Title: Property Investment Analysis

Name of Author	WSU's student
Name of University	Western Sydney University
Country of Study	Australia
Major	Business Aministration
Degree	Master
Course Title	
Type of Document	Report
Year	2015

Property Investment Analysis 2015 (quarter 3)

Unit Number: 200696

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Property Investment Analysis 2016

Assignment 2

Content

1. Introduction

This report aims to provide a detailed analysis of a property investment in Sydney. The report will first provide a detailed description of the subject unit; and then it will perform financial analyses in order to find the discounted cash flow on property (without debt financing), net present value, internal rate of return, and its related risks. After that, the same analyses are performed to find the DCF on equity (with debt financing), related NPV, IRR, and risks. Last, the paper examines the after-tax NPV, IRR, and its impact after taking the taxes and negative gearing into account. These analyses would help the investor have a clear view of opportunity and threat to purchase or not to buy the income-making property.

The property examined in this report is an apartment unit located on **1/426 Church Street Parramatta, NSW 2150** (Starpartner 2016). The unit is close to Parramatta station and Parramatta Westfield. The Parramatta CBD outlook can be viewed from the unit's balcony. The property consists of two bedrooms, two bathrooms, and one parking. The building was built in the **mid-2003** with light filled interiors and an efficient layout. Features included in the property are:

- Modern gas-equipped kitchen
- The total size of the unit is 75 (sqm)
- Living/ dining room with air-conditioner
- CBD-outlook balcony.
- Security building with lift and intercom access.
- Communal gardens with tropical landscaping and pool

At present, the apartment unit is put on sale of the price of **AUD 599,000** with the home loan of proximately AUD 524 per week (Starpartner 2016). Including the total of government fee such as stamp duties and tax, the purchasing price of the unit is **AUD621,718**.

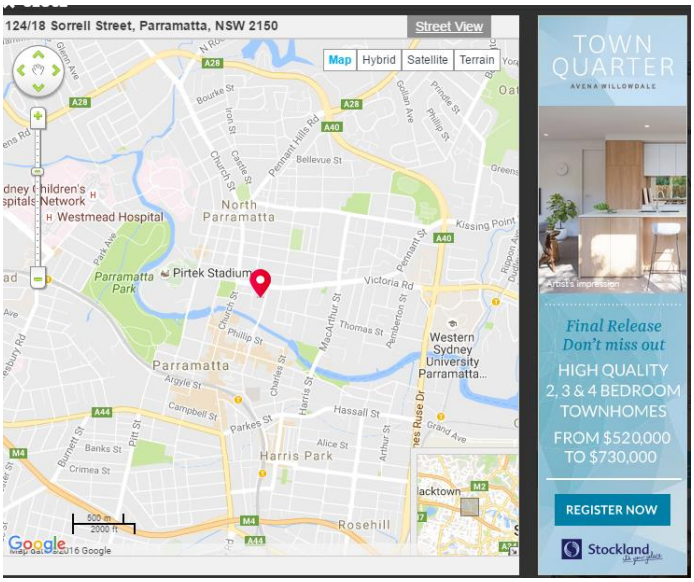
Below are the table presenting financial figures of the apartment:

Advertised Price		**599000**
Total government fee (stamp duties& tax)		22718
Purchasing price including government fees		621718
Outgoing Fees		
Council Rates		930
Water Rates		1132
Strata fee		3232
Management fee	6%+10%GST	3646.656
TOTAL		8940.656

Below are the financial figures relating to incomes (P.A) of the property

Potential Gross Income	**23400**
Vacancy Allowance 2.6%	608.4
Effective Gross Income	22791.6
Outgoings	8940.646
Net Operating Income	13850.95

Pictures and map of the property unit



2. Investment Analysis

In this section, we are going to analyze the target property unit by using the of Discounted Cash Flow, Net present Value, and Internal Rate of Return. For now, in this section, there are key assumptions needed for performance analysis.

Key Assumptions:

- In this section, we assume that the investor has enough fund to purchase the income-making property without borrowing a mortgage loan from the bank.
- As discussed with the investor, he intends to hold the property for 5 years

Discount rate

In order to analyze the target unit by finding of DCF, NPV, and IRR, it is fundamental to find the discount rate, which is the rate required by the investor.

