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MBA 614
4/11/12

Final Project – Rental Property Analyzer

2.2 - Executive Summary

While I didn't perform work for any official business, the work performed was to address a business need for myself and my father. About seven years ago we began investing in rental properties, at the rate of approximately 1 per year. Right now we currently have seven rental properties, and we are continuously looking for the "right deal". As a "side-business" we do not have a significant amount of time to devote to rental property analysis. However, my father, a retired CPA, and me, an aspiring business consultant, have slightly different views as to the important parts to analyze with a rental property. As such, we both run various analyses, typically in Excel with different results based on a variety of factors. To combine our analyses, numerous spreadsheets need to be created. The task can be exhausting.

Therefore, to combat this exhausting task, I decided to create an easy to use rental property analysis spreadsheet. The user interface is such that it can be easily modified with each property analyzed. It includes a number of different evaluators from NOI calculations to sensitivity analysis based on the various yearly increases in rent.

The project has one centralized spreadsheet where all calculations are combined to give an overview to each rental property considered. Following the overview, there is a tab dedicated to each of the following: sensitivity analysis, purchase price information, financing assumptions, rental income assumptions, predicted yearly expenses, and finally a tab that will bring in current rates from bankrate.com.

Based on user-entered information, the spreadsheet provides the return on invested capital over a 10-year period for each rental property. As a general rule, my father and I will not invest in a property that has a predicted ROI of lower than 12% in the first year, and a minimum of 15% within the first four years. The ROI calculation is based on revenues, expenses, and acquisition information; all provided by the user through simple to use userforms. These userforms can be accessed from the ribbon under the real estate tab, or individually on each of the dedicated sheets.

2.3 Implementation Documentation

To create the rental property analyzer, I first gathered together the various spreadsheets my father and I had used previously in evaluating rental properties. I then consulted the book [Investing in Real Estate](#) by McLean Eldred to gain additional insights into which calculations were most important when considering the purchase of a rental property.

After my research, I determined that the focus of the analysis would be return on invested capital (ROI) and a sensitivity analysis involving the estimated yearly increase in rents. Based on the desired outcomes, I figured out what user inputs would be required to return both the ROI and sensitivity analyses.

First, I determined that the user would need to input the basic purchase information for the proposed rental property. This information would include the basic information about the property, along with the purchase price. The purchase price would also include a breakdown for the land value and building value, which information can be found by looking at the tax records for a property. This land and building values would not be included in any calculations, but are there for further reference as we continue to build on the rental property analyzer. The purchase information also included initial improvements that would be required to the property before it could be rented, as well as the estimated closing costs for the loan.

Based on the entered information, the user will see the total cost of the property, which will be relevant to the financing decisions which will be made subsequently.

This is an example of the purchase tab. The purchase tab can be accessed by the user from the tabs at the bottom of the worksheets, or the user can access the purchase information from the ribbon under the real estate tab at the top of the excel file. The button to access the purchase information section is located in the “Acquisition and Financing” group as shown below.

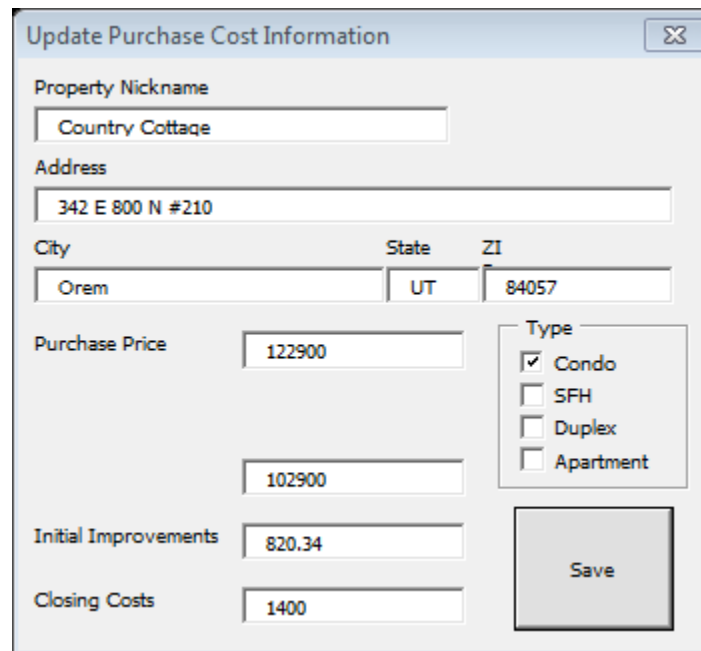
The screenshot shows the 'Purchase' tab selected in the 'Real Estate' ribbon. The spreadsheet contains the following data:

Purchase Information	
Property Nick Name	Country Cottage
Street Address	342 E 800 N #210
City	Orem
State	UT
Zip Code	84057
Property Type	C (C - Condo, D - Duplex, A - Apartment, SFH - Single Family House)
Purchase Price	\$ 122,900.00
Land Value	\$ 20,000.00
Building Value	\$ 102,900.00
Initial Improvements	\$ 820.34
Closing Costs	\$ 1,400.00
Total Cost	\$ 125,120.34

Callout boxes indicate two ways to access this information:

- Purchase Information - access from ribbon**: Points to the 'Enter/Change Purchase Costs' button in the 'Acquisition and Financing' group of the 'Real Estate' ribbon.
- Purchase Information - access from bottom**: Points to the 'Purchase' tab at the bottom of the worksheet tabs.

If the user accesses the purchase information from the ribbon, the user will automatically be brought to the appropriate spreadsheet – Purchase, and a userform will be shown to help facilitate the user entering the information. However, should the user prefer to enter the information directly into the spreadsheet they are able to do so.



The screenshot shows a userform titled "Update Purchase Cost Information" with a close button (X) in the top right corner. The form contains several input fields and a "Save" button. The fields are organized as follows:

- Property Nickname:** A text box containing "Country Cottage".
- Address:** A text box containing "342 E 800 N #210".
- City:** A text box containing "Orem".
- State:** A text box containing "UT".
- ZI:** A text box containing "84057".
- Purchase Price:** A text box containing "122900".
- Initial Improvements:** A text box containing "820.34".
- Closing Costs:** A text box containing "1400".
- Type:** A group box containing four checkboxes: "Condo" (checked), "SFH", "Duplex", and "Apartment".
- Save:** A large button at the bottom right of the form.

The second required inputs for the ROI and sensitivity analyses are the financing assumptions. Similar to the purchase information, the financing information has its own dedicated spreadsheet and the user can access this information either directly through the sheets the bottom of the worksheet or by clicking the button next to the previous button – “Enter/Change Financing Info”.

Again, as with the purchase information, the button in the ribbon will function the same way, activating the spreadsheet and automatically showing the userform. The userform facilitates use as it automatically calculates some of the required inputs based on a lower amount of information entered by the user. With the user inputted information, the financing spreadsheet automatically calculates the mortgage payment based on the terms of the loan. Additionally, it will automatically create the amortization table. **It is extremely important to note, the user must have the analysis tool-pack installed in Excel for the calculations to work. Below is a sample of the financing spreadsheet:

RentalAnalysis8.xlsm - M

File Home Insert Page Layout Formulas Data Review View Developer PowerPivot

Analysis Spreadsheet Home Enter/Change Purchase Costs Acquisition and Financing Enter/Change Financing Info Rental Income Rental Expenses Rental Assumptions Sensitivity Analysis Charts Sensitivity Analysis

