Measure		Notes
Net Operating Income	\$1,701,196	Before debt income from valuation analysis.
Debt Service	(\$1,249,605)	Debt service calculated from Mortgage Equity Analysis above and indicated value.
Debt Coverage Ratio	1.36	This is the amount that NOI exceeds debt. In this case, the ratio is greater than 1.2, which is generally considered reasonable by most lenders, depending on the risk characteristics of the property.
Equity Dividend	\$451,590 11.0%	This is the annual return on the amount invested. The total return may be higher or lower, depending on appreciation and mortgage paydown. In this case, the rate is greater than 10%, which is often adequate to motivate an investor.



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## Discounted Cash Flow (DCF)

- A discounted cash flow analysis can be performed by discounting (1) the known contractual income for the duration of the projection period (Typically 5 years and longer) and (2) the terminal effect at the conclusion of the discrete projection period.
- Both the discrete projection and the terminal effect are the discounted to a present value, to the analysis date by use of a required rate of return, or a discount rate. In using a discounted income analysis, it is important to note that:
  1. *the discount rate reflects the required annual rate of return that a hypothetical investor would expect to earn on the projected income stream to support the indicated value or purchase price estimate, and*
  2. *the discount rate does not incorporate a constant rate of growth for the projected income stream; rather, this rate of growth, which may vary during the projection period, is reflected in the periodic income projections.*



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## Discounted Cash Flow (DCF)

- One of the primary benefits of using the DCF analysis is that it allows known contractual income that is projected to increase (or decrease) at varying rates over time.
- Different scenarios reflecting alternative projected levels of income can be analyzed with a selected discount rate.
- A drawback of this method is the use of an exit cap rate at the end of the period. It is difficult enough trying to determine a Cap rate now, let alone in years to come



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## Discounted Cash Flow (DCF)

- **Basic principals of Discounted Cash Flows:**
- When valuing multi-period investments, where expected benefits and costs and related cash inflows and outflows arise over time, the time value of money should be taken into account.
- The time value of money should be represented by the opportunity cost of capital.
- The discount rate used to calculate the NPV in a DCF analysis should properly reflect the systematic risk of cash flows attributable to the project being appraised, and not the systematic risk of the organization undertaking the project.
- A good decision relies on an understanding of the business and an appropriate DCF methodology. DCF analysis should be considered and interpreted in relation to an organization's strategy and its economic and competitive position.



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## Discounted Cash Flow (DCF)

- Cash flows should be estimated incrementally, so that a DCF analysis should only consider expected cash flows that could change if the proposed investment is implemented. The value of an investment depends on all the additional and relevant cash inflows and outflows that follow from accepting an investment.
- At any decision-making point, past events and expenditures should be considered irreversible outflows (and not incremental costs) that should be ignored, even if they had been included in an earlier cash flow analysis.



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## Discounted Cash Flow (DCF)

- All assumptions used in undertaking DCF analysis, and in evaluating proposed investment projects, should be supported by reasoned judgment, particularly where factors are difficult to predict and estimate.
- Using techniques such as sensitivity analysis to identify key variables and risks helps to reflect worst, most likely, and best case scenarios, and therefore can support a reasoned judgment.
- A post-completion review or audit of an investment decision should include an assessment of the decision-making process, and the results, benefits, and outcomes of the decision.



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## Real Estate Investment Rates and Valuations in Vietnam November 2008

Session 3

Presented by Colin Wood



## Hurdle Rate

- This is the minimum total return required by potential investors to induce them to invest in property. It is known as the hurdle rate (income yield plus expected capital appreciation).
- It represents the opportunity cost of not being invested in property; it therefore is the correct discount rate to use for valuations and viability studies.



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## Hurdle Rate

- Synonyms for hurdle rate are Required Total Return, Cut-off rate or Cost of Capital (not to be confused with the cost of loan funds).
- Most investors calculate the value of an income-producing property by using an income-capitalization approach. Even viability studies are usually judged on the basis of what an acceptable initial income yield is.
- For this reason, there is plenty of relatively reliable information on market capitalization rates or income returns required by investors, in a buoyant market.
- However, in contrast to what business schools have been teaching us for decades, the hurdle rate is seldom used as an investment criterion when doing viability studies.



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## Hurdle Rate

- Hence, many property-investing professionals out there are not all that certain about hurdle rates (the minimum total return required by their organizations to proceed with an investment).
- This is a great pity because even when using capitalization as the primary valuation method, a measure of discounting - which requires a discount rate - is still called for most of the time when valuing income-producing properties (remember, the discount rate equals the hurdle rate).
- In spite of the neglect of hurdle rates, past surveys showed an increase use and understanding of the term.



