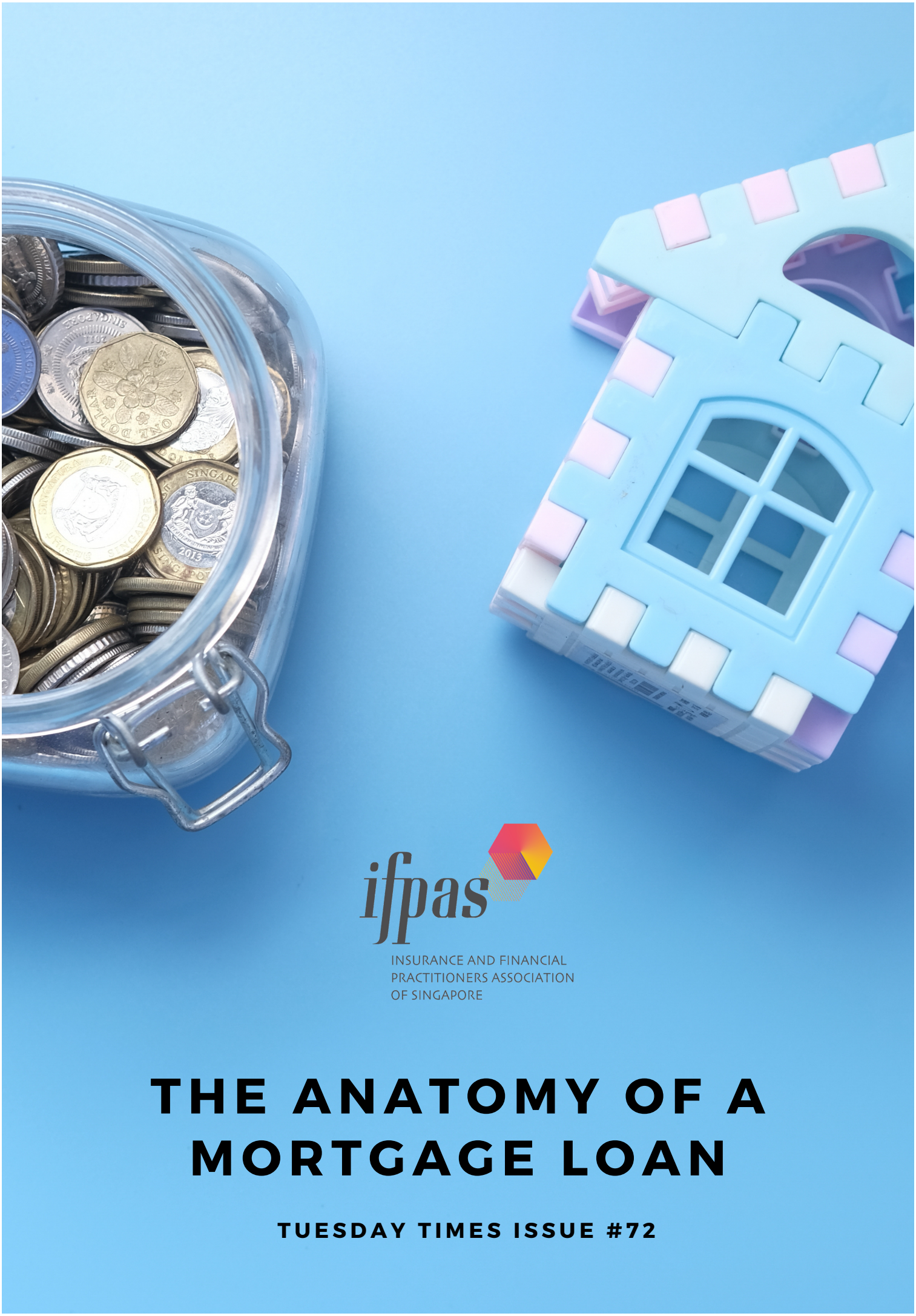

THE ANATOMY OF A MORTGAGE LOAN

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One common dilemma that most homeowners in Singapore faced is:

"I have some savings on hand now, should I make additional repayment to my loan?"

Before I offer my perspective on the dilemma, let us take a step back to understand what makes up a mortgage loan and how best to construct one that is most suitable to you.

What is a mortgage?

A mortgage is a loan that is secured by real property. The word mortgage has its roots in old French, and it literally means death (mort) pledge (gage). There are many interpretations of its roots and here is one that I took a liking to – the pledge (or a loan in our context) dies or becomes void when the obligation is fulfilled, or when the property is taken when the party involved is unable to fulfil their obligation to the loan.