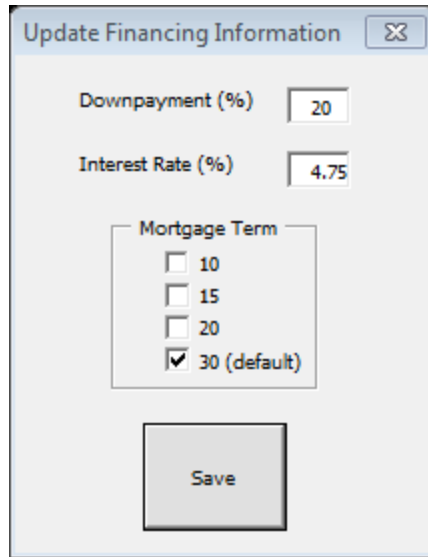
A1 fx

	A	B	C	D	E	F	G	H
1								
2			Financing Information					
3			Downpayment (%)	20				
4			Finance Amount	\$ 98,320.00				
5			Downpayment Amount	\$ 24,580.00				
6			Interest Rate (%)	4.75				
7			Mortgage (Years)	30				
8			Mortgage Payment	\$ 512.88				
9			Cash Outlay	\$ 26,800.34	(Downpayment + Initial Improvements + Closing Costs)			
10			First Payment Date	4/12/2012	(default as today)			
11			Update					
12								
13			Loan Summary					
14			Rate (per period)	0.396%				
15			Payment (per period)	\$512.88				
16			Nper	360				
17								
18								
19			Total Payments	\$ 184,639.65				
20			Total Interest	\$ 86,319.65				
21			Interest Savings	\$ -				
22								
23	Payment #	Due Date	Payment Due	Additional Payment	Interest	Principal	Balance	
24							\$ 98,320.00	
25	1	4/12/2012	512.88	0	389.18	123.7	\$ 98,196.30	
26	2	5/12/2012	512.88	0	388.69	124.19	\$ 98,072.11	
27	3	6/12/2012	512.88	0	388.2	124.68	\$ 97,947.43	
28	4	7/12/2012	512.88	0	387.71	125.17	\$ 97,822.26	
