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Real Estate Division

UBC UNIVERSITY OF BRITISH COLUMBIA

Real Estate Investment Analysis and Advanced Income Appraisal

BUSI 331

Presentation by Graham McIntosh

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Outline

1. Introduction
2. Investment Analysis vs. Appraisal
3. The After Tax Cash Flow Pro Forma Model
4. Dynamic Pro Forma Spreadsheets
5. Project 1 and 2 Overview
6. Case Study

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About Your Course Tutor

My name is Graham McIntosh, one of your tutors for Course 331: Real Estate Investment Analysis and Advanced Income Appraisal this term. I have been working in the Continuing Education area of the UBC Faculty of Commerce since 1988. During that time I have held numerous positions and taught and developed a variety of courses in the Real Estate Division and the Faculty.

I graduated from the Faculty in1987 with my Bachelor of Commerce Degree, Urban Land Economics option and completed my Masters of Business Administration degree on a part time basis between 1991 and 1995. As a former part time student, I fully appreciate the challenge of juggling family, work and school responsibilities.

I wish you the best with your studies this term.

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Investment Analysis vs. Appraisal

Investment Analysis: Value to the Owner based on a set of owner-defined criteria and circumstances:

- Required Rate of Return (RRR)
- Risk tolerance
- Cash flows (income) verses appreciation (capital gain)
- Financing
- Tax status

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Investment Analysis vs. Appraisal

Appraisal: Market Value

- Uses an analytical framework to determine the value of property from the general perspective of the market as opposed to an individual
- Concerned with cash flows from the property on a before financing, before tax basis
- Net Operating Income (NOI) measures the return from the property

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ATCF Pro Forma

(ATCF) Pro Forma follows: **Inputs > Processes > Outputs**

Inputs would include:

- Holding period
- Investor's Required Rate of Return
- Marginal Tax Rate
- Leverage: Loan to Value Ratio or Amount of Debt Versus Equity Invested
- Capital Cost Allowance Rate
- Apportionment: Land Value versus Building Value
- Interest Rate and compounding frequency
- Amortization Schedule
- Term
- Payment Frequency
- Rental Growth Rate
- Expense Growth Rate
- Vacancy and Bad Debt Rate
- Market Capitalization Rate
- Closing costs
- Capital gains rates

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ATCF Pro Forma

Process would be the calculations in the spreadsheet itself

Outputs would be decision criteria:

- Operating Cash Flows: NOI, BTCF, and ATCF
- Reversion Cash Flows: Net Sales Price, BTER, and ATER
- Net Present Value
- Internal Rate of Return
- Justified Investment Price
- Capitalization Rates
- Rent Multipliers
- Debt Coverage Ratios

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Dynamic Pro Forma Spreadsheets

A Dynamic Pro Forma Spreadsheet is designed to be a decision making tool

- Purchase/Sell
- Lending/Investing
- Performance Analysis
- Tax Analysis
- Valuations: Appraisals/Investment Analysis

Unlike accounting financial statements it is forward looking: a forecasting tool, utilizing cash flows as opposed to accounting income.

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Dynamic Pro Forma Spreadsheets

Dynamic implies that the spreadsheet is constructed in such a way that changing one of the inputs automatically results in a new set of outputs without having to adjust the spreadsheet formulas.

This is accomplished by using cell references containing the assumptions in the spreadsheet formulas.

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Dynamic Pro Forma Spreadsheets

Example Dynamic Pro Forma Spreadsheet Cell Referencing			
Model Revenue Growth of a real estate investment over 3 years			
Assumptions			
Revenue growth per year	6%		
Year 1 Revenue	$ 100,000.00		
Method 1: Static Model	Year 1	Year 2	Year 3
Revenue	$ 100,000.00	$ 106,000.00	$ 112,360.00
Method 2: Dynamic Model	Year 1	Year 2	Year 3
Revenue	$ 100,000.00	$ 106,000.00	$ 112,360.00

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Dynamic Pro Forma Spreadsheets

Example Dynamic Pro Forma	Spreadsheet Cell Referencing		
Model Revenue Growth of a	real estate investment over 3	years	
Assumptions			
Revenue growth per year	0.06		
Year 1 Revenue	100000		
Method 1: Static Model	Year 1	Year 2	Year 3
Revenue	100000	=100000*1.06	=106000*1.06
Method 2: Dynamic Model	Year 1	Year 2	Year 3
Revenue	=$B$7	=B13*(1+$B$6)	=C13*(1+$B$6)

