CHAPITRE III : INVESTMENT DECISION MAKING

4 basic components :

1. **forecasting cash flow**
2. **forecasting cash proceeds from the eventual sale of the property**
3. **converting future cash flow streams into present value**
4. **and applying decision-making criteria**

Important question : how should investors reach RE investment decisions ?

INVESTMENT DECISION MAKING

Investment Strategy

- Most **institutional real estate investors** (pension funds, life insurance companies, etc.) follow a written, formal investment strategy.

- Many **individual investors** probably do not follow explicit, pre-established investment strategies. Individual investors implicitly know their investment objectives and the general course they plan to follow.

INVESTMENT DECISION MAKING

The investment strategy may be separated into three components :

1. **Investment philosophy**
2. **Investment objectives**
3. **Investment policies**

1. Investment philosophy

An investment philosophy outlines the relationship investors would like to have with real estate investments Mainly whether they will be ***active*** or ***passive*** investors

- **Active investment** implies direct equity participation in which investors take active roles in finding, buying, managing, and selling the real estate.

- **A passive investor** invest in real estate through a real estate investment trust **(REIT)** or partnership syndication, leaving the acquisition and property management to others for a fee.

1. Investment philosophy

- The investment philosophy of individual, corporate, and institutional investors reflects their **preferences for risk and return**. Some investors are highly risk averse and unwilling to invest risky projects.

2. Investment objectives

Specific objectives of

- earning current income
- benefiting from appreciation
- and diversifying across property types and locations

3. Investment policies

Investment policies may include :

- **Financial criteria**, such as "property value appreciation of at least 5 %"
- **And non financial criteria**, such as "the age of the buildings must not exceed 10 years”
- Investment policies also may include **special considerations** :
  - investing only in small properties (e.g., "Apartment properties should have no more than 50 units")
  - "Office buildings should be no more than 50,000 square feet“

Investment that is inconsistent with investor policies, objectives or philosophy is rejected

Types of Income Property

Apartments
Hotels and motels
Serviced Apartments
Restaurants
Warehouses
Senior assisted living properties
Recreational properties
Rental houses
Commercial properties
Shopping centers
Office buildings
Resorts

Motivations and objectives of purchasers

Purchasers of single-family homes :

- protection from inflation
- income-tax advantages
- swimming pool
- good neighbourhood and scenic site
- Etc

Purchasers of income properties :

- periodic income
- and appreciation

Geographic scope

- **Housing markets are local**
- **Investment markets** for many income properties are **regional, national, or international**
  - **When they seek financial benefits**, some **investors are little** concerned about whether the **properties are located across town or across the country**
  - **Many real estate investors are large firms** or **wealthy persons who employ asset and property managers in the markets where their properties are located**

Geographic scope

Many large office buildings, shopping centers, and other income properties are owned partially or wholly by **foreign investors** from around the world

Forecasting CF from operations

- A primary objective in cash flow forecasting is estimating net operating income **(NOI),** which is calculated by deducting all expenses associated with operating and maintaining the property from the property's rental income
- **NOI (similar to EBITDA) excludes debt financing expenses**, **personal expenses**, and **other non property expenses**

Forecasting CF from operations

- **NOI is the fundamental determinant of property value**. In an analogy to the stock market, NOI is the property's annual **"dividend"** and must be sufficient to provide the investor with an acceptable rate of return
- **NOI therefore is a very important indicator of property performance**
- **NOI focuses** on the **income** produced by the property **after operating expenses** but **before debt service and the payment of income taxes**

Forecasting CF from operations

- In estimating expected NOI, investors and other market participants rely on
  - **the experience of similar properties in the market** and
  - the **historic experience** of the subject property.
- The current owners may not be renting the subject property at the going market rate, and its current expenses may differ from market averages.
- Potential investors must evaluate all income and expense items in terms of current market conditions. Investors in existing properties typically start by placing these items in a **operating statement** format

Operating Statement

1. Potential Gross Income (PGI)
2. Vacancy and collection (V&C)
3. - + Miscellaneous income (MI)
4. = Effective Gross Income (EGI)
5. - Fixed cost (FC)
6. - Variable cost (VC)
7. =Net Operating Income (NOI)
8. - Nonrecurring expenses
9. = Cash flow before debt service & Income tax
   - Debt service (DS)
   = Before-tax cash flow (BTCF)

1. Potential Gross Income (PGI)

PGI is the total annual income the property would produce if it were fully rented and has no collection losses.