29	5	8/12/2012	512.88	0	387.21	125.67	\$ 97,696.59	
30	6	9/12/2012	512.88	0	386.72	126.16	\$ 97,570.43	
31	7	10/12/2012	512.88	0	386.22	126.66	\$ 97,443.77	
32	8	11/12/2012	512.88	0	385.71	127.17	\$ 97,316.60	

Rental Property Analysis Sensitivity Purchase **Financing** Income Expenses Bankrate

Ready

As you will note, the userform only requires a fraction of the information, and simplifies the process. Therefore, by either clicking the ribbon button, or the update button on the actual spreadsheet the user will gain access to the userform included below:



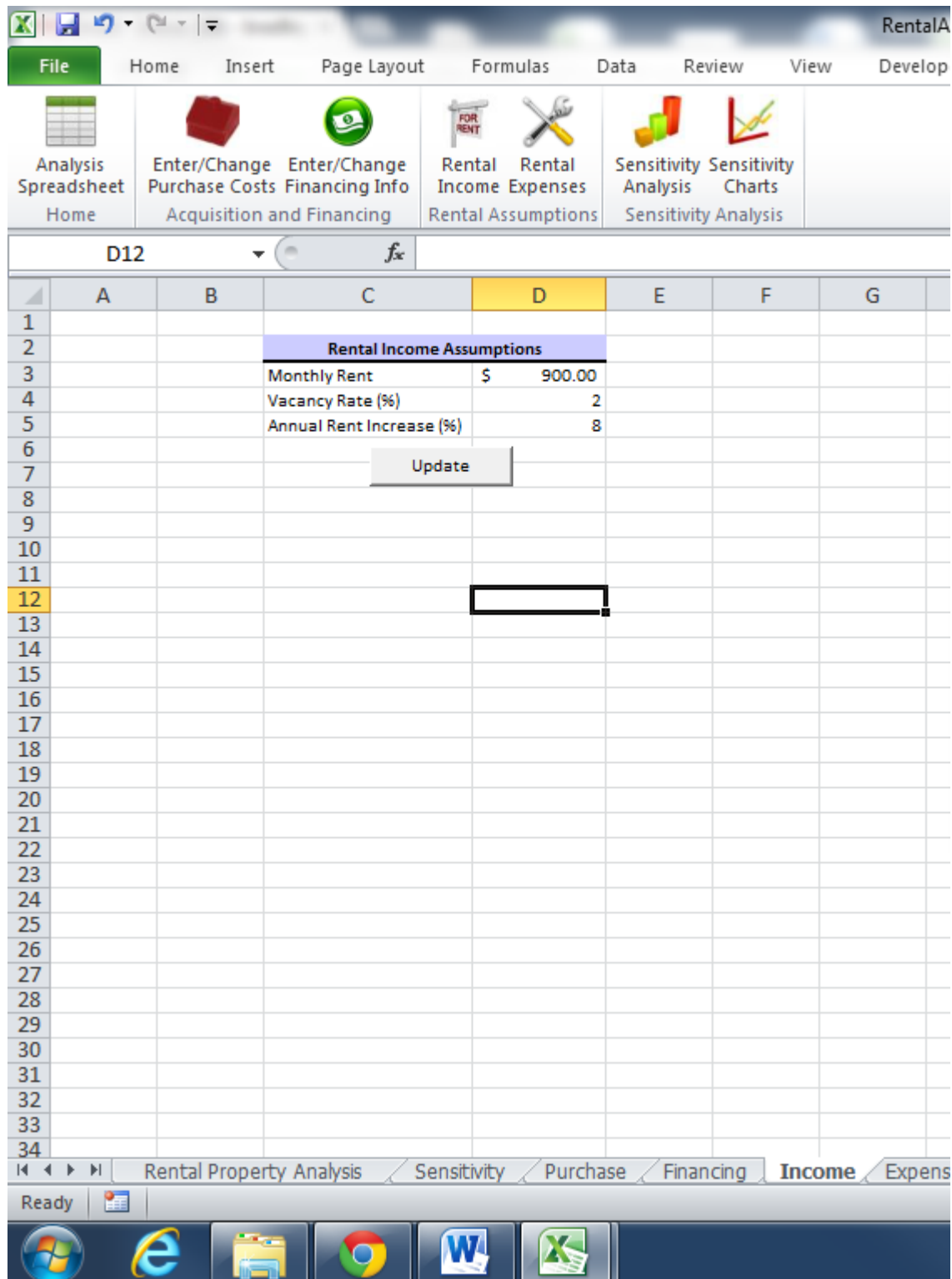
The image shows a dialog box titled "Update Financing Information" with a close button (X) in the top right corner. Inside the dialog, there are three input fields: "Downpayment (%)" with a value of 20, "Interest Rate (%)" with a value of 4.75, and a "Mortgage Term" section. The "Mortgage Term" section contains four radio button options: 10, 15, 20, and 30 (default). The 30 (default) option is selected. At the bottom of the dialog is a "Save" button.