Across the world, mortgage is a financial tool that makes private ownership of properties, both residential and commercial, possible. After all, not everyone has the luxury of having hundreds of thousands dollars sitting in the bank to pay off in full!

What makes up a mortgage?

1. Property
2. Mortgagor – Owner of the property that is being financed
3. Borrower – The persons taking up the loan. All borrowers must be the mortgagors of the property
4. Mortgagee / lender – Banks and financial institutions offering the loan
5. Principal / loan amount – Amount that the borrowers agree to repay, and the lender agrees to loan
6. Interest rate – Cost of the loan
7. Loan tenure – Duration of the repayment. Typically, 25 years for HDB and 30 years for private properties
8. Monthly instalment – Each repayment comprises of both principal and interest.

The amount of repayment every month and thereafter, the total repayment over the entire loan tenure, is determined by how much you borrow, what is the interest rate and how long you intend to borrow for.

This is the formula for mortgage calculation if you are interested. Otherwise, there are many free calculators online that are available for you to tinker with.

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

where

- A = payment Amount per period
- P = initial Principal (loan amount)
- r = interest rate per period
- n = total number of payments or periods

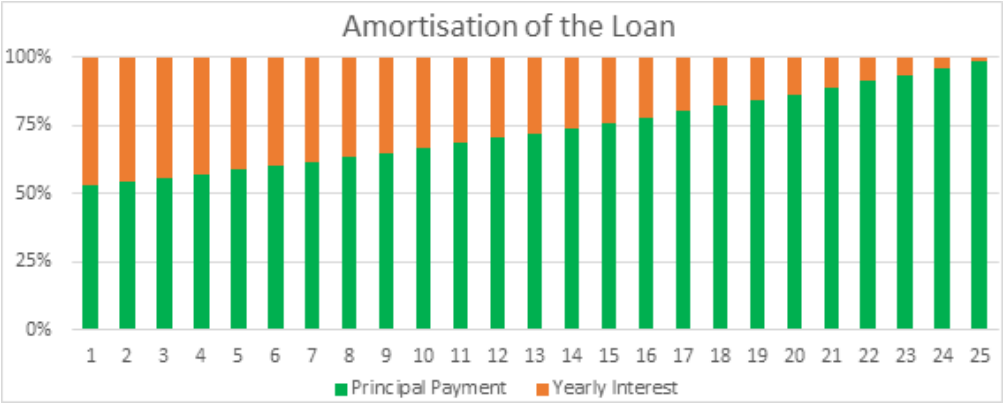
Amortisation

One interesting feature of a mortgage loan is amortisation. Amortisation means that over time, you pay less in interest and more towards the loan. The first example will illustrate it.

Example 1

John and Jane are offered a loan of $400,000 by HDB at the interest rate of 2.6% over a period of 25 years. Using an online calculator, they work out that they will have to make a monthly repayment of $1,815 per month.

Loan amount: $400,000
Interest rate: 2.6%
Monthly repayment: $1,815 (rounded)
Total repayment: $544,400 (rounded)
Total interest payable: $544,400 - $400,000 = $144,400



You will notice that almost 50% of John and Jane's monthly repayment in the first year goes towards the interest! In comparison, their repayment in the last year of the loan is almost entirely towards the loan.

Let us assume that John and Jane have another $100,000 lying around in their savings account after setting aside sufficient saving. They are pondering if they should make an additional payment to take lesser loan. After all, a dollar saved is a dollar earned.

Loan amount: $400,000 - $100,000 = $300,000
Interest rate: 2.6%
Monthly repayment: $1,361 (rounded)
Total repayment: $408,300 (rounded)
Total interest payable: $408,300 - $300,000 = $108,300
Hence, total interest saved = $144,400 - $108,300 = $36,100
Do you think that saving $36,100 is a good deal?

If we approach it from another perspective where John and Jane decided to keep and grow the $100,000, they will have to ensure that their money at 1.24% per annum for 25 years to earn the same $36,100. A relatively safe investment asset such as an AAA rated government bond could possibly achieve the required rate of return.

At this point, for the sharp-eyed reader, you would have realised there will be monthly savings if John and Mary make the additional $100,000 down payment and they will be able to invest the surplus too!

Monthly surplus: $1,815 - $1,361 = $454

Here comes the headache. Taking into consideration of both potential investment gain and interest saving, what is the better course of action for John & Mary?