2. Vacancy and collection (V&C)

Investor should forecast these losses on the basis of

1. the historical experience of the subject property and
2. the experience of competing properties

3. Miscellaneous income (MI)

Garage rentals

Parking fees

Laundry

Machines and vending machines

4. Effective Gross Income (EGI)

Potential Gross Income (PGI)
- Vacancy and collection (V&C)
+ Miscellaneous income (MI)
= Effective Gross Income (EGI)

5. Fixed cost (FC)

- Do not vary with the level of operation (i.e. occupancy) of the property

- The most common FC are (do not include depreciation) :

  – Real property taxes and
  – Property insurance

6. Variable cost (VC)

Vary with the level of operation of the property. They include items such as :

- Utilities
- Garbage collection
- Supplies
- Repairs
- Maintenance
- and Management

7. Net Operating Income (NOI)

Amount of money left after paying the expenses of operation, but before paying the Mortgage and income taxes.

= Effective Gross Income (EGI)
- Fixed cost (FC)
- Variable cost (VC)
= Net Operating Income (NOI)

8. Nonrecurring expenses

Roof r**eplacements**, **tenant improvements**, **leasing commissions** are commonly referred to as leasing and capital costs

These expenditures are subtracted from NOI in the year in which they are expected to be incurred

9. Before-tax cash flow (BTCF)

Net Operating Income (NOI)

- **Nonrecurring expenses**

= Cash flow before debt service & Income tax

- **Debt service (DS)** *(This expense is specific to the investor)*

= Before-tax cash flow (BTCF) *(Equity investor's (before-tax) dividend)*

Valuation : DCF analysis

Data needed:

1. **NOIs**
2. **NSP** (futur value of the property)

   NSP = Expected selling price (SP) - Selling expenses (SE)
   = Net sale proceeds (NSP)
3. **Asking price (AP) (initial investment)**
4. **The discount rate** : **r = Rf + risk premium**

   It is the investor's required rate of return and is determined by
   - the riskiness of the project's NOIs and NSP
   - The investor preference for risk
   - And the risk-free rate of return (rate of return available on a risk-free government security of comparable maturity)

Investment value (IV)

- If IV > AP, accept, =>> NPV > 0
- If IV < AP, reject, =>> NPV < 0

$$IV = \sum_{t=1}^{n} \frac{NOI_t}{(1+r)^t} + \cdots + \frac{NOI_n}{(1+r)^n} + \frac{NSP_n}{(1+r)^n}$$

IRR : Internal rate of return on the investment

- If IRR > r =>> NPV > 0
- If IRR < r =>> NPV < 0
- If IRR = r =>> NPV = 0

$$AP = \sum_{t=1}^{n} \frac{NOI_t}{(1+IRR)^t} + \cdots + \frac{NOI_n}{(1+IRR)^n} + \frac{NSP_n}{(1+IRR)^n}$$

N.B. : IRR contains several pitfalls. The use of NPV is preferable to IRR for making decisions in most situations