Field	Value
Downpayment (%)	20
Interest Rate (%)	4.75
Mortgage Term	30 (default)

If the user does not enter a mortgage term, the spreadsheet is set to default to the 30 year mortgage option.

The third part of the inputs required for the ROI and sensitivity analyses include the rental income information. The most basic of the userforms, this sheet asks for items including monthly rent amount, predicted vacancy rate, and the estimated annual rent increase. Again, as in the previous sections, there are two ways to access the sheet: either through the tabs at the bottom of the worksheet or from the ribbon at the top.

The ribbon will again automatically take the user to the sheet and bring up the easy to use userform.



The following is the userform associated with the Income sheet:

Update Revenue Information

Monthly Rent

Vacancy Rate (%)

Annual Rent Increase (%)

☐ 0%

☐ 2%

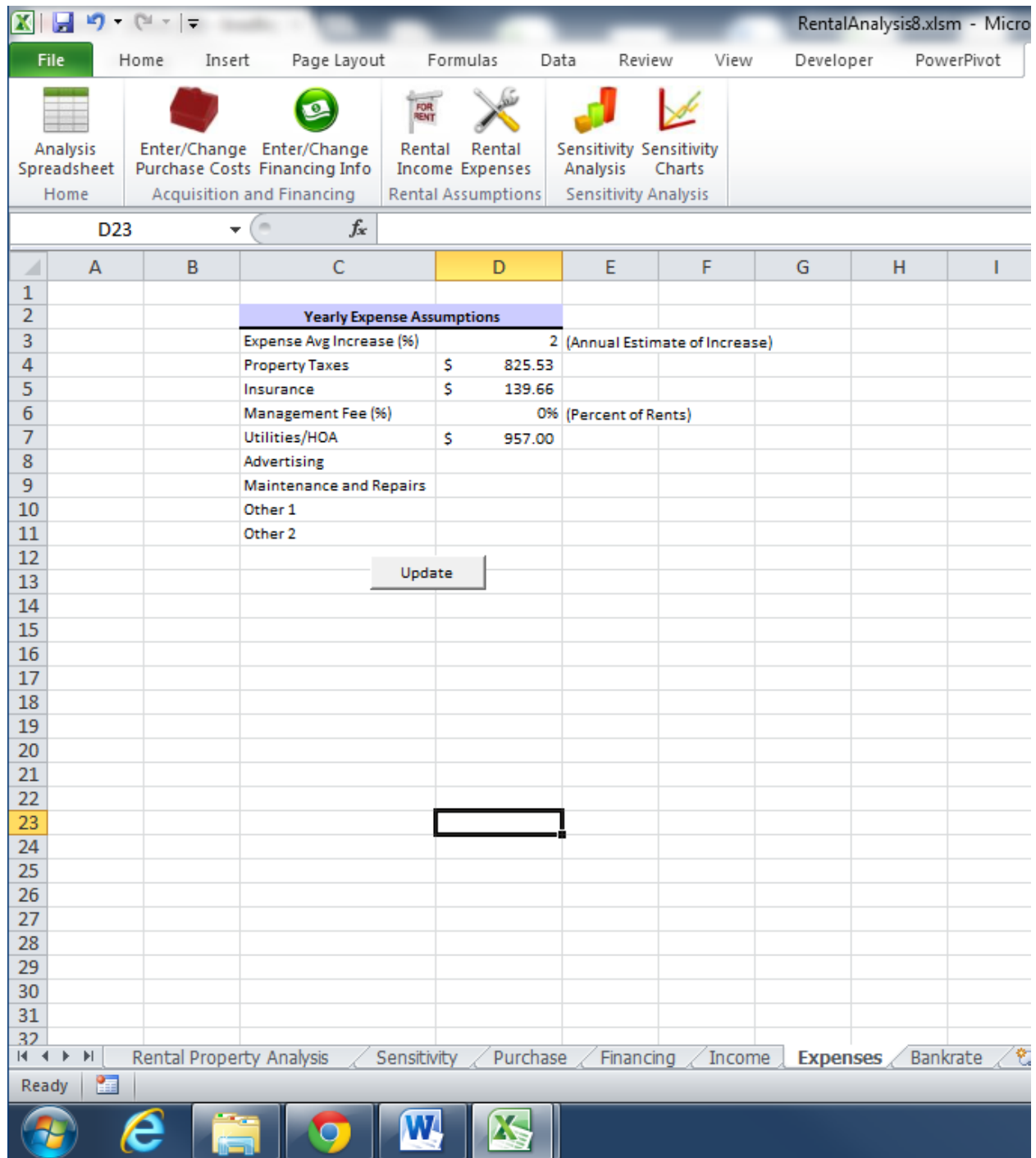
☐ 5%

☒ 8%

Save

The final section requiring user input is the expenses section. The expenses section addresses the user's predictions concerning annual expenses for the rental property. The first user input is the expense average increase (%), this is the percentage that the user thinks expenses will go up annually. This will affect all of the other expenses inputted by the user. The other expenses include: property taxes, insurance, management fees, utilities/HOA, advertising, maintenance and repairs, and then two other categories for whatever the user would like to enter.

Included below is the spreadsheet for the expenses page, which can be accessed both ways as with previously outlined sections.



The userform for the expenses page as shown:

Update Annual Expenses

Expense Avg Yearly Increase (%)

2

Property Taxes

825.53

Insurance

139.66

Management Fee (%)

0

Utilities and HOA

957

Advertising

Repairs

Other 1

Other 2

Save

After the user enters all of the required information, the user can access and see all of the information in one simple to use spreadsheet. This spreadsheet can be accessed from the worksheet tabs by selecting the “Rental Property Analysis” sheet, or by accessing the ribbon under the Real Estate tab and hitting the Analysis Spreadsheet button in the home section.

[illegible]

The ROI is the key statistic and is highlighted in yellow.

RentalAnalysis8.xlsx - Microsoft Excel

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Real Estate

Analysis Spreadsheet

Enter/Change Purchase Costs

Enter/Change Financing Info

Rental Income

Rental Expenses

Sensitivity Analysis

Sensitivity Charts

Rental Assumptions

Sensitivity Analysis

H18

=H17*12

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Acquisition Costs

Purchase Price

\$ 122,900

Land Value

\$ 20,000

Building Value

\$ 102,900

Improvements

\$ 820

Closing Costs

\$ 1,400

Total Costs

\$ 125,120

Financing Assumptions

Downpayment (%)

20%

Finance Amount

\$ 98,320

Downpayment Amount

\$ 24,800

Interest Rate (%)

