

Read and follow instructions to avoid penalty (VA)

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3. 270

Midterm FINA 450/4 Section A ~ WINTER 2011 Professor J. Mannudiar

YOU are concerned over a real estate transaction that you are currently undertaking. The details are as follow: ~

PROPERTY	ASKING PRICE	Offer (accepted)
DOWNTOWN	\$600,000	At 8% premium
UPDOWN	\$760,000	At 10% discount

Financing Plan (FP)	FPA	FPB
Loan-to-Value Ratio	80%	75%
1st Mortgage	65% of Loan @ 4.25%	70% of Loan @ 3.95%
2nd Mortgage	Balance @ 4.65%	Balance @ 4.85%
Compounded	Semi-annually	Semi-annually
Payable	Annually	Annually
Processing fees	1.05% of Loan	1.15% of Loan
Cancel. penalty *	1.35% of M. Balance	1.65% of M. Balance
Term (years)	20	24

* cancellation fees applicable if cancelled before 10 years

The property has 28,000 square feet of space for rent and the going rate is \$2.90 per square foot for the first 15,000 square feet and at 10% premium per square foot for the remaining area. It is estimated to have a 9% vacancy and credit losses and the operating expenses (excluding depreciation) is approximately 34% of effective gross income.

The property consists of building which represent 72% of value and the balance represent land. The building belongs to Class 3 with a CCA rate of 4%, declining balance method, half year rule applies.

You plan to keep this property for 13 years with Financing Plan A (FPA): and for 15 years with Financing Plan B (FPB). The tax rate is 40% and 50% of the capital gains is taxed. Inflation is 2.35% per annum.

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3, 270

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Question #1. see page 2 for details

Assume cash on hand (COH): you stay for the entire term and you want Financing Plan A (FPA). What is the Effective Cost of Borrowing (ECB) for

DOWNTOWN?

Show work below and use back of PREVIOUS page if you need more space

$$SPD = 1.06 \times 600,000 = 636,000$$

$$M\#1 = 0.65 \times 518,400 = 336,960$$

$$EAR = 4.295156\%$$

$$Hpmf_1 (PVA_{20, 4.295156\%}) = 336,960$$

$$\rightarrow 85,446$$

$$\rightarrow 14,196$$

$$Hpmf_2 (PVA_{20, 4.704056\%}) = 181,440$$

$$EAR = 4.704056\%$$

$$M\#2 = 0.35 \times 518,400 = 181,440$$

$$\rightarrow 100\%$$

$$LVR = 80\% \quad 0.80 \times 648,000 = 518,400$$

→ Answer 4.560746%

$$ECB = 4.560746\%$$

$$ECB: \quad 39,642 (PVA_{20, ECB}) = 518,400 - 5443 = 512,957$$

$$P.f: \quad 1.05\% \times 518,400 = 5443$$

$$total\ mpmf = 25446 + 14196 = 39642$$

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

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Question #2. see page 2 for details

Assume No Cash on Hand (No COH), you sold the property as planned under Financing Plan B (FPB).
What is the ECB for Property UPDOWN?

Answer: 4.398413%

Show work below and use back of PREVIOUS page if you need more space)

Sold after 15 yrs 9 yrs remain No can pay

$$SPUR: 0.90 \times 760,000 = 684,000$$

$$LVR: 75\% \quad 0.75 \times 684,000 = 513,000$$

$$\Phi, f: 1.15\% \quad x = 100n$$

$$0.9885 \cdot x = 513,000$$

$$x = 518,968$$

$$m\#1 \quad 0.7 \times 518,968 = 363,278$$

$$EAR: 3.989000\%$$

$$M\#1 \quad (PVA^{24}_{24, 3.989000\%}) = 363,278$$

$$M\#2 \quad (PVA^{24}_{24, 4.908800\%}) = 155,690$$

$$m\#2 \quad 0.3 \times 518,968 = 155,690$$

$$EAR: 4.908800\%$$

$$M\#2 \quad 1183$$

$$M\#1 \quad 23,799$$

$$\text{total M\#1: } 34,983$$

$$m\#2 \quad 1183 (PVA_{1183, 4.908800\%}) = 79,811$$

$$m\#1 \quad 23,799 (PVA_{23,799, 3.989000\%}) = 177,042$$

$$\text{total M\#2: } 256,853$$

$$ECB: \quad 34,983 (PVA_{34,983, ECB}) + 256,853 (PVA_{256,853, ECB}) = 518,968 - 5968 = 513,000$$

$$ECB = 4.398413\%$$

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

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Question #3 see page 2 for details

Assume **COH**, use Financing Plan B (**FPP**) and you sold the property as planned. What is the weighted average cost of capital (WACC) of Property DOWNTOWN?