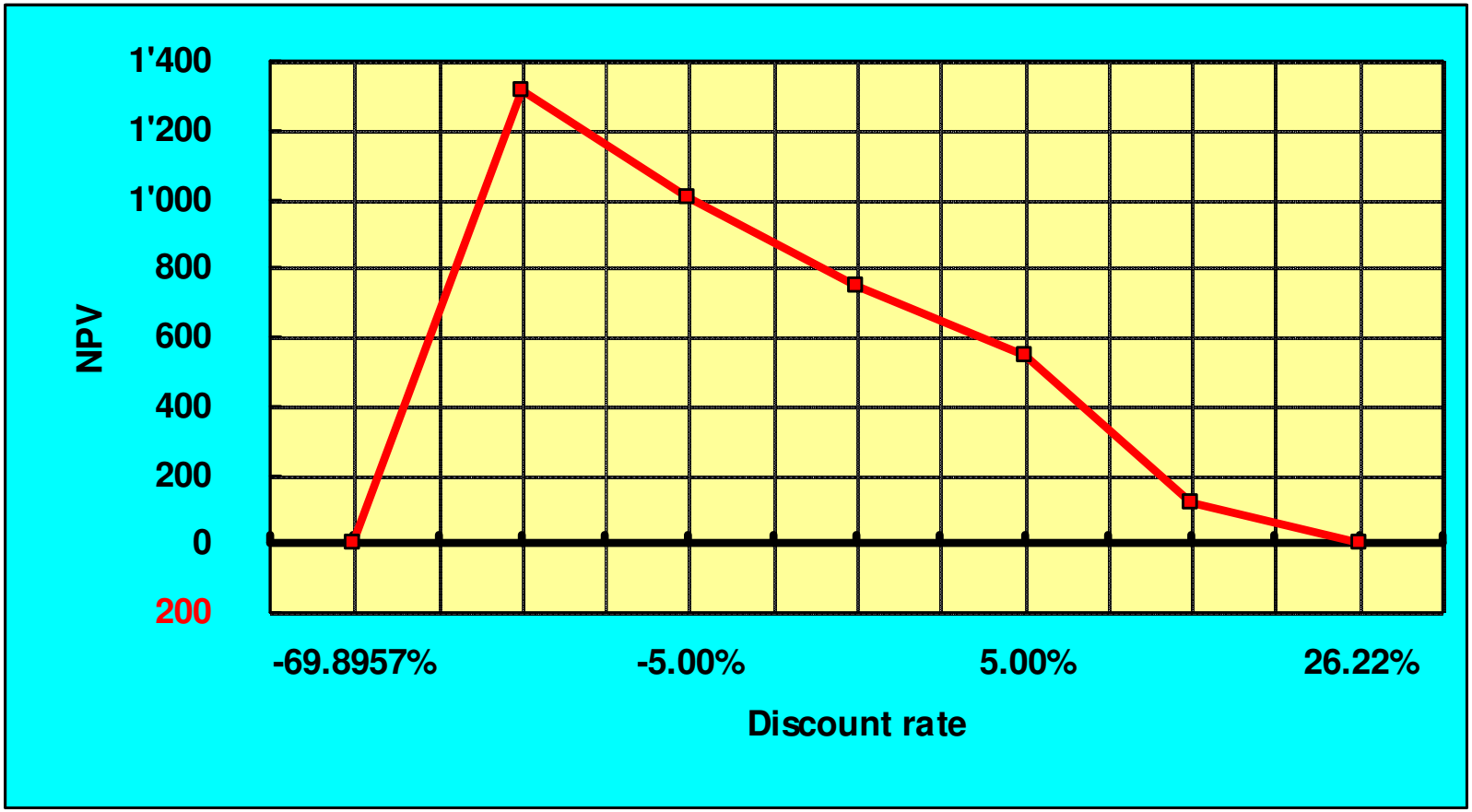
Example 1 of Pitfall

	0	1	2	3	4	5	6
Dépense d'investissement	- 1'000						
Cash flows	**- 1'000**	**500**	**350**	**350**	**350**	**350**	**- 150**

Example 1 of Pitfall

Years	CF	Discount rate	NPV
0	- 1'000.00	-69.8957%	**0**
1	500.00	-10.00%	**1'312**
2	350.00	-5.00%	**1'000**
3	350.00	0.00%	**750**
4	350.00	5.00%	**546**
5	350.00	20.00%	**121**
6	- 150.00	26.22%	**0**

