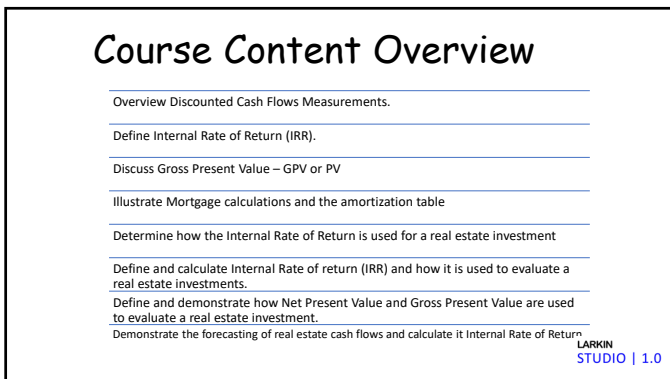


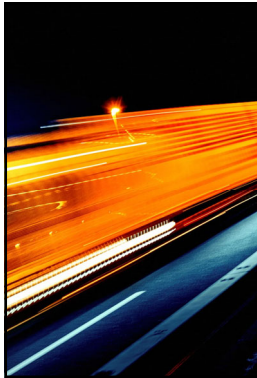
1



2



3




Module 4

Basic Financial Calculations Using the Excel Financial Calculator

Introduction to the Internal Rate of Return (IRR), Present Value, and Net Present Value.

LARKIN STUDIO | 1.0

4




Capitalization Rate (Ro)

The process of converting a one-year stabilized future Net Operating Income NOI into a value of the property.

The Ratio of the NOI of a property and the property's value.

A rate used to convert an NOI into a value LARKIN STUDIO | 1.0

5



Measuring Investment Performance


Capitalization Rate

Capitalization Rates typically come from investors, or they are derived from the market by:

- Sales of comparable properties
- Review of the Capital Markets
- Band of Investment

LARKIN STUDIO | 1.0

6



Measuring Investment Performance

You have been asked to value a small Investment property.

The net operating is \$10,000
Your investor requires a 10% Cap Rate

What would be the Estimated Investment Value?

LARKIN STUDIO | 1.0

7

Capitalization Rate

Going in Capitalization Rate

All Cash
No Financing

$$\frac{\$10,000}{\$100,000} = .10 \text{ or } 10\%$$


LARKIN STUDIO | 1.0

8

Discounted Cash Flow Measures

- Internal Rate of Return (IRR)**
 - The rate of return each dollar in an investment earns while it is in the investment
- Net Present Value (NPV)**
 - The sum of the discounted values of *all* cash flows, including end-of-period zero cash flow, discounted using an appropriate discount rate.
- Gross Present Value (PV)**

9



Internal Rate of Return

IRR is synonymous with:

- Yield
- Interest rate
- Return on
- Opportunity cost
- Discount rate


10

Internal Rate of Return (IRR)

What is the IRR of a real estate investment with annual payments of \$12,000 per year for 5 years if you purchased the investment for \$45,000?

LARKIN STUDIO | 1.0

11



Module 5

Basic Financial Calculations Using the Excel Financial Calculator

Introduction to the Internal Rate of Return (IRR)

LARKIN STUDIO | 1.0

12

Capitalization
Year 1

Annual NPV and IRR Calculations

Holding Period (Years)	5
EOY	Cash Flows + Sale Proceeds
0	(\$100,000)
1	\$10,000
2	
3	
4	
5	+

NPV Discount Rate	
Net Present Value	
Internal Rate of Return	10.00%

13

Solve for IRR

Annual NPV and IRR Calculations

Holding Period (Years)	5
EOY	Cash Flows + Sale Proceeds
0	(\$100,000)
1	\$10,000
2	\$10,000
3	\$10,000
4	\$10,000
5	\$10,000 + \$100,000