4.75%

Mortgage (Years)

30

Mortgage Payment

\$ 512.88

Initial Cash Outlay

\$ 26,800

Rental Assumptions

Monthly Rent

\$ 900.00

Vacancy Rate (%)

2.00%

Ann. Rental Increase (%)

8.00%

Ann. Expense Increase (%)

2.00%

Loan Information

First Payment Date

4/12/2012

Total Payments

\$ 184,640

Total Interest

\$ 86,320

Bankrate.com Mortgage Rates

15yr

3.13%

30yr

3.89%

Monthly

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

Year 7

Year 8

Year 9

Year 10

Annual Revenue Increase

8.00%

0.00%

8.00%

8.00%

8.00%

8.00%

8.00%

8.00%

8.00%

8.00%

Annual Operating Expense Increase

2.00%

0.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

Year 1

Year 2

Year 3

Year 4

Year 5

Year 6

Year 7

Year 8

Year 9

Year 10

Revenues

Monthly Rent

900

972

1050

1134

1224

1322

1428

1542

1666

1799

Yearly Rental Income

10800

11664

12597

13605

14693

15869

17138

18509

19990

21589

Vacancy/Loss Rate

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

2.00%

Vacancy/Loss Value

-18

-216

-233

-252

-272

-294

-317

-343

-370

-432

Gross Income

882

10584

11431

12345

13333

14399

15551

16795

18139

19590

21157

Expenses

Property Taxes

68.79

825.53

842.04

858.88

876.06

893.58

911.45

929.68

948.27

967.24

986.58

Insurance

116.64

139.66

142.45

145.30

148.21

151.17

154.20

157.28

160.43

163.63

166.91

Management Fee (%)

0.00%

0.00%

0.00%

0.00%

0.00%

0.00%

0.00%

0.00%

0.00%

0.00%

Management Fee (\$)

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Utilities/HOA

79.75

957

976.14

995.66

1015.58

1035.89

1056.61

1077.74

1099.29

1121.28

1143.70

Advertising

0

0

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Maintenance and Repairs

0

0

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Other 1

0

0

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Other 2

0

0

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Total Expenses

160.18

1922.19

1960.63

1999.85

2039.84

2080.64

2122.25

2164.70

2207.99

2252.15

2297.19

Expense as % of Gross Income

19.80%

19.80%

18.81%

17.88%

16.99%

16.16%

15.37%

14.63%

13.93%

13.27%

12.64%

Net Operating Income (NOI)

721.82

8661.81

9470.09

10345.33

11292.95

12318.77

13429.12

14630.78

15931.12

17338.09

18860.27

Cash Flow

Net Operating Income (NOI)

721.82

8661.81

9470.09

10345.33

11292.95

12318.77

13429.12

14630.78

15931.12

17338.09

18860.27

Mortgage Payment

512.88

6154.56

6154.56

6154.56

6154.56

6154.56

6154.56

6154.56

6154.56

6154.56

6154.56

Total Cash Flow

208.94

2507.25

3315.53

4190.77

5138.39

6164.21

7274.56

8476.22

9776.56

11183.53

12705.71

Cash ROI

9.36%

12.07%

15.64%

19.17%

23.00%

27.14%

31.63%

36.48%

41.73%

47.41%

53.52%

Equity Accrued

1517.11

1490.77

1667.99

1748.96

1833.90

1922.90

2016.24

2114.13

2216.78

2324.40

2437.40

Total Return

4024.36

4906.30

5858.76

6887.35

7998.11

9197.46

10492.46

11890.69

13400.31

15030.11

16787.40

Total ROI

15.02%

18.31%

21.86%

25.70%

29.84%

34.32%

39.15%

44.37%

50.00%

56.08%

62.70%

Cash Flow/Mortgage Ratio

140.74%

153.87%

168.09%

183.49%

200.16%

218.20%

237.72%

258.85%

281.71%

306.44%

333.27%

Total Equity Accrued

1517.11

3107.88

4775.87

6524.83

8358.73

10281.63

12297.87

14412.00

16628.78

18953.18

21386.58

Loan Payoff Amount

96802.89

95211.12

93544.13

91795.17

89961.27

88038.37

86022.13

83908.00

81691.22

79366.82

76936.82

Rental Property Analysis

Sensitivity

Purchase

Financing

Income

Expenses

Bankrate

The spreadsheet also has a feature that allows the user to see current rates from bankrate.com for both a 15yr and 30yr mortgage. This rate shown on the website is the national average. This information could help the user with the financing assumptions.