Note: Cost of debt (rd) = ECB; and the opportunity costs of your down payment equals ECB + plus 4.35% risk premium?

→ Answer 4.166694%

Show work below and use back of PREVIOUS page if you need more space)

Sold after 15 yrs 9 yrs remain

$$SPD : 1.08 \times 600,000 = 648,000$$

$$LVR : 75\% \quad 0.75 \times 648,000 = 486,000 \leftarrow 100\%$$

$$\#2 \quad 0.3 \times 486,000 = 145,800$$

$$EAR : 4.908806\%$$

$$Hpm_2 (PVA_{24}, 4.908806\%) = 145,800$$

$$4710473$$

$$Hpm_1 (PVA_{24}, 3.989006\%) = 340,200$$

$$4722088$$

$$\text{total mpm} = 32761$$

total (5)

$$\#1 \quad 22288 (PVA_9, 3.989006\%) = 165,808$$

#2

$$\text{total mpm} = 165,808 + 74743 = 240,551 \leftarrow PVI$$

$$PVI : 1.15\% \times 486,000 = 5589$$

$$ECB : 32761 (PVA_{15}, ECB) + 240551 (PVI, ECB) = 486,000 - 5589 = 480,411$$

$$ECB = 4.398848\%$$

$$r_e : 4.398848\% + 4.35\% = 8.748848\%$$

$$WACC = 0.75 (4.398848\%) (1-0.4) + 0.25 (8.748848\%)$$

$$4.166694\%$$

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MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

Question #4 see page 2 for details

What is the Gross Income Multiplier (GIM), Net Operating Income Multiplier (NIM) and Overall Capitalization Rate (OCR) for Property DOWNTOWN?

SP = 648,000 AP = 600,000

Complete the table below for the buyer and seller

	Investor	Seller
GIM	8.38043X	7.759658X
NIM	12.69766X	11.359098X
OCR	7.875463%	8.50559%

Show work below and use back of PREVIOUS page if you need more space

$$\begin{aligned} \text{GIM}_B &= \frac{SP}{EGI} = \frac{648,000}{77,323} \\ \text{GIM}_S &= \frac{AP}{EGI} = \frac{600,000}{77,323} \\ \text{NIM}_B &= \frac{SP}{NUI} = \frac{648,000}{51,033} \\ \text{NIM}_S &= \frac{AP}{NUI} = \frac{600,000}{51,033} \\ \text{OCR}_B &= \frac{SP}{NUI} = \frac{648,000}{51,033} \\ \text{OCR}_S &= \frac{AP}{NUI} = \frac{600,000}{51,033} \end{aligned}$$

Based on your expectations on GIM, NIM and OCR (see below), was this transaction a Favorable (\$) or Unfavorable (\$) for the buyer.

Complete the following table:

Buyer's Expected	Favorable \$	Unfavorable \$
GIM = 8.50 times	9,245.50	
NIM = 12.50 times		10,087.50
OCR = 7.80%		

Show work below and use back of PREVIOUS page if you need more space

$$\begin{aligned} \text{GIM}_B &= \frac{SP}{EGI} = \frac{648,000}{77,323} \\ \text{GIM}_S &= \frac{AP}{EGI} = \frac{600,000}{77,323} \\ \text{NIM}_B &= \frac{SP}{NUI} = \frac{648,000}{51,033} \\ \text{NIM}_S &= \frac{AP}{NUI} = \frac{600,000}{51,033} \\ \text{OCR}_B &= \frac{SP}{NUI} = \frac{648,000}{51,033} \\ \text{OCR}_S &= \frac{AP}{NUI} = \frac{600,000}{51,033} \end{aligned}$$

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

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Question #5 see page 2 for details

What is the Cash Flows After Taxes (CFAT) for Year 1 and Year 2? Assume NO COH and Financing Plan A (FPA) for property DOWNTOWN.