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## Hurdle Rate

- **The question posed to numerous respondents was as follows:**
  - *In your opinion, what is presently the minimum expected internal rate of return or hurdle rate (%) at which your organization will acquire a property ... assuming a time horizon of 5 years?*
- **Of note is the fact that the question elected 5 years as a time horizon because from anecdotal evidence they were pretty sure that this was the typical term used by investors and valuer's alike that was, in those few cases where they did discounting or IRR calculations.**
  - *(Note that when we say that viability studies are done with a 5-year investment horizon, we do not wish to imply that investors necessarily plan to sell a property at the end of Year 5). After year 5 to 8 the discounted amounts become negligible, as is the terminal cap rate.*
- **However, in viability calculations it is problematic to try and forecast rental growth and operating-cost inflation over a period for longer than 5 years.**



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## Hurdle Rate

- **A Hurdle Rate is not the WACC where the equity portion, is equal to the average forward yield of listed property, and the debt portion is equal to the 5 year swap rate, which is then averaged out, and adding arbitrary amount for other items such as timing and the lack of liquidity**
- **Companies and developers could under- or over invest if they do not adjust their hurdle rates as market conditions change. In an environment where cost of debt and equity are declining, if firms do not lower their hurdle rates accordingly, they would run the risk of under-investing. Similarly, in an environment of increasing cost of capital, such as that which is currently being experienced, firms that do not adjust their hurdle rates upwards would suffer from over-investing.**



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## CAPM (Capital Asset Pricing Model)

- There are several methods available for estimating the cost of equity capital. The first, and probably the best-known, method is the capital asset pricing model (CAPM).
- The CAPM, based on Markowitz's Portfolio Theory and further developed by William Sharpe in 1964, is viewed as a significant breakthrough in modern financial economics.
- The CAPM was designed to predict the relationship between (1) the risk of an asset and (2) its expected return. While the CAPM was originally developed for the analysis of marketable securities, analysts have found the CAPM to be a practical method for estimating the expected rate of return for assets that do not trade in a public marketplace.



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## CAPM (Capital Asset Pricing Model)

- The CAPM recognizes that every investment carries two distinct risks. These risks are defined as (1) systematic risk and (2) unsystematic risk. Systematic risk is the risk associated with the market in general, or in other words, a risk that cannot be eliminated through diversification.
- This measure of systematic risk is often referred to as "beta" to a particular portfolio. The second type of risk, unsystematic risk is specific to the particular investment or asset. In contrast to systematic risk, unsystematic risk is often mitigated through diversification, based on James Tobin
- While the CAPM is relatively easy to apply, an analyst should understand the underlying assumptions of the model.



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## CAPM (Capital Asset Pricing Model)

### Assumptions include:

- Investors are risk averse.
- Rational investors seek to hold efficient portfolios—in other words, portfolios that are fully diversified.
- All investors have identical time horizons.
- All investors have identical expectations about expected rates of return.
- All investors pay no taxes on returns and incur no transaction costs.
- The rate received for lending money is not the same as the cost of borrowing money.
- The market has perfect divisibility and liquidity.



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## CAPM (Capital Asset Pricing Model)

- The CAPM is based on the premise that a rational investor expects to earn a rate of return greater than a risk-free rate of return when investing in an asset, property, or business interest that has greater risk than a risk-free investment. This incremental rate of return that compensates the investor for accepting a greater level of investment risk is called a risk premium.
- The CAPM was originally developed to analyze and estimate rates of return on capital market equity securities. The CAPM is most often used to analyze and estimate rates of return on investments in capital market equity securities. Therefore, in the statement of the CAPM, this investment risk premium is most often called an equity risk premium.



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## CAPM (Capital Asset Pricing Model)

- The CAPM equation is expressed as follows:
- $E(R_i) = R_f + B(RP_m)$
- Where:
  - $E(R_i)$  = Expected rate of return (cost of equity capital for an equity security) for a given asset, property, or business interest investment.
  - $R_f$  = Rate of return on a risk-free investment
  - $B$  = Beta
  - $RP_m$  = Risk premium for the market in which the subject investment trades (e.g., an equity risk premium is based on the capital market for equity securities)



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## CAPM (Capital Asset Pricing Model)

- The risk-free rate of return is often represented by the yield on a U.S. Treasury bond, which is considered to have virtually no default risk, or the ruling price being obtained in a particular country.
- The equity risk premium is one measure of the incremental return needed to compensate an investor for assuming a level of investment risk greater than that of a risk-free investment. Within the CAPM, this equity risk premium is adjusted by beta (B)—a measure of systematic, market-wide risk. The beta coefficient in the CAPM takes into account the sensitivity of the return on the subject investment to movements in the returns of the marketplace as a whole.