The last feature of the spreadsheet is a sensitivity analysis. This feature can again be accessed from either the worksheet tabs or the ribbon.

If the user hits the sensitivity analysis button, the user will be taken to the sensitivity page shown below:

RentalAnalysis8.xlsm - Microsoft Excel

File

Home

Insert

Page Layout

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Developer

PowerPivot

Real Estate

Analysis Spreadsheet Home

Enter/Change Purchase Costs Acquisition and Financing

Enter/Change Financing Info Rental Income Rental Expenses

Sensitivity Analysis Charts

Sensitivity Analysis

A1

Sensitivity Analysis Complete.

Sensitivity Analysis Complete.

Sensitivity Analysis

Based on Annual Rent Increase % with +/- 3%

Current Assumption 8.00%

Run Sensitivity Analysis

Clear Sensitivity Analysis

10 Year Average ROI

	-3%	-2%	-1%	Current	1%	2%	3%
5.00%	6.00%	7.00%	8.00%	9.00%	10.00%	11.00%	
24.74%	26.65%	28.65%	30.75%	32.94%	35.23%	37.62%	

Acquisition Costs

Purchase Price	\$ 122,900
Land Value	\$ 20,000
Building Value	\$ 102,900
Improvements	\$ 820
Closing Costs	\$ 1,400
Total Costs	\$ 125,120

Financing Assumptions

Downpayment (%)	20%
Finance Amount	\$ 98,320
Downpayment Amount	\$ 24,580
Interest Rate (%)	4.75%
Mortgage (Years)	30
Mortgage Payment	\$ 512.88
Initial Cash Outlay	\$ 26,800

Rental Assumptions

Monthly Rent	\$ 900.00
Vacancy Rate (%)	2.00%
Ann. Rental Increase (%)	8.00%
Ann. Expense Increase (%)	2.00%

Loan Information

First Payment Date	4/12/2012
Total Payments	\$ 184,640
Total Interest	\$ 86,320

Bankrate.com Mortgage Rates

15yr	3.13%
30yr	3.89%

	Monthly	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Annual Revenue Increase	8.00%	0.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
Annual Operating Expense Increase	2.00%	0.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenues											
Monthly Rent	900	900	918	991	1071	1156	1249	1349	1457	1573	1699
Yearly Rental Income		10800	11664	11897	12849	13877	14987	16186	17481	18879	20390
Vacancy/Loss Rate	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Vacancy/Loss Value	-18	-216	-220	-238	-257	-278	-300	-324	-350	-378	-408
Gross Income	882	10584	11444	11659	12592	13599	14687	15862	17131	18502	19982
Expenses											
Property Taxes	68.79	825.53	842.04	858.88	876.06	893.58	911.45	929.68	948.27	967.24	986.58
Insurance	11.64	139.66	142.45	145.30	148.21	151.17	154.20	157.28	160.43	163.63	166.91
Management Fee (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Management Fee (\$)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Utilities/HOA	79.75	957	976.14	995.66	1015.58	1035.89	1056.61	1077.74	1099.29	1121.28	1143.70
Advertising	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maintenance and Repairs	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other 1	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other 2	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Expenses	160.18	1922.19	1960.63	1999.85	2039.84	2080.64	2122.25	2164.70	2207.99	2252.15	2297.19
Expense as % of Gross Income	19.80%	19.80%	18.70%	18.81%	17.88%	16.99%	16.16%	15.37%	14.63%	13.93%	13.27%
Net Operating Income (NOI)	721.82	8661.81	9483.05	9659.49	10552.24	11518.81	12565.15	13697.70	14923.40	16249.75	17684.86
Cash Flow											
Net Operating Income (NOI)	721.82	8661.81	9483.05	9659.49	10552.24	11518.81	12565.15	13697.70	14923.40	16249.75	17684.86
Mortgage Payment	512.88	6154.56	6154.56	6154.56	6154.56	6154.56	6154.56	6154.56	6154.56	6154.56	6154.56
Total Cash Flow	208.94	2507.25	3328.49	3504.93	4397.68	5364.25	6410.59	7543.14	8768.84	10095.19	11530.30
Cash ROI		9.36%	12.42%	13.08%	16.41%	20.02%	23.92%	28.15%	32.72%	37.67%	43.02%
Equity Acquired		1517.11	1590.77	1667.99	1748.96	1833.90	1922.90	2016.24	2114.13	2216.78	2324.40
Total Return		4024.36	4919.26	5172.92	6146.64	7198.15	8333.49	9559.38	10882.97	12311.97	13854.70
Total ROI		15.02%	18.36%	19.30%	22.93%	26.86%	31.09%	35.67%	40.61%	45.94%	51.70%
Cash Flow/Mortgage Ratio		140.74%	154.08%	156.95%	171.45%	187.16%	204.16%	222.56%	242.48%	264.03%	287.35%