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Generic Pro Forma

Summary Pro Forma	Assumptions	Year 1	Year 2	Year 3
Gross Potential Rental Income				
Add: Other Income				
Less: Bad Debt Allowance				
Less: Vacancy Rate				
Effective Gross Income				
Less: Operating Expenses				
Net Operating Income				
Less: Debt Payments				
Before Tax Cash Flow				
Less: Income Taxes Payable				
After Tax Cash Flow				

Income Tax Calculations	Assumptions	Year 1	Year 2	Year 3
Net Operating Income				
Less: Interest Paid				
Less: CCA				
Taxable Income				
X Tax Rate				
Taxes Payable				

CCA Calculations	Assumptions	Year 1	Year 2	Year 3
Beginning UCC				
X Max CCA Rate				
Max CCA				
Actual CCA Claimed				
Ending UCC				

Reversion Calculation	Assumptions	
Estimated Sales Price		
Less: Closing Costs		
Net Sales Price		
Less: Loan OSB		
Before Tax Equity Reversion		
Less: Tax on Gain		
Less Tax on Recapture		
After Tax Equity Reversion		
Tax on Gain		
Net Sales Price		
Less: CCA Cost Base		
Less: Land at Cost		
Capital Gain		
Taxable Portion		
x Tax Rate		
Tax on Gain		
CCA Recapture		
Total CCA Claimed		
x Tax Rate		
Tax on Recapture		

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Project 1 and 2 Overview

Project 1 – Case Study: the assumptions are given in the case. The object is to build an ATCF pro forma spreadsheet.

Project 2 is a research project where you have to find a property and research many of the assumptions you will use in your ATCF pro forma spreadsheet. Sensitivity Analysis (What if Analysis) is then conducted on the assumptions and various scenarios to assess the risk of the investment.

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Project 1 Marking Guide

BUSI 331 PROJECT 1 MARKING GUIDE		
Student Name: **Student No.:**		
	Mark Value	**Your Mark**
Format of Pro Forma Easy to read and follow. Ideally, a 1 page summary sheet with the assumptions listed and then summarizing ATCF, NPV and IRR calculations.	**10**	
Dynamic Structure of Pro Forma All cell references are linked to the assumptions and parameters so that if one assumption or parameter changes, all other items are calculated automatically.	**10**	
NOI Calculation Must include rent summary, vacancy, bad debt and operating expense calculations.	**5**	
Mortgage Calculation Usually on a separate worksheet linked to the main spreadsheet. The sample spreadsheet from the Course Resources web page may be adapted.	**5**	
CCA/Tax Calculation Properly linked to the main spreadsheet. Credit given for IF/THEN statements to account for low or negative NOI (i.e.. CCA cannot create a loss).	**10**	
Reversion Calculation Sales price based on capitalization of proper NOI. Proper capital gain and recapture calculations.	**10**	
Capitalization Rate Calculation and Interpretation Calculation of the capitalization rate implied by the purchase price. Explanation why the subject property's capitalization rate differs from the "market overall capitalization rate" stated in the "Case Summary Sheet".	**15**	

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Project 1 Marking Guide (cont'd)

IRR and NPV Calculations Proper calculation formula and made dynamic by having the initial equity tied to the assumption section	**15**	
Executive Summary Provide assumptions of the investment opportunity, the results of the analysis and the conclusions and recommendations to the investors.	**15**	
Presentation Grammar, syntax, typos and spelling Paragraph and sentence structure ('readability") Headings and subheadings "(organization").	**5**	
FINAL GRADE	**100**	

Please note that the grading for this project follows the grading guidelines developed by the UBC Department of Studies (http://www.edst.educ.ubc.ca/policies_forms/grading.html), and shown in the UBC Real Estate Division *Student Handbook*.

TUTOR'S COMMENTS: Additional comments may be found on your project submission.

Tutor Signature:
Date:

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Common Errors in Project 1

1. **The spreadsheet is not dynamic to changes**
2. **Limited written analysis**
3. **Spreadsheet format is difficult to follow**
4. **Issues with spreadsheet formulas**

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MB Manor Case Study: Overview

1. **Operating Cash Flow Pro Forma, Net Operating Income (NOI) and Property Capitalization Rate**
2. **Financing and Debt Coverage Ratio (DCR)**
3. **Income Taxes and Capital Cost Allowance CCA, After Tax Operating Cash Flows (ATCF)**
4. **Estimated Selling Price and After Tax Equity Reversion (ATER)**
5. **Required Rate of Return (RRR), Net Present Value (NPV), Internal Rate of Return (IRR) and the Justified Investment Price (JIP)**
6. **Conclusions and Recommendations**

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MB Manor Case

An investor is considering the purchase of MB Manor, a small residential apartment building with the following characteristics:

- Purchase Price: $1,000,000
- Holding period: 3 years
- The building has 10 suites, which currently rent for $1000 per month
- Rents are expected to increase 4% per annum
- The vacancy rate is 4%
- Operating expenses are expected to be $40,000 for this year, and are expected to increase by 3% per year thereafter

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MB Manor Case

1. **Prepare a three-year Net Operating Income Pro Forma for this investment.**

2. **Calculate the property Capitalization Rate (Cap Rate) based on the Year 1 NOI Property Cap Rate = NOI/Cost**

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MB Manor Case: Financing and BTCF

The purchase price will consist of 25% down payment (equity) and a mortgage loan for the remaining 75%. The loan has an interest rate of j_2=7% and calls for monthly payments over a 25 year amortization period. The term of the mortgage is 3 years.