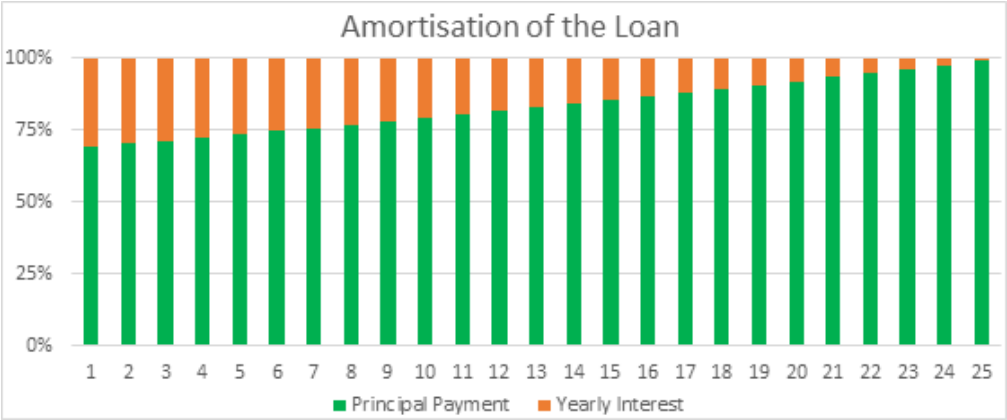
Making the down payment			
Expected Investment Return	0%	4%	8%
Investing $454 consistently at beginning of every month Total amount invested:	$136,200	$136,200	$136,200
Total amount at end of 30 years	$136,200	$234,193	$434,644
Gains	$0	$97,993	$298,444
Interest saved from making the down payment	$36,100	$36,100	$36,100
Total benefit from making the down payment	$36,100	$134,094	$334,544

Not making the down payment			
Expected Investment Return	0%	4%	8%
Investing $100,000 Total amount invested:	$100,000	$100,00	$100,000
Total amount at end of 30 years	$100,000	$271,376	$734,017
Gains	$0	$171,376	$634,017
Additional interest paid from not making the down payment	$36,100	$36,100	$36,100
Total benefit from not making the down payment	-$36,100	$135,276	$597,917

The two tables suggest that if John and Jane can invest their surplus at a certain rate of return, they will be better off investing instead of making the additional down payment.

Example 2

If John and Jane decide to approach the bank for a mortgage loan and are offered an interest rate of 1.5%. Holding everything constant, here is the amortisation chart.



From the chart, we can infer that right from year 1, a much higher percentage of the repayment goes towards the principal, hence much lesser total interest paid, $79,924 compared to $144,400.

Loan amount: $400,000
Interest rate: 1.5%
Monthly repayment: $1,600 (rounded)
Total repayment: $479,924 (rounded)
Total interest payable: $479,924 - $400,000 = $79,924

Lower interest paid is good, but how will that affect our decision in whether to make the additional down payment?

Making the down payment			
Expected Investment Return	0%	4%	8%
Investing ($1,600 - $1,200) $400 consistently at beginning of every month Total amount invested:	$120,000	$120,000	$120,000
Total amount at end of 30 years	$120,000	$206,337	$382,947
Gains	$0	$86,337	$262,947
Interest saved from making the down payment	$19,980	$19,980	$19,980
Total benefit from making the down payment	$19,980	$106,317	$282,927

Not making the down payment			
Expected Investment Return	0%	4%	8%
Investing $100,000 Total amount invested:	$100,000	$100,000	$100,000
Total amount at end of 30 years	$100,000	$271,376	$734,017
Gains	$0	$171,376	$634,017
Additional interest paid from not making the down payment	$19,980	$19,980	$19,980
Total benefit from not making the down payment	-$19,980	$151,396	$614,037

Comparing both examples together, there is a stronger case not to make additional down payment when John and Jane are able to get a mortgage loan with lower interest rate!

Beyond numbers, there are other factors to take into consideration.

First, do you and your partner have sufficient savings to fulfil the mortgage repayment if there is a loss of income for an extended period. It could be due to retrenchment, sickness or perhaps one of you wish to be a stay home parent. Making the decision to down pay more could lead to more problems in future if it is at the expense of not having sufficient saving for prolonged rainy days.

Second, do you aspire to own a second property? If it is in your plan to own a second or even third property, it might make sense to down pay more to clear off your loan. Based on MAS regulations, if a person has an existing mortgage loan, the loan to valuation limit will reduce to either 45% or 25%. Hence, in this situation, it might work in your favour to make additional down payment.

Third point to consider is your emotional state. I know some people who enjoys being debt free, while others prefer to leverage using good debts to make their money work harder. Numbers are meaningless if it doesn't align with your personal values.

Mortgage planning is one important area in financial planning, particularly in view that property makes up a large proportion of the net worth of most Singaporeans. Hence it is important to have a holistic analysis of your financial situation before making any major decision with your mortgage loan.

ABOUT THE AUTHOR

Mr. Chong Wei Ping is a licensed Financial Practitioner and an active IFPAS member. He has the CFP Designation.