

Case Study 2

Part 1

Build a standard mortgage loan (SML) model using the following information. You need to use this standard mortgage loan model as a comparison to your group project (mortgage product).

Some information and instructions are provided by senior management:

- Assume that the standard base rate is 3% and the effective interest rate for a standard mortgage loan is based on 4.5% fixed and to be charged beginning of each month.
- Assume all the installments paid at the end of each month.
- Maximum tenure for standard mortgage loan is 40 years.
- Apply 4% on the Loan Amount as insurance premium (including but not limit to MRTA/MLTA, fire insurance) to cover the dead/catastrophes risk on the borrower.
- The insurance cost compulsory to be financed into the mortgage loan and to be amortized throughout the loan tenure. In other words, the Final Loan Amount will be the approved loan amount plus insurance premium ($1.04 \times$ approved loan amount).
- The above insurance is compulsory and is tied with the mortgage loan.
- The approved mortgage loan amount has to be flexible for example, minimum 50% and increase by 10% (i.e. 50%, 60%, 70% ... 100% of the property price).
- All Legal Fees and Stamp Duty assume to be fully exempted.
- 3% risk free rate is applicable on the calculation of present value, accumulation value, cash flow, etc...

You need to create a **user form** which required user to key in some information needed for the modelling. For example:

1. Property price
2. Loan tenure
3. Percentage of loan/loan amount
4. Household income
5. Gross or Net Income
6. Other commitments.
7. All other information that you think is needed.

All information must be recorded in an input sheet for further reference.

You need to build a standard mortgage loan model with illustrative/amortization table to show all the relevant information such as:

1. Monthly installment
2. Interest paid, principal repay and MRTA payment each month
3. Total principal paid up to month
4. Total interest paid up to month
5. MRTA paid up to month
6. outstanding balance for each month
7. *total interest paid throughout the entire loan tenure
8. *present value of all the monthly interest paid (bank's total profit)
9. *Profit Margin
10. etc...

*can show in a single value.

Part 2

Construct a Debt Service Ratio (DSR) Calculation on a separate worksheet to calculate the eligibility of securing a mortgage loan based on the information given by the applicant in Part 1.

- The following is the DSR threshold:
 - ❖ DSR for income below 5k: 70%
 - ❖ DSR for income above 5k: 80%

Randomly generate 100 model points (based on suitable distribution) for model testing and record down all the details in a separate worksheet. Do a reasonableness check to make sure that both your SML and DSR model are correct and free from any error.

Part 3

Submit an Audit Trail together with your model. You may include the audit trail in excel and/or word file.