Example 1 of Pitfall



Example 2 of Pitfall

Projects	A	B
Investment	- 10'000	- 20'000
CF1	5'000	9'000
CF2	7'000	12'000
CF3	8'000	13'000
IRR	**40.42%**	**29.80%**
NPV (r = 10%)	**6'341**	**7'866**

Example 2 of Pitfall

Projects	A	B
Investment	- 10'000	- 20'000
CF1	5'000	8'000
CF2	7'000	11'000
CF3	8'000	12'000
IRR	**40.42%**	**23.69%**
NPV (10 %)	**6'341**	**5'379**

Valuation using direct capitalization

If NOI is assumed to grow forever at a constant annual rate equal to *"g"*

$$V_t = \frac{NOI_{t+1}}{r - g}$$

- r : investor's expected annual rate of return
- g : expected annual growth rate in NOI
- R : (r – g)
- V_t : PV of Property

Estimating value by dividing NOI in year 1 by (r – g) is widely used by real estate appraisers to estimate the market value of income properties

Valuation using direct capitalization

We can rearrange the above expression to produce

$$r = \frac{NOI_{t+1}}{V_t} + g$$

NOI divided by value (or acquisition price) is equal to the property's current yield

Valuation using direct capitalization

This formulation clearly shows that the investor's required return must be obtained from 2 sources:

- The property's periodic dividend (i.e. NOI)
- Appreciation (or depreciation) in the value of property

Example

Years	1	2	3	4	Variations
Value of property	1'000.00	1'025.00	1'050.63	1'076.89	2.50%
NOI	100.00	102.50	105.06	107.69	2.50%
Property yield	10.00%	10.00%	10.00%	10.00%	
NOI growth rate		2.50%	2.50%	2.50%	
Capitalization rate		**12.50%**	**12.50%**	**12.50%**	

$$V_t = \frac{NOI_{t+1}}{r - g}$$

$$V_t = \frac{100}{0{,}125 - 0{,}025} = 1'000$$

The effect of mortgage financing on cash flows

Why do investors borrow funds ?

- Limited financial resources
- It alters risk and return of real estate investment (financial leverage)

= Cash flow before debt service & Income tax	
- Debt service (DS)	Interest and amortization of debt
= Before-tax cash flow (BTCF)	Equity investor's (before-tax) d*ividend*

Effect of initial investment

Example :

- Acquisition price (AP): 800’000.0
- Financing: 75 %
- Up-front financing costs 3 %
- Net loan Proceeds (NLP) 582’000.0
- Equity = AP – NLP = 218’000

Effect on cash flow from sale

Most mortgage loans require that the remaining mortgage balance (RMB) be paid in full to the lender when the property is sold.

Effect on cash flow from sale

Example

The **BTER** is the amount of money investors net from the sale of the property, after paying all sale expenses, including the remaining mortgage balance, but before paying income taxes due on sale.

Expected selling price (SP) at year 5	880’000
- Selling expense (SE) 5 %	44’000
= Net sale proceeds (NSP)	836’000
- Remaining mortgage balance (RMB)	420’000
= **Before-tax equity reversion (BTER)**	416’000

Cash flows after debt & before tax

Years	**0**	**1**	**2**	**3**	**4**
NOI		+ NOI_1	+ NOI_2	+ NOI_3	+ NOI_4
- E(quity)	- E				
- DS		- DS_1	- DS_2	- DS_3	- DS_4
+ NSP					+ NSP
- RMB					- RMB
= **BTCF**	- E	$BTCF_1$	$BTCF_2$	$BTCF_3$	$BTCF_4$

NPV

$$NPV = \frac{BTCF_1}{(1+r)^1} + \frac{BTCF_2}{(1+r)^2} + \frac{BTCF_3}{(1+r)^3} + \frac{BTCF_4}{(1+r)^4} - E$$