Below are the detailed method of discount rate finding:

- Risk premium of asset = Average return of apartment unit (Parramatta) – average return of risk free rate
    - Average return of apartment unit (Parramatta) = 6.64% (Suburb Profile Report for Parramatta NSW (2150), 2016)
    - Average return of risk free rate= 3.335492 (excel file)

- Risk Premium of asset = 6.64% - 3.335492%= 3.3045%

- Discount rate = Risk free rate + Risk premium
  - Risk free rate = 1.77% (retrieved from DataStream)
  - **Therefore, Discount rate = 1.77% + 3.3045%= 5.075%**

Discount Rate				
Average return of apartment unit				6.64%
Average return of risk free rate				3%
Risk Premium of asset				3.30%
Risk free rate				1.77%
Discount Rate				5.075%

a. Discounted Cash Flow on Property (DCF without debt financing)

The discounted cash flow on property is the present value of the net incomes generated by the property for next five years by using the discount rate found (**5.075%)** to discount back. In order to calculate the discounted cash flow on property, there are some key information relating to the property unit.

Current Rent	**22791.6**	
Discount Rate	5.075%	
Market rental growth	2.5%	pa
Asking Price	621718	
Premium	0.50%	
Cap rate	3%	
Inflation rate	1%	
TY	3.50%	

- **Terminal Yield** = Cap rate + Premium = 3% + 25pms-100bsp = 2.50%
- **Market rental growth** is retrieved from Franknight.com (2016)
- **Cap rate** is retrieved from Franknight.com

After the key information pertaining the property unit, the DCF is able to be calculated. Below is the detailed calculation of the DCF for the next five years.

Most Likely Case							
Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Effective Gross Income		22791.6	23361	23945	24544	25158	25787
Resale Price						728439	
Total Revenue	**0**	**22791.6**	**23361.39**	**23945.42**	**24544.06**	**753597**	**25786.6**
Outgoings							
Council Rates		930	939	949	958	968	977
Water Rates		1132	1143	1155	1166	1178	1190
Strata fee		3232	3264	3297	3330	3363	3397
Management fee		3646.656	3683	3720	3757	3795	3833
Capital	621718						
Total	**621718**	**8941**	**9030**	**9120**	**9212**	**9304**	**9397**
Net Income	**-621718**	**13851**	**14331**	**14825**	**15332**	**744293**	**16390**
PV @ 5.075%	1.000	0.952	0.906	0.862	0.820	0.781	
PV	-621718	13182.02	12980.51	12779.22	12578.34	581108.5	
NPV	**10911**						
Excel NPV	10911						
Excel IRR	5.46%						

- **Resale Price**: After 5 years, the property will be sold in the fifth year. The resale price is calculated by using the estimated income in year sixth divided by the Terminal rate.

b. NPV and IRR on Property

Based on the finding on the DCF above, the Net Present Value of the subject property is **10911**, whereas the IRR **is 5.41%,** which is slightly similar to the discount rate (5.075%). Based on the two measurements above, the property is considered to be a favorable investment since the NPV is greater than 0.

c. Risks (without debt financing)

In order to find the risk of the property, we need to perform the sensitive analysis such as pessimistic, most likely, and optimistic cases. The most likely case is the base case that we have found earlier. According to realestate.com.au, the worst and best cases of dropping and soring in renting yield of the consecutive 5 years are likely to be:

- Pessimistic case: -2%
- optimistic case: 4%

Referring to the excel file calculation of these two cases the IRRs and NPVs are

Pessimistic case

Excel NPV	-85658
Excel IRR	1.87%

optimistic case

Excel NPV	81319
Excel IRR	7.80%

We can see that IRR and NPV for the pessimistic case is lower than our base case. However, the NPV and IRR of the optimistic case is greater.

After the IRRs and NPVs of the two cases are found, we find the risk measurements (STD and Varian) of the unit.

No Loan					
Scenario	Return (or R)	obability (P	Return x Probability	- Expected	R-Expected
Pessimistic	1.87%	20%	0.37%	-3.57%	0.03%
Most Likely	5.46%	50%	2.73%	0.02%	0.00%
Optimistic	7.80%	30%	2.34%	2.36%	0.02%
		Expected Return	5.44%		
		Variance	0.04%		
		Standard Deviation	2.05%		

Therefore, the standard of the deviation (risk) is **2.05%.**

3. The impacts of leverage and risk in the investment analysis

This section, we will analyze the subject property DCF, NPV, and IRR by taking the financial leverage and it related risk of the investment into account.