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## CAPM (Capital Asset Pricing Model)

- Beta, the measure of systematic risk, is a function of the relationship between (1) the return on an individual security and (2) the return on the market—measured by a broad market index such as the Standard and Poor's 500, the New York Stock Exchange Composite, the Russell 1000, Russell 2000, and so on.
- Given that there are multiple data sources used for estimating beta—and no single accepted source—there are often problems with beta comparability and beta measurement.
- These measurement problems result from different (1) data sources, (2) measurement intervals, and (3) measurement time period



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## CAPM (Capital Asset Pricing Model)

- Due to the differences in how the various services calculate beta, it is common to have two (or more) financial reporting services calculate a different beta for the same security at any point in time.
- When using the CAPM to estimate the required rate of return, the analyst is confronted with the problem of identifying a reasonable measurement of the beta. The analyst has a number of solutions to solve this problem, including:
  - *The analyst can use the beta of the company that owns the intellectual property as a proxy for the intellectual property beta that should be used.*
  - *This method of estimating a beta assumes that the subject intellectual property is owned by a company that has publicly traded equity securities.*
  - *It also assumes that the publicly traded securities are traded frequently enough to allow for the calculation of a beta*



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## CAPM (Capital Asset Pricing Model)

- The analyst can rely upon a composite beta for publicly traded companies that (a) operate in the same industry as the company that owns the subject intellectual property and (b) have similar intellectual properties.
- The analyst can rely upon a composite beta for publicly traded companies that own a significant number of intellectual properties that are similar to the subject intellectual property; even though these publicly traded companies may not necessarily operate in the subject's industry.



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## CAPM (Capital Asset Pricing Model)

- While all of the situations described above assume that the subject intellectual property is owned by a company, there are situations where the intellectual property is owned by an individual.
- In these situations, it is not possible to assess a beta for the individual owner/operator. As a result, the analyst is often required to research the overall systematic risk that is inherent in the publicly traded companies that are the logical users of the subject intellectual property.
- This analysis would involve an evaluation of the betas of the publicly traded companies that could benefit from licensing the subject patent, copyright, trademark, or trade secret.



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## CAPM (Capital Asset Pricing Model)

- A widely used market risk premium used in the CAPM is the long-horizon equity risk premium calculated by Ibbotson Associates. The premium is calculated as the difference between
  - (1) the historical large company stock total return and
  - (2) the historical income return on long-term government bonds.
- The equity risk premium is expressed as follows:

$$\text{RPM} = \text{TRlcs} - \text{IRltb}$$

Where:

- RPM = Risk premium for the market in which the subject investment trades (e.g., an equity risk premium is based on the capital market for equity securities)
- TRlcs = Total return on large company stocks
- IRltb = Income return on long-term government bonds



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## CAPM (Capital Asset Pricing Model)

- For purposes of this calculation, Ibbotson Associates measures the return on large company stocks as the historical total return on the S&P 500. The measurement for the income return on long-term government bonds relates to the historical income return generated by government bonds with a maturity near 10 to 20 years.
- While the CAPM is particularly useful in estimating rates of returns on publicly traded equity securities, the model has limitations when used to estimate the required rate of return on an intellectual property investment. Some of these CAPM limitations include the following:
  - The CAPM was developed for purposes of the valuation/pricing of publicly traded securities—principally equity securities; the CAPM was not developed for use in performing economic analyses of non-publicly traded intellectual properties.



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## CAPM (Capital Asset Pricing Model)

- A fundamental component of the CAPM is beta, which can be easily measured from readily available capital market pricing data when valuing/pricing an equity security. In contrast, there are no comparable market data for use in the measurement of the intellectual property beta.
- The CAPM is based on the premise that an investor expects to earn an equity risk premium associated with an investment in an equity security that has greater risk than a risk-free investment. The measurement of this equity risk premium is usually based on the historical rates of return of a broad index of equity securities. While this equity risk premium is appropriate for equity security analysis, an additional risk premium may be appropriate if the intellectual property has greater risk than the business that owns/operates the intellectual property.



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## CAPM (Capital Asset Pricing Model)

- While the above equation represents the CAPM in its basic form, the model has been refined over the years to reflect the additional risk normally associated with investments other than publicly traded equity securities.
- Such model refinements include adding various risk premiums for
  - (1) the size of the subject investment
  - (2) the illiquidity of the subject investment, and
  - (3) various investment-specific, nonsystematic risk factors.
- For intellectual property analysis, the basic CAPM may be expanded to include consideration of a risk premium associated with an intellectual property investment.
- Such an intellectual property-related risk premium should be based on:



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## CAPM (Capital Asset Pricing Model)

- the type of the subject economic analysis (i.e., valuation, damages, or transfer pricing);
- the type of intellectual property subject to analysis (i.e., copyright, patent, trademark, trade secret, etc.);
- industry factors related to the current or expected use of the intellectual property;
- the remaining useful life of the subject intellectual property;
- competition related to the availability/use of alternative intellectual properties;
- competition related to the development/commercialization of new intellectual properties;
- competition for the business enterprise owner/operator of the intellectual property;
- innovation/obsolescence of the subject intellectual property (and vis-à-vis potential or actual competitive intellectual properties); and other relevant factors.