1. Calculate the required monthly payments.
2. Calculate the Debt Coverage Ratio based on the Year 1 NOI
   DCR = NOI/Annual Mortgage Pmts
3. Calculate the Total Interest paid during Years 1, 2 and 3.
4. Calculate the Outstanding Balance (OSB) at the end of the term.
5. Calculate the Before Tax Cash Flow (BTCF) for Years 1, 2 and 3

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MB Manor Case: CCA, Income Taxes and ATCF

- **$400,000 of the purchase price is apportioned to the land and $600,000 to the building (the CCA Cost Base). This proportion will remain constant forever. The building is CCA Class 1 (4% max CCA rate).**
- **The investor's tax rate is 50%**

1. Calculate the maximum CCA that can be claimed in each year
2. Calculate the Income Taxes Payable in each year
3. Calculate the After Tax Cash Flows for Year 1, 2 and 3

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MB Manor Case: Estimated Selling Price and ATER

- **The market capitalization for this type of property rate is 7%**
- **Real estate commissions and legal fees are estimated to be 8% of gross sale price**
- **Assume full CCA recapture and any capital gains are 50% taxable**

1. Calculate the estimated Selling Price
2. Calculate the Net Selling Price
3. Calculate the Before Tax Equity Reversion (BTER)
4. Calculate the Capital Gains Tax
5. Calculate the CCA Recapture Tax
6. Calculate the After Tax Equity Reversion (ATER)

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MB Manor Case: NPV and IRR

The investor's Required Rate of Return (RRR) is 12%

1. Calculate the Net Present Value (NPV) of this investment
2. Calculate the Internal Rate of Return (IRR) on this investment.
3. Calculate the Justified Investment Price (JIP) for this property

JIP = PV of Equity Cash Flows + Value of Debt

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MB Manor Case: Conclusions and Recommendations

Given a RRR = 12% as an investor, would you invest in this property?

Decision rules:

If NPV at the RRR > $0, the invest and

If IRR > RRR then invest

Therefore, INVEST!

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MB Manor Case: Other Observations

Most of the value is attributable to the appreciation in the property's value at sale. This is turn is premised on the estimated market capitalization rate at time of sale. Therefore, selection of the appropriate market capitalization rate is extremely important and risky!

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Project 1 Hints

The Pro Forma for Project 1 will have some different features:

- **There are fixed term leases for each tenant: will need a table of lease rates over the 5 year holding period**
- **Leases are triple net meaning the owner will recover operating expenses related to CAM charges and property taxes before calculating NOI**
- **There are leasing and capital costs that need to be accounted for in the pro forma (see Argus Example) and will impact taxable income and taxes payable**
- **Structural reserves (1% of EGI) will impact after tax cash flow but not taxable income**

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Other Topics: Sample Argus Output

ARGUS

Schedule Of Prospective Cash Flow
In Inflated Dollars for the Fiscal Year Beginning 10/1/2011

