Assumptions

For now, assume:

- Income of 100k gross ($1920 weekly, say $1200 after tax)
- I want to spend only 30% of my income on rent
- Will rent near city (say, for a range of 300-500 per week)
- Will rent out the investment property for ~500 per week
- For simplicity, assume rent from investment covers rent in city with no excess profit or cost
- Therefore, leftover income to spend on investment for rent per week $= 1200 * 0.3 = 360$
- Long-term interest rates of 7.25% (calculated monthly = 0.00625)
- Loan length = 25 years = 300 months

These assumptions will be tweaked later on.

Formula

Let:

- A_n= amount owing after the nth payment
- P = principal owing
- r = interest rate calculated monthly (interest is applied before repayment)
- M = monthly repayment

$$A_1 = P + (1 + r) - M$$

$$A_2 = A_1 * (1 + r) - M - R = P(1 + r)^2 - M(1 + r) - M$$

$$A_3 = A_2 * (1 + r) - M = P(1 + r)^3 - M(1 + r)^2 - M(1 + r) - M$$

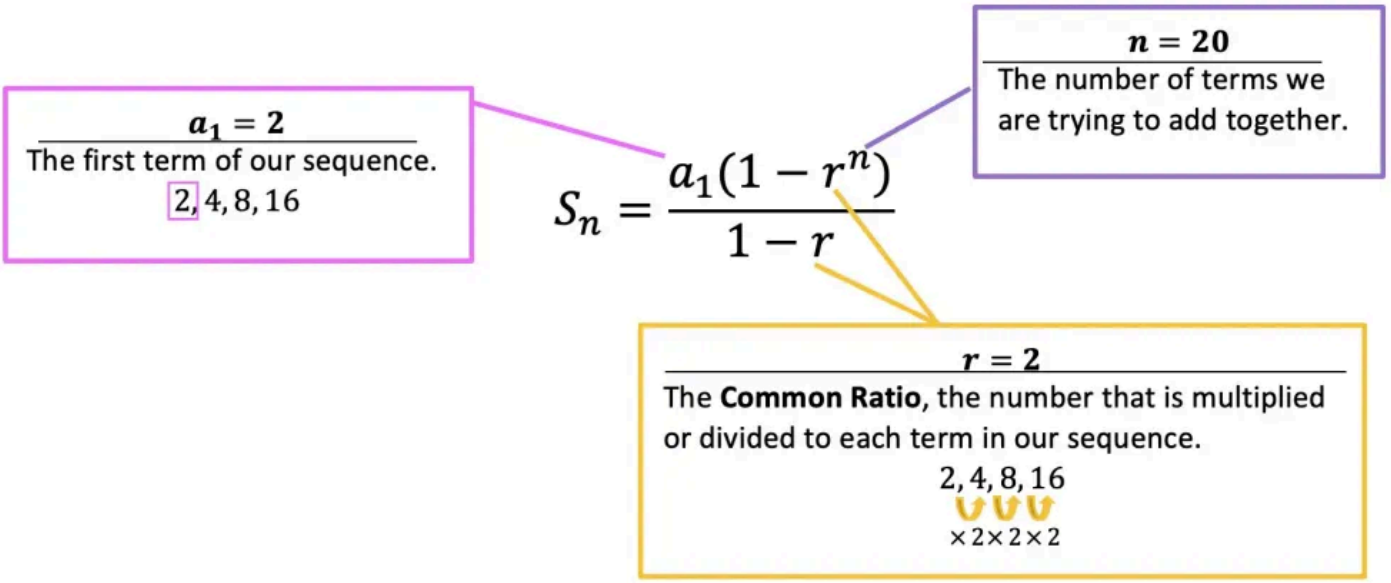
$$A_n = P(1 + r)^n - M(1 + r)^{n-1} - M(1 + r)^{n-2} - \ldots - M$$

To simplify, with every month, interest is applied and the repayment is subtracted.

As this is a geometric progression, we use the sum of a finite geometric process formula:

$$\frac{a(r^n - 1)}{r - 1}$$

or



depending on whether r is < or > 1. For us:

- a = -M
- r = 1.005 (interest rate multiplied to outstanding loan amount)
- n = number of periods

Therefore,

$$A_n = P(1+r)^n - \frac{M(r^n-1)}{r-1}$$

To calculate monthly repayment, let $A_{300} = 0$ and n be the final period:

$$\frac{M(r^n-1)}{r-1} = P(1+r)^n$$

$$M(r^n-1) = P(1+r)^n(r-1)$$

$$M = \frac{P(1+r)^n(r-1)}{r^n-1}$$

Calculation

Positive gearing

For a property to be positively geared, the rental yield must be more than M. Therefore, assuming rental yield is $500 per week (\$500 * \frac{52}{12} = 2166.66$ per month):

$$2167 = \frac{P(1+0.00625)^{300}(1.00625-1)}{1.00625^{300}-1}$$

$$2167(1.00625^{300}-1) = P(1+0.00625)^{300}(1.00625-1)$$

$$P = \frac{2167(1.00625^{300}-1)}{(1+0.00625)^{300}(1.00625-1)} = 293237.6008$$

Therefore, the Principal (after putting a deposit down) must be a maximum of **$293,237**. Even at a rental yield of $650, the Principal must be a maximum of **$381,195**.

