Solutions to Questions - Chapter 14
Disposition and Renovation of Income Properties

Question 14-1

What factors should an investor consider when trying to decide whether to dispose of a property that he has owned for several years?

The factors are based on an incremental, or marginal, return criteria that should be utilized by investors when faced with such decision making.

The investor should evaluate the expected future performance of the property and then compare the IRR for holding versus sale of the property.

The investor must consider whether the net funds obtained from the sale of the property (after tax and expenses) can be reinvested at a greater rate of return (ATIRR) than the return that would be earned if the property is not sold.

Tax laws in effect at the time of purchase/sale of a property. Tax law changes affect the relative benefits of existing versus new investors in the same property.

Question 14-2

Why might the actual holding period for a property be different from the holding period that was anticipated when the property was purchased?

An investor purchases a real estate investment based on the benefits expected to be received over an anticipated holding period. That is, the investor computes the various measures of investment performance based on expectations at the time the property is purchased. After the property is purchased, however, many things can change that affect the actual performance of the property. These same factors may affect the investor's decision as to whether the property continues to meet his investment objectives. For example, market rents may not be increasing as fast as expected, thus reducing the investor's cash flow. Tax laws may have changed, as they did in 1986, thus changing the benefit for some investors more than others. The point is that a periodic evaluation should be made to determine whether properties should be sold.

Question 14-3

What is the marginal rate of return? How is it calculated?

The marginal rate of return is the return gained by holding the property for one additional year.

The marginal rate of return considers what the investor could get in the future by keeping the property versus what he could get today by selling the property.

Question 14-4

What causes the marginal rate of return to change over time? How can the marginal rate of return be used to decide when to sell a property?

Increasing rents and increases in the value of the property tend to increase the MRR. Equity buildup from price appreciation and loan repayment, however, tends to lower the MRR. Also, because the depreciation deduction is fixed but rents are rising, the relative amount of tax benefits from depreciation decreases each year. The property should be sold when the marginal rate of return falls below the rate at which funds can be reinvested.

Question 14-5

Why might the after-tax internal rate of return on equity ($ATIRR_e$) differ for a new investor versus an existing investor who keeps the property?

This could be due to tax law changes that affect the relative benefits of existing versus new investors in the same property. If the tax law becomes less favorable, as it did in 1986, this tends to favor existing investors. If the tax law becomes more favorable, as it did in 1981 when ACRS was passed and depreciable lives were shortened considerably, then new investors tend to be favored.

Tax law changes tend to affect the turnover or sale of real estate. It is important to understand these concepts since tax laws are always subject to change and these changes affect the relative risk and return opportunities for new and existing investors.

Question 14-6

What factors should be considered when deciding whether to renovate a property?

To determine whether a property should be renovated, consider the incremental benefit associated with renovating the property versus not renovating the property.

Question 14-7

Why is refinancing often done in conjunction with renovation?

When properties are renovated, the investor often uses that opportunity to refinance the entire property. Thus, the investor may be able to borrow funds in addition to what is needed for the renovation, especially if the investor plans to obtain a new loan on the entire property rather than obtain a second mortgage to cover the renovation costs. The total amount of funds that the investor will be able to borrow is usually based on a percentage of the estimated value of the property after renovation is completed.

Question 14-8

Why would refinancing be an alternative to sale of the property?

Refinancing would increase financial leverage. Refinancing at a higher loan-to-current-value ratio may provide the investor with additional funds to invest. This, to some extent, is an alternative to a sale of the property. No taxes have to be paid on funds received by additional borrowing, whereas taxes would have to be paid if the property is sold.

Question 14-9

How can tax law changes create incentives for investors to sell their properties to other investors?

Tax law changes affect the relative benefits of existing versus new investors in the same property. If the tax law becomes less favorable, as it did in 1986, this tends to favor existing investors. If the tax law becomes more favorable, as it did in 1981 when ACRS was passed and depreciable lives were shortened considerably, then new investors tend to be favored.

Tax law changes tend to affect the turnover or sale of real estate. It is important to understand these concepts since tax laws are always subject to change and these changes affect the relative risk and return opportunities for new and existing investors.

Question 14-10

How important are taxes in the decision to sell a property?