NPV Discount Rate	
Net Present Value	
Internal Rate of Return	10.00%

14

Level Cash Flows

Time Value of Money Calculations

Input		EOP	\$
YEARS	5	0	PV = (100,000.00)
P/YR	1	1	PMT = 10,000.00
N	5		
I/YR	10.00%	5	
PV	(\$100,000.00)		
PMT	\$10,000.00		
FV	\$100,000.00		
Beg 1/End 0			

N

I/YR

PV

PMT

FV

15

Capitalization Rates

Going in Capitalization Rate

All Cash
No Financing

$$\frac{\$ 10,000}{\$100,000} = .10 \text{ or } 10\%$$

Exit Capitalization Rate

All Cash
No Financing

$$\frac{\$ 15,000}{.10 \text{ or } 10\%} = \$150,000$$

LARKIN
STUDIO | 1.0

19

Internal Rate of Return (IRR)

1. You purchased a cell tower lease for \$45,000 with annual cash flows (EOP) of \$12,000 for the remaining term of five years. What is the yield (IRR) on the cell tower lease?

LARKIN
STUDIO | 1.0

20

Internal Rate of Return (IRR)

CCIM Institute
Networking, Education, Technology

CCIM Financial Calculator-2/19/2009
Time Value of Money Calculations

Input		EOP:	
YEARS	5	0	PV = (\$45,000.00)
P/YR	1	1	PMT = 12,000.00
N	5		
IRR	10.42%		
PV	(\$45,000.00)		
PMT	\$12,000.00		
FV			
Begin/End	0		

LARKIN
STUDIO | 1.0

21

Internal Rate of Return (IRR)

3. You purchased a piece of land 20 years ago for \$100,000. Today, you estimate the value to be \$1,000,000. What is the annual increase in value over the past 20 years?

LARKIN STUDIO | 1.0

25

Internal Rate of Return (IRR)

Time Value of Money Calculations

Input		EOP	
YEARS	20	0	PV = \$ (100,000.00)
P/YR	1	1	PMT =
N	20		
I/YR	12.20%		
PV	(\$100,000.00)	20	PMT = + FV = 1,000,000.00
PMT			I/YR = 12.20%
FV	\$1,000,000.00		
Beg 1/End 0			

ANS: 12.2%

N I/YR PV PMT FV

LARKIN STUDIO | 1.0

26

Internal Rate of return (IRR)

4. You are considering buying a vacant parcel of land worth \$200,000 today.

Your goal would be to sell it 10 years from now for \$1,000,000. Estimated annual holding costs are \$7,000 per year. What is your IRR?

27

Internal Rate of return (IRR)

7. You are considering purchasing a cell tower lease with 60 monthly payments at \$1000 per month. Rent is paid at the beginning of the month. Your required return on similar investments is 25% (your discount rate or IRR), and the lease payments are made at the end of the month.

How much would you be willing to pay for the cell tower lease?

34

Internal Rate of return (IRR)

Time Value of Money Calculations

Input		BOP	
YEARS	5	1	PV = 1,000.00
P/YR	12	2	PMT = 1,000.00
N	60		
I/YR	25.00%		
PV	(\$34,779.81)		
PMT	\$1,000.00		
FV			
Beg 1/End 0	1		

35



Module 6

Basic Financial Calculations Using the Excel Financial Calculator

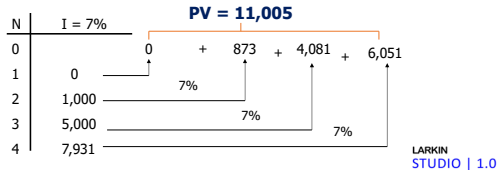
Gross Present Value and Net Present Value.

LARKIN STUDIO | 1.0

36

Gross Present Value (PV)

What is the Present Value (PV) of a series of cash flows discounted at **7% Annually**?



37

Gross Present Value (PV)

What is the Present Value (PV) of a series of cash flows discounted at **7% Annually**?