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## CAPM (Capital Asset Pricing Model)

- By considering these and other factors, the basic CAPM equation is expanded as follows:

$$E(R_i) = R_f + B(RP_m) + RP_{ip}$$

### Where:

- $E(R_i)$  = Expected rate of return for a given investment.
- $R_f$  = Rate of return on a risk-free investment
- $B$  = Beta
- $RP_m$  = General equity risk premium, extracted from the general capital markets
- $RP_{ip}$  = Additional risk premium associated with intellectual property-specific factors



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## CAPM (Capital Asset Pricing Model)

- An Ibbotson-derived equity risk premium may be sufficient for use in the CAPM when estimating the required rate of return on an equity security, but it may not capture all of the incremental risk (and resulting high required return) that is inherent in an intellectual property. As a result, an analyst will routinely incorporate an additional risk premium that is specific to the subject intellectual property.
- Based on a comparison of the characteristics of (1) an intellectual property and (2) a typical equity security, it is often the case that an intellectual property will warrant a required rate of return that is higher than the rate of return derived for a publicly traded equity security. While this concept seems intuitive, the quantification of the exact intellectual property-specific risk premium is not so straightforward.



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## CAPM (Capital Asset Pricing Model)

- Unlike equity securities, intellectual properties have limited useful lives. Intellectual properties are generally considered to be more risky than equity securities. In contrast, the (1) commercialization and license potential and (2) legal protection/judicial standing associated with intellectual properties generally makes them less risky than other intangible assets.
- As a result, the required rate of return for an intellectual property normally ranges from (1) a low that is equivalent to the required rate of return on the equity securities of the company that owns the intellectual property to (2) a high that is equivalent to the required rate of return on the company's other intangible assets.
- It is important to note that there is no specific model or formula for quantifying the exact intellectual property-specific risk premium. Ultimately, the adjustment to the required rate of return is based on the analyst's experience and judgment.



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## CAPM (Capital Asset Pricing Model)

### ▪ The Build-up Model

- A second method for estimating the discount rate for an intellectual property analysis is the build-up model.
- The build-up model is a conceptual cousin to the CAPM in that it includes (1) a risk-free rate of return and (2) many of the same equity risk premium components as the CAPM.
- A primary difference between the two methods is that the build-up model does not include a beta factor to capture the element of systematic risk.



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## CAPM (Capital Asset Pricing Model)

- Algebraically, the build-up model is expressed as follows:

$$E(R_i) = R_f + RP_m + RP_s + RP_{ip}$$

Where:

- $E(R_i)$  = Expected rate of return (e.g., cost of equity capital for an equity security) for a given investment.
- $R_f$  = Rate of return on a risk-free investment
- $RP_m$  = Risk premium for the market in which the subject investment trades
- $RP_s$  = Risk premium related to size
- $RP_{ip}$  = Risk premium related to intellectual property-specific factors



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## CAPM (Capital Asset Pricing Model)

- The above build-up model includes a risk premium related to investment size. While the basic CAPM does not include this size-specific risk premium, it should be noted that the basic CAPM has been modified over the years to include consideration of a risk premium for investment size.
- Analysts typically incorporate a risk premium for investment size when valuing the equity securities of small capitalization companies. However, such a size-related risk premium is not as commonly used in intellectual property analysis.
- Given the conceptual similarities between the CAPM and the build-up model - and ignoring the risk premium related to investment size - it is noteworthy that the two methods produce identical discount rate conclusions when the beta factor (explicit in CAPM, implicit in build-up model) is equal to one.



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## CAPM (Capital Asset Pricing Model)

- Like the CAPM, the build-up model estimates a cost of equity capital. Therefore, a discount rate derived from the build-up model corresponds to the measure of income available to an investor in equity securities.
- In order to be consistent in our matching of (1) the discount rate and (2) the stream of economic income, it is crucial that the discount rate derived from the build-up model be applied to the appropriate income stream (i.e., after-tax cash flow).
- This would also hold true if the build-up model is expanded to encompass an intellectual property-specific risk factor.



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## CAPM (Capital Asset Pricing Model)

- As with a CAPM discount rate, a build-up model discount rate may be converted to a capitalization rate and used in a direct capitalization analysis.
- The use of a direct capitalization rate—as opposed to a discount rate—would be appropriate in situations where
  - (1) the economic income of the trade name is estimated to either (a) remain unchanged or (b) increase/decrease at a constant rate during the capitalization period and
  - (2) the remaining useful life of the trade name is expected to be so long that the projected economic income can be analyzed as an annuity in perpetuity.