Taxes are important for a number of reasons. If a property is sold, capital gains tax must usually be paid. This increases the opportunity cost of selling versus keeping the property. Also, tax laws may have changed since the property was purchased. This means that the depreciation deductions available to a new investor might be better or worse than that which the current owner is using. This affects the return that a new investor can get relative to that which the current owner can get by keeping the property.

Question 14-11

Are tax considerations important in renovation decisions?

Yes. First, the improvements may result in an increased depreciable basis and more tax deductions. Second, there may be tax credits available for renovating the property.

Question 14-12

What are the benefits and costs of renovation?

In general, renovation can have many benefits, including increasing rents, lowering vacancy, lowering operating expenses and increasing the future property value.

Question 14-13

Do you think renovation is more or less risky than a new investment?

Renovation can be more risky because of the uncertainty as to the cost of the renovation. It is often easier to estimate the costs of new construction relative to the costs of renovating an older building that may have hidden structural and environmental problems.

Question 14-14

What is meant by the "incremental cost of refinancing?"

When the interest rate is higher on the larger loan amount, the incremental cost of the additional funds borrowed is even higher than the rate on the larger loan. This is due to the fact that the higher rate has to be paid on all the funds borrowed, not just the additional funds.

For refinancing to be a profitable strategy, the effective cost of the debt must be less than the unlevered return on the project being refinanced.

Question 14-15

In general, what kinds of tax incentives are available for rehabilitation of real estate income property?

There are several tax incentives for rehabilitation. For example, investment tax credits are available for certain rehabilitation expenditures. A property placed in service before 1936 may be eligible for a 10% credit and a building that is a certified historic structure may be eligible for a 20% tax credit. There are also credits available for renovation of low income housing.

Question 14-16

Why would an investor consider doing an exchange or an installment sale?

Both an exchange and an installment sale are ways of deferring capital gain taxes so that they are recognized in the future rather than at the time of sale.

Solutions to Problems - Chapter 14
Disposition and Renovation of Income Properties

INTRODUCTION

The four problems in this chapter deal with disposition and renovation decisions. Students are also expected to recognize that refinancing is also an alternative to disposition (part g of problem 3), and refinancing is often a part of renovation (part b of problem 4).

Problem 14-1

(a)

	If sold today	If sold next year
Sale price	$2,000,000	$2,100,000
Mortgage balance	1,000,000	900,000
Capital gain tax	250,000	255,000
Cash flow	$ 750,000	$ 945,000

Marginal return = (Cash flow if sold next year + NOI over next year - Cash flow if sold today) ÷ Cash flow if sold today
Marginal return = ($945,000 + $50,000 - $ 750,000) ÷ $750,000 = 32.67%.

(b) This appears to be a very attractive return. The property should be held for another year unless the investor feels that a higher return can be earned investing the $750,000 elsewhere at the same or lower risk.

Problem 14-2

After-tax cash flow from operations if renovated	$60,000
After-tax cash flow from operations if not renovated	- 50,000
Incremental cash flow from operations	$10,000
Sale proceeds if renovated	$2,400,000
Sale proceeds if not renovated	2,100,000
Incremental cash flow from sale	$ 300,000
Renovation costs	$250,000

(a) Return from renovation = ($10,000 + $300,000 - $250,000) ÷ $250,000 = 24%

(b) This appears to be an attractive return, but it must be weighed against the risk of renovation. The investor needs to consider whether the $250,000 can be invested elsewhere at a higher return with the same or less risk.

Problem 14-3
(REFER TO TEMPLATE 14_3.XLS)

ASSUMPTIONS:

EGI Year After Sale	350,000		**Purchase Price**	2,000,000	
Projected Increase in EGI	3.00%	per year	**Building Value**	1,800,000	
Operating Expenses	40.00%	of EGI	**Land Value**	200,000	
Loan:			**Years since Purchased**	2	
Loan-to-value ratio	70.00%		**Resale Value Today**	2,200,000	
Interest	10.00%		**Selling Expenses**	6.00%	of sale price
Term	25	years	**Appreciation Rate**	3.00%	per year
Payments per year	12		**Depreciable Life**	27.5	years
			Tax Rate	36.00%	

Equity	600,000
Loan Amount	1,400,000

Loan Information:

Year	2	3	4	5	6	7	8	9	10	11	12
Interest	124,756	136,481	134,787	132,915	130,847	128,563	126,040	123,252	120,173	116,770	113,012
EOY Loan Balance	1,372,095	1,355,914	1,338,039	1,318,293	1,296,478	1,272,380	1,245,758	1,216,348	1,183,859	1,147,968	1,108,318

(a) Cash flow if sold today:

Cash Flows from Sale in Year 2

Sales Price			2,200,000
Sales Costs			132,000
Mortgage Balance			1,372,095
Before-tax Cash Flow			695,905
Sales Price		2,200,000	
Sales Costs		132,000	
Original Cost Basis	2,000,000		
Accumulated Depreciation	130,909		
Adjusted Basis		1,869,091	
Capital Gain		198,909	
Tax			71,607
After-Tax Cash Flow from Reversion			**624,298**

(b) Cash flow if not sold:

Year	3	4	5	6	7
Effective Gross Income	350,000	360,500	371,315	382,454	393,928
Operating Expenses	140,000	144,200	148,526	152,982	157,571
Net Operating Income	210,000	216,300	222,789	229,473	236,357
Debt Service	152,662	152,662	152,662	152,662	152,662
Before-tax Cash Flow	57,338	63,638	70,127	76,811	83,695
Taxable Income:					
NOI	210,000	216,300	222,789	229,473	236,357
Less: Interest	136,481	134,787	132,915	130,847	128,563
Depreciation	65,455	65,455	65,455	65,455	65,455
Taxable Income	8,064	16,059	24,419	33,171	42,339
Tax	2,903	5,781	8,791	11,941	15,242

After-tax Cash Flow:					
Before-Tax Cash Flow	57,338	63,638	70,127	76,811	83,695
Tax	2,903	5,781	8,791	11,941	15,242
After-Tax Cash Flow	**54,435**	**57,857**	**61,336**	**64,869**	**68,453**

(c) Cash flow if sold after 5 years:

Cash Flows from Sale in Year	7		
Sales Price			2,550,403
Sales Costs			153,024
Mortgage Balance			1,272,380
Before-tax Cash Flow			1,124,999
Sales Price		2,550,403	
Sales Costs		153,024	
Original Cost Basis	2,000,000		
Accumulated Depreciation	458,182		
Adjusted Basis		1,541,818	
Capital Gain		855,561	
Tax			308,002
After-Tax Cash Flow from Reversion			**816,997**

(d) IRR (selling after 5 additional years vs. selling today):

ATIRR on holding property 5 additional years:

Year	2	3	4	5	6	7
ATCF	(624,298)	54,435	57,857	61,336	64,869	885,450
ATIRR	**14.32%**					

(e)
15.25%. (see part i).

(f)
The MRR is rising for the first 5 years (see part i). Thus, the MRR in 5 additional years will be higher than for one additional year.

(g)
Lonnie Carson might consider refinancing Royal Oaks. For example, a new loan for 80% of value would result in a loan of .8 x $2,220,000 or $1,760,000. Subtracting the current loan balance of $1,372,095 results in additional funds of $387,905 which could be used as equity capital for purchase of Royal Palms.

(h)
The answer depends on the rate of return available for investing in Royal Palms (assuming Royal Oaks must be sold). If the return from Royal Palms is greater than 15.25% (the MRR on Royal Oaks), then Royal Oaks should probably be sold. Alternatively, as indicated above, Lonnie Carson may want to refinance Royal Oaks and use the funds to purchase Royal Palms.

(i)
Marginal Rate of Return

Year	3	4	5	6	7	8	9	10	11	12
Effective Gross Income	350,000	360,500	371,315	382,454	393,928	405,746	417,918	430,456	443,370	456,671
Operating Expenses	140,000	144,200	148,526	152,982	157,571	162,298	167,167	172,182	177,348	182,668
Net Operating Income	210,000	216,300	222,789	229,473	236,357	243,448	250,751	258,274	266,022	274,002
Debt Service	152,662	152,662	152,662	152,662	152,662	152,662	152,662	152,662	152,662	152,662
Before-tax Cash Flow	57,338	63,638	70,127	76,811	83,695	90,786	98,089	105,612	113,360	121,341
NOI	210,000	216,300	222,789	229,473	236,357	243,448	250,751	258,274	266,022	274,002
Less Interest	136,481	134,787	132,915	130,847	128,563	126,040	123,252	120,173	116,770	113,012