Identify ANSWER below

Use this table if you find it useful

	Year 1	Year 2
NOI	51033	52232
Depreciation	(9381)	(18289)
EBIT	41702	33943
Interest	(23253)	(22500)
EBT	18449	11437
Taxes 40%	(7380)	(4575)
EAT	11069	6862
CCA	+ 9331	+ 18289
Principle	(16810)	(13557)
CFAT	\$ 3590	\$ 7594

Show work below and use back of PREVIOUS page if you need more space)

Bidg: $0.72 \times 648000 = 465600$

SP: 648000
B/C 465600
CCA (9331)
EUC 459229

LVR: 80%
 $0.80 \times 648000 = 518400$

D.F. 1.05%
 $X = 1000$

$0.9895 \cdot X = 518400$

$X = 523901$

m#1: $0.65 \times 523901 = 340536$

EAR: 9.295156%

MPMT (PVA 20, 9.295156%) = 340536

47 857100

47 14347

MPMT (PVA 20, 9.295156%) = 183365

EAT: 9.295156%

m#2: $0.35 \times 523901 = 183365$

Iden answers
Schedules

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

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Question #6.

Raphael purchased a property for \$500,000 and RBC financed it under the following terms: *Assume Cash on Hand*. There is 1.40% processing fees based on loan amount; and 1.60% cancellation penalty based on outstanding mortgage balance, if mortgage is cancelled before 9 years into term.

40 percent

20 years

MONTHLY

5.10% per annum, compounded semi-annually

• Interest Rate

• Payment mode

• Term

• Down payment

How much do you owe the bank after 100 payments?

→ Answer

210,029

Show work below and use back of PREVIOUS page if you need more space

cancel, owe 213,389

COT

$$DPM 40\% \therefore 100n = 0.6 \times 500,000 = 300,000$$

$$n = 20 \times 12 = 240$$

$$EMR = \left(1 + \frac{0.050}{2}\right)^{240} - 1 = 0.420553\%$$

$$MPM (PVA^{240, 0.420553\%}) = 300,000$$

$$\rightarrow 1988$$

Mbal(100)

$$\text{time remaining } n = 240 - 100 = 140$$

$$1988 (PVA_{140, 0.420553\%}) = 210,029$$

→ amount you still owe

if cancel, penalty:

$$1.60\% \times 210,029 = 3360$$

then owe, 213,389

Question #7

You have been given the assignment to appraise a property. This property has 44,000 square feet (s.f.) of usable space on 70,000 square feet of land. Analysis of construction costs indicate a per square-foot cost of \$11.50 for the first 18,000 square feet of space; \$15.60 per square foot for the next 22,000 square feet, and \$21.50 per square foot for the balance. The property is forty-five years old with an estimated economic life of one hundred years. Changing neighborhood (location depreciation) characteristics have had a negative influence on the property of approximately 15% of building (construction) costs. An examination of similar lots indicate a land value of \$15 per square foot.

What is the estimated market value of this property based on the Cost Approach?

→ Answer:

\$ 1,304,480

Show work below and use back of PREVIOUS page if you need more space

155: Depreciation

- Physical $\frac{45}{100} \times 630200 = (286,290)$

- Functional

- Location $630200 \times 15\% = (94530)$

Book Value

Value of land (as if vacant) $(\$15 \times 70000)$

Value of property

Cost of bldg (as if new) $(11.50 \times 18000) + (15.60 \times 22000) + (21.50 \times 4000)$

(381,720)

+ 1,050,000

\$ 1,304,480

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270

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Question #8

A property has 20,000 square feet of rentable space at \$30 per square foot. You expect a vacancy and credit loss of 13% and operating expense (without CCA) is 32% of effective gross income. LVR = 72%, and downpayment = \$280,000.

Financing is at 5.45% per annum compounded semi-annually.

payable annually. The processing fees is 1.15% of loan and

the term is 30 years. The opportunity costs of your down

payment is 3.25% above the effective cost of borrowing (ECB)

of this loan. Tax rate is 40%. You have NO cash on hand.