Rental Property Analysis

Sensitivity

Purchase

Financing

Income

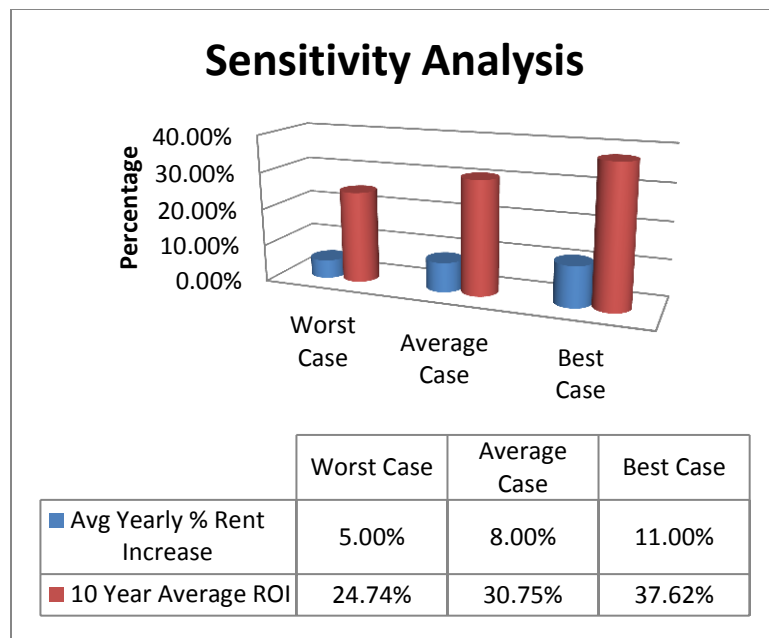
Expenses

Bankrate

As you can see, the sensitivity page is an exact replica of the rental property analysis sheet with an additional 7 lines at the top for a sensitivity analysis. The sensitivity analysis is based on the yearly rent increase expected or inputted from the user. The sensitivity analysis calculates the range of yearly rent increase with a +/- 3%, then returns the 10 year average ROI for each.

For simplicity a clear sensitivity analysis button was included as well.

Finally, the user can also create a chart based on the sensitivity analysis with the ribbon button at the top of the worksheet entitled "Sensitivity Charts". An example of the chart is shown below, comparing the best, average, and worst case for the sensitivity analysis.



To create the ribbon component of the worksheet, I used the Custom UI Editor that was discussed in class. I also accessed the code from the userforms worksheet to see how the editor was used for each of those buttons.

In conclusion, the spreadsheet is a good starting point for rental analysis. There are many additional features which I plan on adding at a later time, and I think that this provides an excellent base.

2.4 Learning difficulties and conceptual difficulties

One of my biggest obstacles was trying to implement the appropriate chart. I was struggling with the placement, and tried a number of solutions. However, I found that I was best helped by searching some popular vba forums. I also struggled a little with trying to incorporate more vba features into my rental analysis worksheet. At times I feel so comfortable with Excel spreadsheet work, I forget to think about the end-user that may not be as familiar with excel. For this reason, I decided to incorporate a number of userforms. I tested this solution by sending the sheet to my friend to test. He has recently started looking into rental properties to purchase, so I wanted to make sure that he could adequately move through the various inputs.

2.5 Assistance

I did not receive assistance on this project.

2.6

Please see 2.3, this details both the process and explanation for each component.