N	I = 7%	Cash Flow	Discounted Value
0		(11,005.45)	
1		0	
2		1,000	
3		5,000	
4		7,931	

EOY	Cash Flows	+	Sale Proceeds
0		+	
1		+	
2	\$1,000.00	+	
3	\$5,000.00	+	
4	\$7,931.00	+	
5		+	
6		+	
7		+	
8		+	
9		+	
10		+	

NPV Discount Rate	7.00%
Net Present Value	\$11,005.45
Internal Rate of Return	

38

Gross Present Value (PV)

8. You are evaluating a 10-year government lease of a commercial building. The rent payment is scheduled to be \$25,000 per year (end-of-period) for the first 5 years, and for years 6 through 10, it will increase to \$30,000 per year.

What is the cash flow's gross present value (PV) if your discount rate is 9%?

39

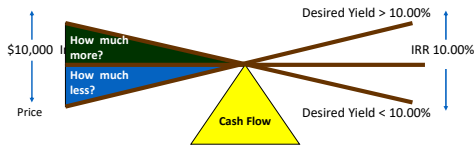
Net Present Value

- NPV is calculated by discounting the FUTURE CFs at an appropriate discount rate, then comparing this discounted sum to the initial investment.
- Therefore, NPV is not in itself a value. It is a differential.
- VALUE, to the investor, is determined by discounting the future benefits of an investment.
- Net Present Value is the comparison of VALUE to the COST of the investment.

43

Net Present Value

NPV measures how much more, or less, you would pay for an investment, when comparing the investor's desired yield against the IRR of the investment.



44

Net Present Value

NPV is the sum of the present value of all future cash flows added to the initial investment.

N	I = 7%	
0	(10,000)	0
1	0	873
2	1,000	4,081
3	5,000	6,051
4	7,931	

(10,000) + 11,005 = 1,005 NPV

LARKIN STUDIO | 1.0

45

Application of IRR and NPV

Below are five years of forecasted cash flows (NOI) for a real estate investment. The property is listed at \$275,000, and the Exit (terminal) Capitalization Rate (year six NOI) is 10%.

Using the Net Operating Income (NOI) for each year, what is the Internal Rate of Return, the Net Present Value, and the gross present value (PV) of the cash flows if your discount rate is 11%?

End of Year:	1	2	3	4	5	6
1 - Potential Rental Income	\$ 48,000	\$ 49,440	\$ 50,923	\$ 52,451	\$ 54,024	\$ 55,645
2 - Vacancy & Credit Losses	\$ (4,800)	\$ (4,944)	\$ (5,092)	\$ (5,245)	\$ (5,402)	\$ (5,565)
3 = Effective Rental Income	\$ 43,200	\$ 44,496	\$ 45,831	\$ 47,206	\$ 48,622	\$ 50,081
4 + Other Income	\$ 5,000	\$ 5,250	\$ 5,513	\$ 5,788	\$ 6,078	\$ 6,381
5 = Gross Operating Income	\$ 48,200	\$ 49,746	\$ 51,343	\$ 52,994	\$ 54,700	\$ 56,462
6 - Operating Expenses	\$ (20,726)	\$ (21,391)	\$ (22,078)	\$ (22,787)	\$ (23,521)	\$ (24,279)
7 = NET OPERATING INCOME	\$ 27,474	\$ 28,355	\$ 29,266	\$ 30,207	\$ 31,179	\$ 32,183

52

Application of IRR and NPV

Annual NPV and IRR Calculations

Holding Period (Years)		5
EOY	Cash Flows	+ Sale Proceeds
0	(\$275,000)	
1	\$27,474	
2	\$28,355	
3	\$29,266	
4	\$30,207	
5	\$31,179	+ \$321,830

NPV Discount Rate	11.00%
Net Present Value	\$23,556
Internal Rate of Return	

Annual NPV and IRR Calculations

Holding Period (Years)		5
EOY	Cash Flows	+ Sale Proceeds
0		
1	\$27,474	
2	\$28,355	
3	\$29,266	
4	\$30,207	
5	\$31,179	+ \$321,830

NPV Discount Rate	11.00%
Net Present Value	\$298,556
Internal Rate of Return	

53

What is Next?

LARKIN
STUDIO | 1.0

54