Depreciation	65,455	65,455	65,455	65,455	65,455	65,455	65,455	65,455	65,455	65,455
Taxable Income	8,064	16,059	24,419	33,171	42,339	51,953	62,044	72,646	83,797	95,536
Tax	2,903	5,781	8,791	11,941	15,242	18,703	22,336	26,153	30,167	34,393
Before-Tax Cash Flow	57,338	63,638	70,127	76,811	83,695	90,786	98,089	105,612	113,360	121,341
Tax	2,903	5,781	8,791	11,941	15,242	18,703	22,336	26,153	30,167	34,393
After-Tax Cash Flow	**54,435**	**57,857**	**61,336**	**64,869**	**68,453**	**72,083**	**75,753**	**79,459**	**83,193**	**86,948**

ATCF From Sale	3	4	5	6	7	8	9	10	11	12
Sales Price	2,266,000	2,333,980	2,403,999	2,476,119	2,550,403	2,626,915	2,705,723	2,786,894	2,870,501	2,956,616
Sales Costs	135,960	140,039	144,240	148,567	153,024	157,615	162,343	167,214	172,230	177,397
Mortgage Balance	1,355,914	1,338,039	1,318,293	1,296,478	1,272,380	1,245,758	1,216,348	1,183,859	1,147,968	1,108,318
Before-tax Cash Flow	774,126	855,902	941,467	1,031,074	1,124,999	1,223,542	1,327,031	1,435,821	1,550,303	1,670,901
Sales Price	2,266,000	2,333,980	2,403,999	2,476,119	2,550,403	2,626,915	2,705,723	2,786,894	2,870,501	2,956,616
Sales Costs	135,960	140,039	144,240	148,567	153,024	157,615	162,343	167,214	172,230	177,397
Original Cost Basis	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Accumulated Depreciation	196,364	261,818	327,273	392,727	458,182	523,636	589,091	654,545	720,000	785,455
Adjusted Basis	1,803,636	1,738,182	1,672,727	1,607,273	1,541,818	1,476,364	1,410,909	1,345,455	1,280,000	1,214,545
Capital Gain	326,404	455,759	587,032	720,279	855,561	992,937	1,132,470	1,274,226	1,418,271	1,564,674
Tax	117,505	164,073	211,332	259,301	308,002	357,457	407,689	458,721	510,578	563,283
ATCF From Sale	**656,621**	**691,828**	**730,135**	**771,773**	**816,997**	**866,085**	**919,342**	**977,100**	**1,039,726**	**1,107,618**

Marginal Rate of Return

Holding Period	CF0	CF1	MRR
1	(624,298)	711,056	13.90%
2	(656,621)	749,686	14.17%
3	(691,828)	791,471	14.40%
4	(730,135)	836,643	14.59%
5	(771,773)	885,450	14.73%
6	(816,997)	938,168	14.83%
7	(866,085)	995,095	14.90%
8	(919,342)	1,056,559	14.93%
9	(977,100)	1,122,919	14.92%
10	(1,039,726)	1,194,566	14.89%

Problem 14-4
(REFER TO TEMPLATE 14_4a.XLS)

ASSUMPTIONS:

CURRENT		**IF RENOVATED**	
Purchase Price	800,000	**Renovation Cost**	200,000
Building Value	600,000	**Initial Increase in NOI**	20.00%
Land Value	200,000	**Annual Increase in NOI**	3.00%
Loan-to-value ratio	75.00%	**Terminal Cap Rate**	10.00%
Interest	10.00%	**Selling Expenses**	6.00% of sale price
Term	20 years	**New Loan:**	
Payments per year	12	**% of Renovation Costs**	75.00%
Years since Purchased	2	**Interest Rate**	11.00%
Current NOI	90,000	**Term**	20
Projected Increase in NOI	2.00% per year	**Payments per year**	12
Resale Value Today	820,000		
Appreciation Rate	2.00% per year		
Depreciable Life	39 years		
Tax Rate	28.00%		

Equity	200,000
Loan Amount	600,000

Loan Information:

Year	2	3	4	5	6	7	8	9	10	11	12
Interest	48,585	57,365	56,096	54,695	53,146	51,436	49,546	47,459	45,152	42,605	39,791
EOY Loan Bal.	579,104	566,987	553,602	538,815	522,479	504,433	484,498	462,475	438,146	411,269	381,578

CASH FLOWS WITHOUT RENOVATION

Year	3	4	5	6	7
Net Operating Income	90,000	91,800	93,636	95,509	97,419
Debt Service	69,482	69,482	69,482	69,482	69,482
Before-tax Cash Flow	20,518	22,318	24,154	26,027	27,937
Taxable Income:					
NOI	90,000	91,800	93,636	95,509	97,419
Less: Interest	57,365	56,096	54,695	53,146	51,436
Depreciation	15,385	15,385	15,385	15,385	15,385
Taxable Income	17,250	20,319	23,557	26,978	30,599
Tax	4,830	5,689	6,596	7,554	8,568
After-Tax Cash Flow:					
Before-Tax Cash Flow	20,518	22,318	24,154	26,027	27,937
Tax	4,830	5,689	6,596	7,554	8,568
After-Tax Cash Flow	**15,688**	**16,629**	**17,559**	**18,473**	**19,370**

Cash Flows from Sale in Year 7

Sales Price			905,346
Sales Costs			54,321
Mortgage Balance			504,433
Before-tax Cash Flow			346,592
Sales Price		905,346	
Sales Costs		54,321	
Original Cost Basis	800,000		
Accumulated Depreciation	107,692		
Adjusted Basis		692,308	
Capital Gain		158,718	
Tax			44,441
After-Tax Cash Flow from Reversion			**302,151**

CASH FLOWS WITH RENOVATION

Loan Information:	
Additional Equity Investment	50,000
Loan Value	729,104

Year	2	3	4	5	6	7	8	9	10	11	12
Interest	0	79,676	78,446	77,073	75,541	73,832	71,926	69,798	67,425	64,777	61,822
EOY Loan Bal.	729,104	718,471	706,608	693,372	678,604	662,128	643,744	623,234	600,350	574,818	546,332

Year	3	4	5	6	7	8
Net Operating Income	108,000	111,240	114,577	118,015	121,555	125,202
Debt Service	90,309	90,309	90,309	90,309	90,309	90,309
Before-tax Cash Flow	17,691	20,931	24,269	27,706	31,246	34,893
Taxable Income:						
NOI	108,000	111,240	114,577	118,015	121,555	125,202
Less: Interest	79,676	78,446	77,073	75,541	73,832	71,926
Depreciation	20,513	20,513	20,513	20,513	20,513	20,513
Taxable Income	7,811	12,282	16,992	21,961	27,210	32,763
Tax	2,187	3,439	4,758	6,149	7,619	9,174
After-Tax Cash Flow:						
Before-Tax Cash Flow	17,691	20,931	24,269	27,706	31,246	34,893
Tax	2,187	3,439	4,758	6,149	7,619	9,174
After-Tax Cash Flow	**15,504**	**17,492**	**19,511**	**21,557**	**23,628**	**25,719**

Cash Flows from Sale in Year	7		
Sales Price			1,252,016
Sales Costs			75,121
Mortgage Balance			662,128
Before-tax Cash Flow			514,767
Sales Price		1,252,016	
Sales Costs		75,121	
Original Cost Basis	1,000,000		
Accumulated Depreciation	133,333		
Adjusted Basis		866,667	
Capital Gain		310,228	
Tax			86,864
After-Tax Cash Flow from Reversion			**427,904**

(a) Incremental Analysis - Renovation Vs. No Renovation

INCREMENTAL ANALYSIS - RENOVATION VS. NO RENOVATION

Year	2	3	4	5	6	7
ATCF with renovation	(250,000)	15,504	17,492	19,511	21,557	451,531
ATCF no renovation	(200,000)	15,688	16,629	17,559	18,473	321,521
Incremental CF	(50,000)	(184)	863	1,952	3,084	130,010
ATIRR on Equity	**22.49%**					

(b)
(REFER TO TEMPLATE 14_4b.XLS)

ASSUMPTIONS:

CURRENT			IF RENOVATED		
Purchase Price	800,000		**Renovation Cost**	200,000	
Building Value	600,000		**Initial Increase in NOI**	20.00%	
Land Value	200,000		**Annual Increase in NOI**	3.00%	
Loan-to-value ratio	75.00%		**Terminal Cap Rate**	10.00%	
Interest	10.00%		**Selling Expenses**	6.00%	of sale price
Term	20	years	**New Loan:**		
Payments per year	12		**% of Renovation Costs**	75.00%	
Years since Purchased	2		**Interest Rate**	11.00%	
Current NOI	90,000		**Term**	20	
Projected Increase in NOI	2.00%	per year	**Payments per year**	12	
Resale Value Today	820,000				
Appreciation Rate	2.00%	per year			
Depreciable Life	39	years			
Tax Rate	28.00%				

Equity	200,000
Loan Amount	600,000

Loan Information:

Year	2	3	4	5	6	7	8	9	10	11	12
Interest	48,585	57,365	56,096	54,695	53,146	51,436	49,546	47,459	45,152	42,605	39,791
EOY Loan Bal.	579,104	566,987	553,602	538,815	522,479	504,433	484,498	462,475	438,146	411,269	381,578

CASH FLOWS WITHOUT RENOVATION

Year	3	4	5	6	7
Net Operating Income	90,000	91,800	93,636	95,509	97,419
Debt Service	69,482	69,482	69,482	69,482	69,482
Before-tax Cash Flow	20,518	22,318	24,154	26,027	27,937
Taxable Income:					
NOI	90,000	91,800	93,636	95,509	97,419
Less: Interest	57,365	56,096	54,695	53,146	51,436
Depreciation	15,385	15,385	15,385	15,385	15,385
Taxable Income	17,250	20,319	23,557	26,978	30,599
Tax	4,830	5,689	6,596	7,554	8,568
After-Tax Cash Flow:					
Before-Tax Cash Flow	20,518	22,318	24,154	26,027	27,937
Tax	4,830	5,689	6,596	7,554	8,568
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Cash Flows from Sale in Year **7**

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Sales Price		905,346	
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Adjusted Basis		692,308	
Capital Gain		158,718	
Tax			44,441
After-Tax Cash Flow from Reversion			**302,151**

CASH FLOW WITH RENOVATION

Loan Information:	
Additional Equity Investment	14,104
Loan Value	765,000

Year	2	3	4	5	6	7	8	9	10	11	12
Interest	0	83,599	82,308	80,867	79,260	77,467	75,467	73,235	70,744	67,966	64,866
EOY Loan Bal.	765,000	753,844	741,397	727,509	712,014	694,727	675,438	653,918	629,908	603,119	573,230

Year	3	4	5	6	7	8
Net Operating Income	108,000	111,240	114,577	118,015	121,555	125,202
Debt Service	94,755	94,755	94,755	94,755	94,755	94,755
Before-tax Cash Flow	13,245	16,485	19,822	23,260	26,800	30,447
Taxable Income:						
NOI	108,000	111,240	114,577	118,015	121,555	125,202
Less: Interest	83,599	82,308	80,867	79,260	77,467	75,467
Depreciation	20,513	20,513	20,513	20,513	20,513	20,513
Taxable Income	3,889	8,420	13,197	18,241	23,575	29,222
Tax	1,089	2,357	3,695	5,108	6,601	8,182
After-tax Cash Flow:						
Before-Tax Cash Flow	13,245	16,485	19,822	23,260	26,800	30,447
Tax	1,089	2,357	3,695	5,108	6,601	8,182
After-Tax Cash Flow	**12,156**	**14,128**	**16,127**	**18,152**	**20,199**	**22,265**

Cash Flows from Sale in Year	7			
Sales Price			1,252,016	
Sales Costs			75,121	
Mortgage Balance			694,727	
Before-tax Cash Flow			482,168	
Sales Price		1,252,016		
Sales Costs		75,121		
Original Cost Basis	1,000,000			
Accumulated Depreciation	133,333			
Adjusted Basis		866,667		
Capital Gain		310,228		
Tax			86,864	
After-Tax Cash Flow from Reversion			**395,304**	

(b) Incremental Analysis - Renovation Vs. No Renovation

INCREMENTAL ANALYSIS - RENOVATION VS. NO RENOVATION

	Year	2	3	4	5	6	7
ATCF with renovation		(214,104)	12,156	14,128	16,127	18,152	415,504
ATCF no renovation		(200,000)	15,688	16,629	17,559	18,473	321,521
Incremental CF		(14,104)	(3,532)	(2,501)	(1,431)	(321)	93,983
ATIRR on Equity		**38.27%**					

(c)
The return for part (b) is higher (38.89% vs. 22.67%) due to the additional financing obtained which is resulting in positive leverage. Of course, there is also financial risk.