Key assumptions:

- As having a discussion with our investor, he is considering to invest in the subject property by funding 30% of purchasing price out of his own pocket and the rest will be funded through bank mortgage loan.
- Loan is fully **amortized** for 10 years
- Term Loan: 10 years
- Property Holding Period: 5 years
- Interest Rates: 3% P.A or 0.33% P.M (ANZ Banks)

Below is the information regarding the loan of the subject property:

Mortgage Information			**Equity in year 5**	
Loan	70%	435202.6	Resale Price	728439
Equity	30%	186515.4	OBL	$21,715.62
Term	120	payments	Equity in year 5	$706,723.67
Interest	0.33%	p.m		
Monthly Payment	$4,385.56			
Annualized Debt Service	$52,626.73			
Mortgage term	10	years		

a. Discounted Cash Flow on equity (with debt financing)

This discounted cash flow on equity considers the impact of the financial leverage when the investor borrows the 70% of the property price with a 3% interest rate from the bank. The loan term is 10 years. After holding for 5 years, the property is to be sold, and the equity in year 5^{th} is calculated by deducting the resale price from the outstanding balance.

After all of the information pertaining the mortgage is considered, the DCF on equity is calculated as follow:

Most Likely Case							
DCF							
Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Effective Gross Income		22791.6	23361	23945	24544	25158	25787
Resale Price						706724	
Total Revenue	**0**	**22791.6**	**23361.39**	**23945.42**	**24544.06**	**731881.3**	**25786.6**
Outgoings							
Council Rates		930	939	949	958	968	977
Water Rates		1132	1143	1155	1166	1178	1190
Strata fee		3232	3264	3297	3330	3363	3397
Management fee		3646.656	3683	3720	3757	3795	3833
Capital	186515.4						
Total	**186515**	**8941**	**9030**	**9120**	**9212**	**9304**	**9397**
Net Income	**-186515**	**13851**	**14331**	**14825**	**15332**	**722578**	**16390**
ADS		**52627**	**52627**	**52627**	**52627**	**52627**	
Before-tax-cash flow	**-186515**	**-38776**	**-38295**	**-37802**	**-37294**	**669951**	
PV @ 5.075%	1.000	0.952	0.906	0.862	0.820	0.781	
PV	-186515.4	-36903.1	-34685.8	-32585.1	-30595.1	523065.6	
NPV	**201781**						
Excel NPV	201781						
Excel IRR	18.36%						

Key findings:

- After DCF on equity is calculated, we observe the before-tax cash flows are negative from year 1 to year 4; it is because of the expenses on interest

payment. However, in year 5th, the cash flow is showing a positive figure due to the resale of the property.

- NPV and IRR is showing a favorable figure.
- Compare with the DCF on property (without financing), the NPV (201781) and IRR (18.36%)of the DCF on equity are greater. It is due to the effect of the financial leverage. Therefore, the investment of the unit property through debt financing helps the investor get higher return.

b. Risks of the investment (with debt financing)

In this section, we will study the risk of the property investment if the property is funded with debt financing. Similar to the above section, we need to perform two more analyses: the pessimistic and optimistic scenarios. The rental yield for these two cases are:

- Pessimistic case: -2% (Sydney Investment property data for 2 bed units, 2016)
- optimistic case: 4%

Therefore, referring to the excel file, the IRRs and NPVs of these two scenarios are:

Pessimistic case

Excel NPV	-85658
Excel IRR	1.87%

optimistic case

Excel NPV	81319
Excel IRR	7.80%

After the IRRs and NPVs of the two cases are found, the standard deviation and variance are calculated by using the IRRs of the three scenarios above: the most likely, the pessimistic, and the optimistic cases. the standard deviation and variance are:

No Loan					
Scenario	Return (or R)	obability (P	Return x Probability	- Expected	R-Expected
Pessimistic	1.87%	20%	0.37%	-3.57%	0.03%
Most Likely	5.46%	50%	2.73%	0.02%	0.00%
Optimistic	7.80%	30%	2.34%	2.36%	0.02%
		Expected Return	5.44%		
		Variance	0.04%		
		Standard Deviation	2.05%		

Key findings:

- According to the calculation of the standard deviation and variance above, the risk of the property investment through debt financing is higher than that without financial leverage.
- The higher standard deviation and variance are due to the risk of debt financing.