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## CAPM (Capital Asset Pricing Model)

- It is noteworthy that the sources used to estimate the equity risk premium in the CAPM are identical to the sources used to estimate the equity risk premium in the build-up model. As previously mentioned, the most widely used sources for this particular premium are the Ibbotson Associates publications.
- The application of an intellectual property-specific risk premium using the build-up model is identical to the application using the CAPM. There is no specific model or formula for quantifying the intellectual property-specific risk premium. The adjustment to the required rate of return is based on the analyst's experience and judgment.



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## CAPM (Capital Asset Pricing Model)

- In recent years, Ibbotson Associates has made advances in modifying the build-up model to include an industry-specific risk factor. The modifications include using beta information from companies that participate in a particular industry to evaluate the risk characteristics of that particular industry. The Ibbotson Associates calculations resulted in a series of industry premiums that are categorized by standard industrial classification (SIC) codes. These premiums, as cited in Stock, Bonds, Bills, and Inflation Yearbook—Valuation Edition, are used in conjunction with the build-up model—to estimate the cost of capital.
- Algebraically, the build-up model, as modified for an industry-specific premium, is expressed as follows:



## CAPM (Capital Asset Pricing Model)

$$E(R_i) = R_f + R_{Pm} + R_{Ps} + R_{Pi} + R_{Pip}$$

Where:

- $E(R_i)$  = Expected rate of return (e.g., cost of equity capital for an equity security) for a given investment.
- $R_f$  = Rate of return on a risk-free investment
- $R_{Pm}$  = Risk premium for the market in which the subject investment trades
- $R_{Ps}$  = Risk premium related to size
- $R_{Pi}$  = Risk premium related to industry
- $R_{Pip}$  = Risk premium related to intellectual property-specific factors



## CAPM (Capital Asset Pricing Model)

- It is evident from the following examples that the estimated Cost Rate is dependant on the equity provided by the client. As equity increase, the rate decreases, indicating a slightly higher value. The rates used come from the analysis of past current and future anticipated rates.

Equity 25.00%      Debt 75.00%  
 Risk Free 15.00%      Market Rate 15.41%  
 Beta 1.3      Cost Debt 14.85%  
 Corporate Tax 25.00%  
 Cost Debt 8.353%      Cost EQ 15.533%  
 Total Cost 23.886%



## CAPM (Capital Asset Pricing Model)

a	Equity	25.00%			
b	Debt	75.00%			
c	Risk Free	15.00%			
e	Market Rate	15.41%	I+m		
f	Beta	1.3			
g	Cost Debt	14.85%	p		
h	Corporate Tax	25.00%			
i	Cost Debt	8.353%	$b^*(1-h)*g$		
k	Cost EQ	15.533%	$c+P*(e-c)$		
	<b>Total Cost</b>	<b>23.886%</b>	$b^*(1-h)*g + ((c+P*(e-c))$		

a	Equity	30.00%			
b	Debt	70.00%			
c	Risk Free	15.00%			
e	Market Rate	15.41%	I+m		
f	Beta	1.3			
g	Cost Debt	14.85%	p		
h	Corporate Tax	25.00%			
i	Cost Debt	7.239%	$b^*(1-h)*g$		
k	Cost EQ	15.533%	$c+P*(e-c)$		
	<b>Total Cost</b>	<b>22.772%</b>	$b^*(1-h)*g + ((c+P*(e-c))$		



## IRR and NPV

- This is a very important question which I have faced almost my entire career. IRR & NPV analysis will give the same results as said, but there are few differences:
  - NPV assumes a discount rate and for different discount rates different NPV values can be obtained. For IRR only one percentage is obtained.
  - IRR is based on trial and error so comparatively tedious to calculate.
  - NPV method calculates additional wealth whereas IRR does not.
  - Returns are generally stated in percentages and are generally used for comparison and hence IRR is preferred over NPV.
  - If NPV is positive that means the project is profitable, this cannot be viewed in the case if we take decision based on IRR



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## IRR and NPV

- It is wrong that IRR & NPV gives the same results, NPV is narrated in terms of money value and IRR is a %age.
- Where NPV is zero there IRR stands, so if you have a positive NPV of your project, it's a worthwhile project and if you have negative NPV, it not a worthwhile project in terms of DCF technique.

### Looking at it in a different way:

- IRR is more convenient for less sophisticated investors/managers but from a technical perspective NPV should have the last say when we are making any investment decision because it reflects a more accurate picture compared with IRR especially if you have an inconsistent cash flows and different discount rates.