Note : “r” is the required rate of return on **equity investment**

IRR

$$E - \frac{BTCF_1}{(1+IRR)^1} + \frac{BTCF_2}{(1+IRR)^2} + \frac{BTCF_3}{(1+IRR)^3} + \frac{BTCF_4}{(1+IRR)^4} = 0$$

Common ratios used in real estate investment analysis

1. Overall cap rate (R)
2. Equity dividend rate (EDR)
3. Net Income Multiplier (NIM)
4. Gross Income Multiplier (GIM)
5. Operating expense ratio (OER)
6. Breakeven ratio (BER)
7. Loan-to-value ratio (LTV)
8. Debt coverage ratio (DCR)

1. Overall cap rate (R)

Use: To indicate the rate of return on total investment

(both lender and equity position)

Comment : R is more commonly applied in appraisals.

Also useful for comparisons with R on similar properties in the market area.

$$R = \frac{NOI}{AP}$$

2. Equity dividend rate (EDR)

Use : To indicate the investor's one-period rate of return

Comment : Difference between EDR and R is the effect of debt financing. EDR is useful in distinguishing among investments with different financing structures.

$$EDR = \frac{BTCF}{Initial \cdot Equity \cdot Invest}$$

Fundamental relation between R and EDR

$$EDR = R + \frac{D}{E}(R - DS\%)$$

$$Financial \cdot Leverage = \frac{D}{E}(R - DS\%)$$

Fundamental relation between R and EDR

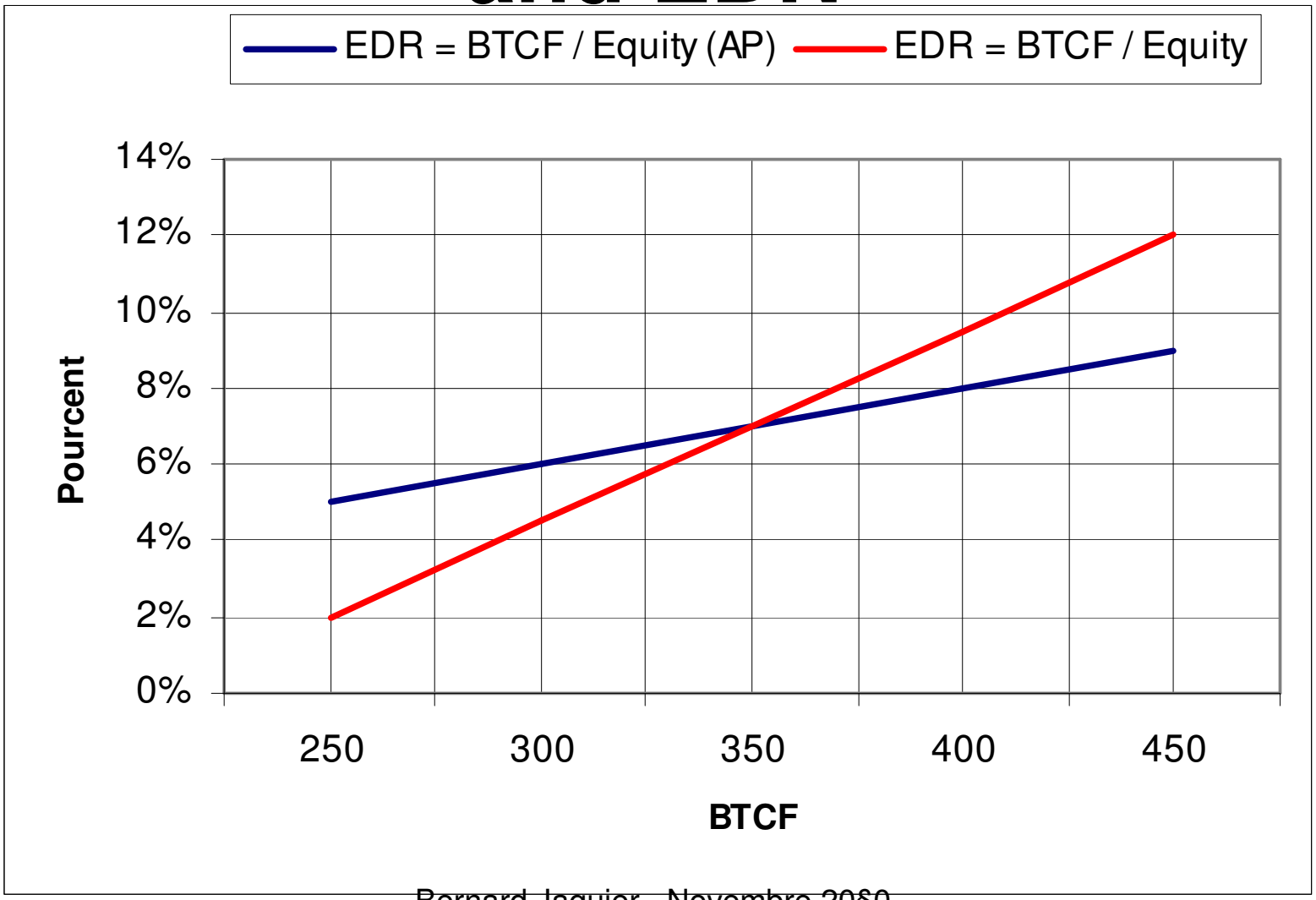
	Before-debt	After-debt
Debt	-	3'000
Equity	5'000	2'000
Investment	5'000	5'000