C. **DCF with tax, gearing, and capital gain tax**

In this section, we will examine the impact of the tax, negative gearing, and the capital gain tax on the subject property by finding the after-tax DCF, its NPV, and IRR after taking those determinant factors into account.

- Below is the key information for calculating the after-tax DCF:

Purchase Price		621718
Equity Portion	$	186,515.40
Loan Amount	$	435,202.60
Interest Rate		3.90%
Term Length (yrs.)		10
Payments Per Yr:		12
Debt Service	$	4,385.56
Annual Debt Service		$52,627
Discount Rate		5.075%
Resale Price		728,439
Disposition Proceeds	$	489,723
Terminal Yield		2.50%
CGT Taxable Income		53,360.6
Tax Rate @ 28%	$	14,941

- For depreciation cost, the prime cost method is employed to depreciate the building:

Years	Diminishing Value	Prime Cost
Year 1	13000	9000
Year 2	10000	9000
Year 3	9000	9000
Year 4	9000	9000
Year 5	8000	9000
Year 6	8000	8000
Year 7	7000	8000
Year 8	7000	8000
Year 9	7000	8000
Year 10	7000	8000

- Summary of the 5-year mortgage activities:

Year	Annual Debt Service	Interest	Principal	Remaining Balance
1	$ 52,627	$ 16,329	$ 36,298	$ 398,905
2	52,627	14,887	37,739	361,165
3	52,627	13,389	39,238	321,927
4	52,627	11,831	40,796	281,132
5	52,627	10,211	42,415	238,716
6	52,627	8,527	44,100	194,617

After the information needed is collected, we are able to calculate the after-tax DCF as follow:

		Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Effective Gross Income			$ 22,792	$ 23,361	$ 23,945	$ 24,544	$ 25,158
Less:	Operating Expenses	186515.4	8,941	9,030	9,120	9,212	9,304
Net Operating Income		$ (186,515)	$ 13,851	$ 14,331	$ 14,825	$ 15,332	$ 15,854
Less:	Interest Expense		16,329	14,887	13,389	11,831	10,211
	Depreciation		9,000	9,000	9,000	9,000	9,000
Taxable Income (Loss)			$ (11,478)	$ (9,556)	$ (7,564)	$ (5,499)	$ (3,357)
X:	Tax Rate		0.28	0.28	0.28	0.28	0.28

Income Tax (Saving)			$ (3,214)	$ (2,676)	$ (2,118)	$ (1,540)	$ (940)
Net Operating Income		$ (186,515)	$ 13,851	$ 14,331	$ 14,825	$ 15,332	$ 15,854
Less:	Debt Service		52,627	52,627	52,627	52,627	52,627
	Income Tax		(3,214)	(2,676)	(2,118)	(1,540)	14,001
After-Tax Cash Flow		$ (186,515)	$ (35,562)	$ (35,620)	$ (35,684)	$ (35,755)	$438,949
Remember: With consideration of the resale price							
NPV		$29,990.13					
IRR		7.4859%					

Key findings:

- After taking the property tax, negative gearing, and capital gain tax into account, we find that the impact of those determinants cause the NPV and IRR to decrease significantly.
- In this case, the NPV decreases from 201,781 to 29,990; the IRR decreases from 18.36% to 7.49%.
- The decrease in NPV and IRR cause our property investment a bit less favorable than that without taking the taxes and negative gearing into account. However, These NPV and IRR are still more favorable than that of the IRR and NPV of the DCF on property (without debt financing)

Conclusion and Recommendation

After examining and analyzing many cases such as DCF on property, DCF on equity, sensitive analysis, risks, and taxes on property, we can see that our subject property is a favorable investment. The purchasing of the investment property using debt financing helps the investor get higher return. Even though the financial leverage can magnify the return of our property investment, the financial risk relating to the debt financing is also greater than that without debt financing. Therefore, our investor is advised as follow:

- To purchase the subject property and hold it for 5 years.
- To use atomized mortgage of 3% interest rate to fund 70% of the property purchasing price.
- To consider the financial risk and tax carefully.

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