For the Years Ending	Year 1 Sep-2012	Year 2 Sep-2013	Year 3 Sep-2014	Year 4 Sep-2015	Year 5 Sep-2016	Year 6 Sep-2017	Year 7 Sep-2018	Year 8 Sep-2019	Year 9 Sep-2020	Year 10 Sep-2021	Year 11 Sep-2022
Potential Gross Revenue											
Base Rental Revenue	$3,567,665	$3,524,046	$3,628,609	$3,701,448	$4,211,393	$4,376,026	$4,353,398	$4,098,329	$4,112,213	$4,313,429	$4,480,715
Absorption & Turnover Vacancy	(39,472)	(2,212)	(3,733)	(71,500)	(451,645)	(69,792)	(76,428)	(4,172)	(65,509)	(519,522)	(28,696)
Scheduled Base Rental Revenue	3,528,193	3,521,834	3,624,876	3,629,948	3,759,748	4,306,234	4,276,970	4,094,157	4,046,704	3,793,907	4,452,019
Expense Reimbursement Revenue											
Realty Taxes	789,996	864,186	893,464	883,021	811,876	925,298	965,880	1,114,837	1,120,788	1,036,987	1,184,239
Repairs & Maintenance	1,182,646	1,293,715	1,322,576	1,321,915	1,215,412	1,385,207	1,445,955	1,668,951	1,677,833	1,552,406	1,772,843
Utilities	234,446	256,464	262,189	262,056	240,938	274,600	286,647	330,848	332,611	307,748	351,448
Insurance	30,543	33,413	34,160	34,145	31,389	35,776	37,346	43,105	43,334	40,091	45,789
Administration / Management	186,452	203,966	208,519	208,414	191,618	218,388	227,969	263,125	264,527	244,752	279,507
Amortization Recovery	35,314	59,034	78,500	76,733	68,220	86,499	67,888	76,633	68,961	56,620	
Total Reimbursement Revenue	2,459,397	2,710,778	2,789,408	2,786,284	2,559,453	2,905,768	3,031,685	3,497,499	3,508,034	3,238,604	3,633,826
Storage Revenue	35,000	35,787	36,593	37,416	38,258	39,119	39,999	40,899	41,819	42,760	43,722
Parking Revenue	347,000	354,808	362,791	370,953	379,300	387,834	396,560	405,483	414,606	423,935	433,474
Total Potential Gross Revenue	6,369,590	6,623,207	6,813,668	6,824,601	6,736,759	7,638,955	7,745,214	8,038,038	8,011,163	7,499,206	8,563,041
General Vacancy	(152,800)	(196,551)	(200,789)	(135,383)		(161,470)	(158,221)	(237,094)	(176,791)		(229,056)
Effective Gross Revenue	6,216,790	6,426,656	6,612,879	6,689,218	6,736,759	7,477,485	7,586,993	7,800,944	7,834,372	7,499,206	8,333,985
Operating Expenses											
Realty Taxes	954,445	976,920	997,878	1,020,330	1,043,288	1,066,762	1,090,764	1,115,306	1,140,401	1,166,060	1,192,296
Repairs & Maintenance	1,428,837	1,460,986	1,493,858	1,527,470	1,561,838	1,596,979	1,632,911	1,669,652	1,707,219	1,745,631	1,784,908
Utilities	283,251	289,624	296,141	302,804	309,617	316,583	323,706	330,990	338,437	346,052	353,838
Insurance	36,903	37,733	38,582	39,450	40,338	41,246	42,174	43,123	44,093	45,085	46,099
Administration / Management	225,268	230,337	235,519	240,818	246,237	251,777	257,442	263,234	269,157	275,213	281,406
Non-Recoverable Costs											
Legal & Audit	13,506	13,810	14,121	14,436	14,763	15,095	15,435	15,782	16,137	16,500	16,872
Legal/Consulting	13,113	13,408	13,710	14,018	14,334	14,656	14,986	15,323	15,668	16,020	16,381
Non-Recoverable Parking Lot	13,000	13,292	13,592	13,897	14,210	14,530	14,857	15,191	15,533	15,882	16,240
Bank Charges	2,600	2,658	2,718	2,779	2,842	2,906	2,971	3,038	3,107	3,176	3,248
Total	42,219	43,168	44,141	45,132	46,149	47,187	48,249	49,334	50,445	51,578	52,741
Total Operating Expenses	2,970,923	3,037,768	3,106,119	3,176,004	3,247,467	3,320,534	3,395,246	3,471,639	3,549,752	3,629,619	3,711,288
Net Operating Income	3,245,867	3,388,888	3,506,760	3,513,214	3,489,292	4,156,951	4,191,747	4,329,305	4,284,620	3,869,587	4,622,697
Leasing & Capital Costs											
Tenant Improvements	161,475	7,239	12,217	249,172	1,682,387	105,034	192,629	323,008	230,588	1,929,350	117,394
Leasing Commissions	26,913	1,207	2,036	42,646	280,395	17,506	32,105	53,835	39,681	321,559	19,566
Dome Site Repairs		1,463,000									
Lighting Retro Flrs 3-7 & 9-10	60,000										
Washroom Upgrade Floors 3-8		240,000									
Washroom Upgrade Floors 9-17			240,000								
Structural Reserve				133,784	134,735	149,550	151,740	156,019	156,687	149,984	166,680
Total Leasing & Capital Costs	248,388	1,711,446	254,253	425,602	2,097,517	272,090	376,474	532,862	426,956	2,400,893	303,640
Cash Flow Before Debt Service & Taxes	$2,997,479	$1,677,442	$3,252,507	$3,087,612	$1,391,775	$3,884,861	$3,815,273	$3,796,443	$3,857,664	$1,468,694	$4,319,057