What is the value of this property based on the Net Income

Approach?

Show work below and use back of previous page if you need more space

$$VIA = \frac{NOI}{WACC_{BT}} = \frac{324,960}{0.539579\%} = \$5,427,872$$

$$PGI = (20,000 \times 30)$$

$$-VCL: 13\%$$

$$= EGI$$

$$-OE(WIOCCA) = 32\% EGI$$

$$= NOI$$

$$LVR: 72\% \quad DPM: 28\%$$

$$0.28 \times 1000,000 = 720,000$$

$$PF = 1.15\% \times X = 1000$$

$$0.985 \times X = 720,000$$

$$X = 728,376$$

$$EAR: 5.524256\%$$

$$HPMT(PVA_{30, 5.524256\%}) = 728,376$$

$$L = 50,251$$

$$WACC_{BT} = 0.72(5.629579\%) + 0.28(8.879579\%)$$

$$r_e: 5.629579\% + 3.25\% = 8.879579\%$$

$$= ECB = 5.629579\%$$

$$ECB: 50,251(PVA_{30, ECB}) = 720,000$$

$$728,376 - 8,376$$

$$\begin{array}{r} \$600,000 \\ (78,000) \\ \hline 522,000 \\ (167,040) \\ \hline 354,960 \end{array}$$

Read and follow instructions to avoid penalty (VA)

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3, 270

Midterm FINA 450/4 Section A ~ WINTER 2011 Professor J. Mannadhar

11

Question #9

You obtained a mortgage 9 years ago for \$650,000 at 7.15% per annum compounded semi-annually, processing fees was 0.75% of loan, amortized over 25 years. Mortgage rates has dropped so that a 16-year loan can be obtained at 5.55% per annum, compounded semi-annually. Cancellation penalty is 1.50% of mortgage outstanding balance. There is a 1.25% processing fees on the new loan. If you plan to switch, what is the ECB of the new loan? Assume you have no cash on hand.

→ Answer: 6.024446%

Show work below and use back of previous page if you need more space

Old: loan = 650,000 EAR = 7.277800% n = 25

HPMT (PVA_{25, 7.277800%}) = 650,000

↳ 57,180

HDA19

57,180 (PVA_{16, 7.277800%}) = 530,350

cancell pen: 1.50% x 530,350 = 7955

538,311

New loan: DF: 1.25% x X = 166,100

0.9875 · X = 538,311

X = 545,125

EAR = 5.627000%

HPMT (PVA_{16, 5.627000%}) = 545,125

↳ 52,508

ECB: 52,508 (PVA_{16, ECB}) = 545,125 - 6814 - 7955 = 530,330

ECB = 6.024446%

11

MARCH 13th, 2011 ~ 10 - 12 noon ~ MB3.270**Read and follow instructions to avoid penalty (VA)****Question #10**

On March 13th, 2011 a potential buyer offered you \$700,000 for your property and you have the following information to evaluate the offer.

- Housing prices increasing at 3.15% per annum
- \$125 per square foot
- \$45,000 per year reduction for age
- Two-car garage valued at \$95,000 compared to \$40,000 for a one-car garage
- Corner property warrants a 15 percent premium
- Swimming pool worth approximately \$36,000 considered a good selling point in your neighborhood

	Your Property	The Comparable
Selling Price	?	\$750,000
Sold (when)	Now	August 13 th , 2010
Location	middle	corner
Size (square feet)	10,800	9,500
Age (years)	12	9
Garage	one-car	two-car
Swimming pool	Yes	No
Financing	Conventional	Conventional

Should you accept this offer? Circle YES or NO

What is the value of your home? Answer: \$659,781

Show work below and use back of PREVIOUS page, if you need more space

SP

Adj:

$$\text{Inflation: } \frac{12}{1} \times 3.15\% \times 750,000 =$$

$$\text{Location: } 0.15 \times 750,000$$

$$\text{Area: } 1300 \times 125$$

$$\text{Age: } 3 \text{ yrs} \times 45k$$

S. Pool:

Garage:

750,000

Comp.

$$+ 13,781$$

$$(112,500)$$

$$+ 162,500$$

$$(135,000)$$

$$(55,000)$$

$$+ 36,000$$

end

12

700,000 offer

VS.