

Part 1

## Buy vs Rent a Home

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One of the most critical financial decisions one must make while moving to a new city is whether to **buy a home or rent one**. Given an anticipated stay of at least a decade, it's essential to make a well-informed choice. This report serves as a guide for both my future self and anyone else facing a similar dilemma.

To make an informed, data-driven financial decision, I have created an Excel-based financial model using the principles from CE657 and answered important questions such as "Should we Buy a home or Rent a home ?"

I have considered suitable economic decision-making parameters and made a few assumptions while creating the financial model. I have used real-world numbers pertaining to the city of Mumbai while doing this analysis, but I have permitted any changes in the Parameters (sensitivity analysis) one would like to make specific to his/her requirements. I have created the model in 3 excel sheets, one for the variable "Buy the home", one for "Rent the home", and a "Decision Maker", which will decide whether to Buy or Rent based on the Parameter Values one chooses.

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## **BUY A HOME:**

Based on the data I have obtained from the internet and my family for Mumbai (BKC) , I filled values of various parameters: Price of House, Down Payment %, Interest Rate compounded monthly (APR), Buying Closing cost, Property Tax and its increment, Home insurance, House Owner Association Fee, Maintenance Cost, Appreciation of Home value with aging of the property, increment in the Cost/Insurance, Selling / closing price & associated cost.

I made a few assumptions, for eg., the property tax is paid at the beginning of each year, whereas in reality this tax is paid at the end of each year. The others, i.e., Home insurance, House Owner Association Fee, Maintenance Cost are usually paid at the beginning of each year. This assumption is valid, given an anticipated stay of a decade.

Assuming a 15 year Loan term and have calculated the Loan Amount, effective (annual) rate of interest, EMI, Future Value of the home (after 10 years), Total EMI paid over the period (Future Value), Total Home insurance, house owner association fee, maintenance amount, home value appreciation over the period as well as the selling price of the house.

I have used basic excel functions of mathematics and finance to calculate the values and their future equivalents such as -PV (i, n, A, [F], [Type]), -PMT (i, n, P, [F], [Type]), -FV (i, n, A, [P], [Type]), Future Value = Amount\*(1+r)^(n),

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**1. NOTE : Money “received” is considered positive whereas Money “paid” is negative.**

**2. NOTE : Red colour numerical text represents a negative sign ( if written without any sign)**

Using these Formulas and Assumptions, I have calculated the future equivalent of **NET VALUE OF BUYING A HOUSE (= - ₹ 2,65,64,596.05)**

### **RENT A HOME:**

Similarly, I filed for these parameters pertaining to renting a home in Mumbai in BKC: Monthly rental cost and its increment %/year, monthly Renter’s Insurance and maintenance fees, security deposit & upfront cost, monthly interest rate.

I calculated the effective (yearly) interest rate, final future values of rent, renter’s insurance, maintenance fees, security deposit paid, upfront amount paid in totality.

Based on them, I calculated the future value of **NET VALUE OF RENTING A HOUSE (= - ₹ 7519852.764)**

In the case of the values of the Parameters I chose, I found that

$| \text{NET EQUIVALENT FUTURE VALUE OF RENTING A HOUSE} | <$

$| \text{NET VALUE OF BUYING A HOUSE} |$

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This showcases that in my case Renting a house is feasible compared to Buying a house.

In the case of renting the house, If invested in the stock market at an average 12% annual return, the money saved could grow significantly over 10 years. If an apartment is rented instead of bought, the down payment amount and EMI amount is saved, that could be invested smartly to generate wealth . Here, I have assumed that the person does not take Loan when he rents a home.

According to the variables of BKC, the person has paid an overall EMI (present value, in the case of buying) of ₹2,33,69,034.97 and a rent (present value, in the case of renting) of ₹27,98,332.40. The difference could be invested, along with the extra down payment savings.

I also found some primary factors, which, if changed, consequently influence the decision to a large scale. Those were Purchase price of house, Interest Rate for Loan, Home Value appreciation and Number of years of Loan Term and ownership of house. In the case of renting the home, the most sensitive factors were loan interest rate and monthly rental cost.