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## IRR and NPV

- Example: If your company is small with little access to capital where every dollar / dong counts, I would recommend the IRR to maximize every, on the other hand, I would use the NPV if you did not have such constraints.
- Some time IRR and NPV give conflicting results (different ranking), in this case you should consider NPV, not IRR. The reason is that IRR assume the cash flow received is reinvested at IRR rate which is practically difficult.



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## IRR and NPV

- The key difference between NPV and IRR is:
  - NPV gives you an absolute figure, 'how much money in total can I make from this project?',
  - IRR's give you a proportionate figure 'How much will I make per dollar invested in this project'.
  - If using NPV's to compare projects, there is an implicit assumption that availability of cash is not a constraint. So in NPV terms, a project which required a \$300 million investment to give a \$50 million NPV would be rated higher than a project which required a \$20 million investment to give a \$40 million NPV.
  - Comparing IRR's gives an indication of the level of return achieved on each invested dollar, and in IRR terms the \$40 million with \$20 million invested project would probably score highest.



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## IRR and NPV

- IRR is coveted by concerns that, for example, an 18% p.a. return over 30 years, doesn't mean that the whole investment will earn 18% over the whole period.

It does, however, mean that this is the return obtain on funds whilst they are invested in this project.

Both methods give a limited amount of information, and certainly a combination, along with a good look at the cash flows, is a good way to work.

- As a matter of interest, in project finance deals, it is generally IRR which is used as the measure of performance for equity investors.

In this case the IRR is generally being compared to a minimum threshold level seen as suitable for the risk level in the project, to establish whether the project is sufficiently profitable to attract the necessary equity funding.



## IRR and NPV

- I believe that this is the correct way to look at IRR and NPV. IRR is most useful for optimal allocation of equity capital and the time value is paramount for PE funds that have lock up considerations.
- NPV is most useful for DCF analysis and encompasses all costs of capital (debt and equity) using a hurdle discount rate assumption, easily tweaked for sensitivity analysis.



## IRR and NPV

- I would like to list certain points which would compare NPV with IRR. As you go down the list it would be quite clear that NPV is a better method to use in majority of the problems

- NPV requires estimation of Future cash flow and discounting rate. So any error in estimating these could weigh heavily on the entire NPV exercise.
- IRR requires estimation of cash flow only but the calculation of IRR is in itself a complex method wherein we have to use a series of hit and trial and extrapolation method. (So it is quite difficult for less sophisticated investors to calculate).
- IRR does not give us the liberty to discount the cash flow at varying discount rates which is possible in case of NPV method.



## IRR and NPV

For two different projects we get different IRR's which means that within the same economic considerations our future cash flows are reinvested at different rates which is not possible, practically.

The purpose of any investment (whether expansion or maintaining capex) should be maximization of wealth. NPV is doing the same, which is ruling the flavour for projects which give highest returns in absolute terms.

Simplistically, I definitely want to know both. NPV is a great metric for a Go/No-Go decision and to rate different projects against a hurdle discount rate. It also is perhaps the best arbiter of capital structure. That is, rating degree of leverage for different NPV's within risk constraints. Though IRR is good, NPV is better. Both are important in different context, but when there is a conflict between IRR and NPV;



## IRR and NPV

Consider the NPV because NPV shows the real return.

I believe the preference of the two metrics probably depends on the analysis role.

- *If I were the CFO, then I'd agree that NPV would rank higher in decision making.*
- *If I were a potential equity investor (or even a subordinated debt provider) I'd be using IRR.*

In either role, I'd need to know both and want to concur on the underlying assumptions or be doing the analysis using my assumptions



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## IRR and NPV

- Again I will say NPV is better because in the case of mutually exclusive project for instance, it is possible for IRR and NPV to give different signals as to the viability of the project. In that wise, the decision rule will be to dine with the dictate of NPV and not IRR.
- Besides, there are instances where IRR gives no solution to project evaluation due to there being two or more instances of negative cash flow. It might give complex roots to answers which do not make economic sense. More so, IRR at times can give two results or solutions for the same project evaluation problem. This is common where the formulated equation results in a quadratic form.



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## IRR and NPV

Both the NPV and IRR methods discount cash flow, although NPV is theoretically preferable.

IRR indicates a potential project's annual average return on investment in percentage terms. For this reason, it can be useful in (a) communicating an analysis of investment choices to entrepreneurs and employees without financial expertise, and (b) facilitating decisions where the discount rate is uncertain. However, it can provide misleading results in certain contexts.

Calculating the IRR requires identifying the discount rate that results in a zero NPV of cash flows. Comparing the IRR with the target rate of return on an investment can be useful in deciding whether to proceed, but it does not reflect the increase in a company's monetary value flowing from accepting an investment.