Before Debt					
NOI	250	300	**350**	400	450
- DS	-	-	**-**	-	-
BTCF	250	300	**350**	400	450
EDR	5%	6%	**7%**	8%	9%
R	5%	6%	**7%**	8%	9%

Fundamental relation between R and EDR

After Debt					
NOI	250	300	**350**	400	450
- DS 7 %	-210	-210	**-210**	-210	-210
BTCF	40	90	**140**	190	240
EDR	2%	5%	**7%**	10%	12%
R	5%	6%	**7%**	8%	9%

Fundamental relation between R and EDR



3. Net Income Multiplier (NIM)

Use : To indicate the relationship between NOI and total investment *(frequently used)*

Comment : A quick method of comparing the income to total investment of one property to others sold in the market

$$NIM = \frac{AP}{NOI}$$

4. Gross Income Multiplier (GIM)

Use :To indicate the relationship between potential gross income (PGI) and total investment *(frequently used)*

Comment : A quick method of Comparison. To compare GIMs, properties should be traded in the some market

$$GIM = \frac{AP}{PGI}$$

5. Operating expense ratio (OER)

Use :To indicate the tolerance for vacancy of the property

Comment :Normal range is 25-50 % of EGI (US)

If OER Is higher than average, it may signal that OE are out

Of control or the rents are too low *(EGI – NOI = OE)*

$$OER = \frac{OE}{EGI}$$

6. Default or Breakeven ratio (BER)

- The higher the ratio, the greater the probability of negative cash flow
- BER typically varies between 60 and 80% (US)

$$BER = \frac{OE + DS}{PGI}$$

7. Loan-to-value ratio (LTV)

- Limited by lenders to protect their capital from default and foreclosure losses
- Maximum allowable on income property usually 75-80 % (US)

$$\frac{LTV = Mortgage \cdot Balance}{AP}$$

8. Debt coverage ratio (DCR)

- Used by lenders to see how much NOI can decline before it will not cover debt service
- Lenders usually seek a 1,20 to 1,30 (US) coverage ratio but may vary their requirements

$$DCR = \frac{NOI}{DS}$$

Sources

- *Real Estate Perspectives, An Introduction to Real Estate. 3thd edition, J.B. Gorgel, H.C. Smith, D.C. Ling, Mc Graw Hill, 1998*
- *Real Estate Course, Bernard Jaquier*