Renting without using rental income at different levels of income expenditure

Now assume that I do not want to spend more than $340 per week as per original assumption (or \$340 * \frac{52}{12} = 1473.33$ per month) on repayments. Therefore, the max P I should take on is:

$$1473 = \frac{P(1+0.00625)^{300}(1.00625-1)}{1.00625^{300}-1}$$

$$1473(1.00625^{300}-1) = P(1+0.00625)^{300}(1.00625-1)$$

$$P = \frac{1473(1.00625^{300}-1)}{(1+0.00625)^{300}(1.00625-1)} = 199325.7896$$

Looks like I can't buy jack shit with my assumptions – **$199,325** is not enough for Australian property. I need to relax my *leftover income to spend on investment for rent per week $=1200*0.3=360$** assumption.

Let's say I'm willing to spend 50% of my income for this investment for rent:

$$1200 * 0.5 = 600$$

$$600 * \frac{52}{12} = 2600$$

$$2600 = \frac{P(1+0.00625)^{300}(1.00625-1)}{1.00625^{300}-1}$$

$$2600(1.00625^{300}-1) = P(1+0.00625)^{300}(1.00625-1)$$

$$P = \frac{2600(1.00625^{300}-1)}{(1+0.00625)^{300}(1.00625-1)} = 351830.9931$$

Even with 50% of my income, I can't spend more than **$351,830** on a property.

Finally, let's try with 70% of my income, which is probably most realistic given I'll only need 30% of my income for spending (as per current spending habits - see 20231209 Savings report):

$$1200 * 0.7 = 840$$

$$840 * \frac{52}{12} = 3640$$

$$3640 = \frac{P(1+0.00625)^{300}(1.00625-1)}{1.00625^{300}-1}$$

$$3640(1.00625^{300}-1) = P(1+0.00625)^{300}(1.00625-1)$$

$$P = \frac{3640(1.00625^{300}-1)}{(1+0.00625)^{300}(1.00625-1)} = 492563.3904$$

Here, I can only buy an investment for **$492,563**.

Renting using rental income at 70% of income expenditure

Another variation to consider is that my rental income from the investment is likely to be more than my rental payments as I would live with a roommate. For simplicity, assume that the rental yield is double my rental payments (as I now live with one other roommate). Our monthly repayments can now incorporate half of the rental yield of the investment property ($500 * 0.5 = 250$).

Therefore, we can add 250 to the value of M:

$$250 + 1200 * 0.7 = 1090$$

$$1090 * \frac{52}{12} = 4723.333333$$

$$4723 = \frac{P(1 + 0.00625)^{300}(1.00625 - 1)}{1.00625^{300} - 1}$$

$$4723(1.00625^{300} - 1) = P(1 + 0.00625)^{300}(1.00625 - 1)$$

$$P = \frac{4723(1.00625^{300} - 1)}{(1 + 0.00625)^{300}(1.00625 - 1)} = 639114.531$$

Results

To generalise the above, I cannot spend more than **$640,000** on an investment property assuming:

1. interest rates remain high;
2. income remains at $100k gross; and
3. I live with housemates.

Discussion

From an opportunity cost perspective, purchasing a property will redirect 70% of my income, crowding out all other investment ventures. Property is not liquid, and I cannot live as freely as I do now. Property investing also primarily relies on your ability to generate income – the golden handcuffs would shackle fast.

Property is unique for its leveraging effect – you can use equity in a house to buy more property. You are likely to produce 8% growth over the long run, and the rental yield means you can live off passive income with multiple properties.

However, property investing is a game of decades. For now, I do not want to overleverage myself. I'd like to have freedom in liquidity to deploy capital in other entrepreneurial ventures.

In Australia, there are two primary incentives to purchase property investments:

- Capital Gains Tax discount; and
- tax deductions on negatively geared properties.

Therefore, once I start making a high income, I'll probably buy a property purely to minimise taxable income and hopefully sell the property with minimal CGT.

Sources

- Eddie Woo on calculating loan repayments