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## IRR and NPV

Furthermore, the NPV approach can incorporate different discount rates for different periods, and cash flow streams of different systematic risks. This allows a proper reflection of changing macroeconomic conditions (inflation and interest rates) and the systematic risk of all projected cash flows.

In certain circumstances, such as in multi-period projects where net negative cash flows are followed by net positive cash flows, and then again by net negative cash flows, there may be more than one IRR for which NPV will be equal to zero. Therefore, using the criterion of  $NPV > 0$  as a decision-making tool is better than using the criterion of  $IRR > \text{cost of capital}$



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## IRR and NPV

### ■ The Problems with IRR

- Internal Rate of Return works well in many situations, but in not quite all. In the typical investment, you expect to have a single negative cash flow on day one (your cash outlay to acquire the investment) followed by a series of periodic positive cash flows. The last of these will be the proceeds of sale when you finally dispose of the investment. In such a scenario, IRR usually works pretty well.
- The wheels can start to come off, however, when you use IRR to help you choose among alternative investments. Particularly vexing is a situation where your investment timeline expects to encounter some negative cash flows. Perhaps you're projecting a significant increase in the interest rate on your financing; or you expect to have some major (but unfunded) repairs; or you want to play "what if?" to see what will happen if you lose an important tenant and seek to replace that tenant quickly. Any of these possibilities could throw your projected cash flow for a future year into the negative.



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## IRR and NPV

- That's where the arcane math behind IRR throws you a curve. In general, if you have more than one change of sign in the series of cash flows (and you must include the initial investment as one of the cash flows), then you may encounter "non-unique" results. That's a polite way of saying the same of facts can give you more than one answer, which clearly is not helpful.

Consider this example from the classic text, Mastering Investment Real Estate (Messner, Schreiber, Lyon and Ward):

Year 0 Initial Investment:(25,000)

Year 1 Cash Flow:150,000

Year 2 Cash Flow:(275,000)

Year 3 Cash Flow:150,000

In this series of cash flow, the sign changes three times; therefore, there could be as many as three different internal rates of return, i.e., rates at which you could discount these cash flows so that their NPV would equal zero. Indeed, there are three such rates: 0%, 100% and 200%, and they're all mathematically correct.



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## IRR and NPV

- The IRR is of little value if it presents you with multiple solutions for the same set of data and invites you to pick one of those solutions.
- If IRR's relationship with negative cash flows is occasionally dysfunctional, it doesn't get along as well as it should with positive cash flows either. Conventional wisdom has long held that IRR assumes that positive cash flows can be reinvested, until the end of the holding period, at the same rate as the IRR itself. There are also those who assert that IRR actually makes no assumption at all as to the rate of reinvestment of positive cash flows.
- For our purposes the distinction may be literally academic because in either case the IRR does not attend to how positive cash flows are handled in the real world. You will reinvest positive cash flows at the best rate you can reasonable obtain, and that rate is likely to be closely tied to the size of the cash flow. If your cash flow is large, you may be able to reinvest it in another piece of real estate. If it is small, then passbook savings may be your only option.



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## Financial Management Rate of Return

### ■ FMRR

- You can use a modified version of IRR to deal with the problems of non-unique results and the reinvestment of positive cash flows. Back in the 1970 the technique was called Financial Management Rate of Return (FMRR).
- This technique eliminated negatives by first discounting them back at the safe rate to the nearest previous positive cash flow, adding that discounted negative amount to the positive cash.
- If there were any negatives left, those would be discounted back to day one, also at the safe rate, and added to the initial investment.
- The procedure would then compound the remaining positive cash flows forward to the end of the holding period at a rate that was realistic for those cash flows. It was up to you, the analyst, of course to specify the safe and reinvestment rates.



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## Financial Management Rate of Return

- This process would leave you with a string of cash flows on which you could perform a proper IRR, a series that included one initial outflow – a negative amount – followed by all positive or zero cash flows.

- For example, say that you found these among your series of cash flows;

Year 3 Cash Flow:30,000

Year 4 Cash Flow:(20,000)

If your safe rate were 4%, you would discount the (20,000) Year 4 cash flow back one year at that rate. The result would be (19,231). Now in Year 3 you can combine the positive 30,000 with the negative (19,231) and at the same time eliminate the negative cash flow in Year 4.

Year 3 Cash Flow:10,769

Year 4 Cash Flow:0



## Modified Internal Rate of Return

- At some point, around the mid-'80s, it was observed that some investors and brokers were using a variation of this variation on IRR called Modified Internal Rate of Return, or MIRR.
- We can only speculate as to what caused this shift, but the theory is that this is a result of Microsoft publishing its Excel spreadsheet software with MIRR as a built-in function.
- MIRR is perhaps slightly less precise than FMRR, but we feel that it demands less computing power to calculate.
- The difference with MIRR is that it discounts all negative cash flows to day one rather than trying to mix and match individual negatives with offsetting positives.
- The difference between it and FMRR is typically inconsequential.