(d)
Richard Rambo should renovate if his opportunity cost of funds is less than 22.67%. Furthermore, if he feels that the additional return justifies the additional financial risk, he should refinance the entire property. This is probably a good opportunity to bring financing up to an amount typically used to purchase a real estate investment (75% of value) which would not appear to be an excessive amount of debt for this case.

Problem 14-5

The IRR on the incremental cash flows resulting from renovation drops to 9.01% from 37.47%.

Problem 14-6

The marginal rate of return (MRR) starts off higher and decreases at a faster rate over time as shown below.

Holding Period	Original MRR	New MRR
1	15.43%	20.20%
2	15.56%	19.94%
3	15.65%	19.68%
4	15.69%	19.42%
5	15.71%	19.15%
6	15.69%	18.89%
7	15.65%	18.63%
8	15.58%	18.37%
9	15.49%	18.11%
10	15.38%	17.86%

Problem 14-7 part a

Sale price	$2,000,000	
Adjusted basis	$1,500,000	
Capital gain	$500,000	
Sale price	$2,000,000	
Mortgage Balance	$1,750,000	assumed by seller
Equity	$250,000	
Profit ratio	200%	
Down Payment	$50,000	

Seller Financing	$200,000
Interest rate	10.00%
Installment payments	$50,000
Ordinary income tax rate	35%
Capital gain tax rate	20%

Year	0	1	2	3	4	Total
Installment Payment	$50,000	$50,000	$50,000	$50,000	$50,000	$250,000
x Profit Ratio	200%	200%	200%	200%	200%	
= Gain to report	$100,000	$100,000	$100,000	$100,000	$100,000	$500,000
x Capital gain tax rate	20%	20%	20%	20%	20%	
= Capital gain tax	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
End year balance	$200,000	$150,000	$100,000	$50,000	$0	
Interest		$20,000	$15,000	$10,000	$5,000	$50,000
x Ordinary income tax rate		35%	35%	35%	35%	
Ordinary income tax		7000	5250	3500	1750	$17,500
Installment Payment	$50,000	$50,000	$50,000	$50,000	$50,000	$250,000
Less ordinary income tax	$0	$7,000	$5,250	$3,500	$1,750	
Less capital gain tax	$20,000	$20,000	$20,000	$20,000	$20,000	
After tax cash flow	$30,000	$43,000	$39,750	$36,500	$33,250	

Discount rate	7.00%
PV	$160,067

Cash Sale

Sale price	$2,000,000
Gain to report	$500,000
Tax	$100,000
Mortgage balance	$1,750,000
After Tax Cash Flow (PV)	$150,000

The installment sale has a higher present value ($160,067) than the cash sale ($150,000).

Part b.

Exchange versus Regular Sale and Purchase New Prop

Calc of tax savings if exchanged:	
Sale Price if sold today	$2,000,000
Adjusted Basis today	1,500,000
Gain if sold today	$500,000
Capital Gain Tax Rate	20%
Tax if sold today	$100,000
Calc of add dep benefits if not exchanged:	
Depreciable life	30
Add depreciation if sale & purchase new	$16,667
Ord inc. tax rate	35%
Dep. tax savings if sale & purchase new	$5,833

Calc of additional tax at end of holding period if exchanged:	
Holding period	5
Additional Gain at sale of exchanged prop	
Deferred gain	$500,000
Less: difference in accum dep	$83,333
Net	$416,667
Cap gains tax rate at end of holding period	20%
Additional tax at sale of exchanged prop	$83,333

Calc of return on tax savings from exchange:	
PV	($100,000)
PMT	$5,833
FV	$83,333
N	5
Rate	2.67%

This means that by paying the taxes today instead of doing the exchange the investor is only earning 2.67% on his or her money. This is quite low suggesting that it is better to do the exchange.