## Modified Internal Rate of Return

Consider these cash flows, once again based on an example in the text by Messner et al.:

- Year 0 Initial Investment:(10,000)
- Year 1 Cash Flow:(50,000)
- Year 2 Cash Flow:(50,000)
- Year 3 Cash Flow:30,000
- Year 4 Cash Flow:(20,000)
- Year 5 Cash Flow:30,000
- Year 6 Cash Flow:250,000

If you use a safe rate of 5% to discount negative cash flows, a reinvestment rate of 10% for positive cash flows, and perform the admittedly tedious task of figuring the FMRR, you will find that your FMRR equals 19.4%. Use Excel's MIRR function with the same safe/reinvestment choices and the result is 18.0%. If you believe this difference justifies the additional time and effort to calculate the FMRR, you may want to try switching to decaf.



## Modified Internal Rate of Return

- It's worth noting however that if you were to use Excel's IRR function on these cash flows, using a "guess" rate of 20% to narrow the field of possible answers, you would get an IRR of 25.2% for these same cash flows. Clearly, the difference in this example between IRR and MIRR is quite meaningful. The MIRR yields a more conservative and probably more realistic measurement.
- While MIRR addresses the chief deficiencies of IRR as a measure of return, it still comes up a bit short when you want to compare mutually exclusive alternative investments. The problem here is in accounting for both the duration and scale of your investment. Using MIRR to compare opportunities that require the same initial investment and will be held for the same length of time seems reasonable enough. What if the alternatives require different amounts of cash, or presume different holding periods?



## Modified Internal Rate of Return

- Let's say that you want to decide between two properties, one requiring a cash investment of \$100 000, the other \$60 000. Clearly, you must really have \$100,000 in hand if you're considering both options. To make an "apples-to-apples" comparison, you should invest \$100 000 no matter which property you choose. When considering the property that requires only \$60k, your analysis should involve both the return you expect to receive from the property plus the return you expect from the \$40k cash that you were free to invest elsewhere.
- Likewise, if you project that you will hold one property for 4 years but the other for 5, you should look at the after-tax proceeds from the 4-year property and take into account the return you could earn with those proceeds if you invested them elsewhere for one more year.



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## Summary

- In this discussion we have dealt with numerous methods for determining the value of an income producing property.
- The onus is placed squarely on the shoulders in the selection of the appropriate method.
- While we have discussed various rates, it is also up to the individual to verify that these rates are in line with market norms, and that any method chosen, can stand up to critical scrutiny.



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## Summary

- **We have dealt with:**
  - Capitalisation Rates
  - Discount Rates
  - Mortgage Equity and Debt Ratio Analysis
  - Hurdle Rates
  - Discounted Cash Flows
  - Capital Asset Pricing Models
  - Internal Rates of Return. MIRR and FMRR



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## Conclusion

- As stated in the beginning, the object of this seminar was to advise delegates that there are alternatives, which could be used in the absence of suitable sales evidence, to justify a Capitalisation, Hurdle or Discount Rate.
- This discussion explored the development of a discount rate or capitalization rate. This discussion presented many of the fundamental analytical differences between an income producing property and a going-concern business enterprise. This discussion also described how these analytical differences impact the estimation of a discount or capitalization rate. Finally, this discussion summarized several of the models commonly used to estimate a property discount or capitalization rate.



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## Conclusion

- The onus is placed on the individual valuer or analyst, to research, and appreciate these financial tools. In addition, to these which have been discussed there are other minor methods, but we feel that these are the most typical, used worldwide. Finally, I implore my fellow colleagues to acquaint themselves, and offer a more professional service, into the future, which I am sure the property market worldwide will demand from us.



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## Conclusion

- Personally, I feel that the Ellwood Formula, and Mortgage Equity Analysis, are a good alternative, as worldwide, most commercial properties are purchase with some form of financing in place. The criteria used in this calculation, satisfies both lender and property alike.
- Based on the above, we thus feel that discount rates are in the region of 23.5%, Escalation Rates should be in the region of 10%, and Cap Rates in the region of 13.5 to 15%.
- Again we reinforce, that rates are subject to dramatic fluctuations, but with careful monitoring, the rates should smooth out, into a more meaningful interpretation, bringing about more stability in property valuations, and avoiding a Yo Yo effect.



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## Conclusion

- I trust that this discussion has been beneficial, and hope that a clearer understanding of the interaction between the various rates has been explained.
- The most important being:  
A discount rate or Hurdle rate is a combination of a capitalisation rate plus an escalation rate.

I thank you

*Please feel free to raise any questions, which we will attempt to respond to as promptly as possible.*



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