Time Value of Money: A Home Investment Decision Dilemma

Buy vs. Rent Analysis

Introduction

• Background: Naresh Jain, a tax consultant, faces a decision between buying and renting an apartment in North West Delhi.

• Objective: To conduct a quantitative analysis to determine the better financial option.

Scenario Overview

• Current Situation: Naresh Jain needs to vacate his current rental apartment.

• Options:

- Rent an identical apartment for ₹30,000 per month.

- Buy a similar apartment for ₹12.5 million.

Financial Details for Buying

- Purchase Price: ₹12.5 million
- Down Payment: ₹2.5 million (20%)
- Loan Amount: ₹10 million (80%)
- Interest Rate: 10.25% (20 years)

- Property Tax: ₹10,000 per year = ₹ 833.33 per month
- Society Charges: ₹1,000 per month (₹ 12,000 per year)
- Monthly Mortgage Payment : ₹ 98,164.34 (Total Principal + Interest/ 240 = 23,559,443/240 Total principal and interest taken from exhibit 1)

Initial & Monthly Costs of Buying

- Down Payment: ₹2.5 million
- Stamp Duty and Registration: ₹875,000 (7%)
- Brokerage Fee: ₹125,000 (1%)
- Total Initial Cost: ₹3.5 million

- Total Monthly Cost = Mortgage + Property Tax + Society Charges
- Total Monthly Cost = ₹ 98,164.34 + ₹ 833.33 + ₹ 1,000 = ₹ 99,997.68

Monthly Cost of Renting

- Rent: ₹30,000 per month
- Society Charges: ₹1,000 per month
- Total Monthly Cost: ₹31,000

Monthly difference between expenses for buying vs renting:

₹ 99,997.68 – ₹ 31,000 = ₹ 68,997.68

Future Value of Money If Rented

- Opportunity Cost of Capital: 7 % per annum

Assuming that the down-payment amount is in fixed deposits and the monthly difference amount is periodically deposited:

- Future Value after 20 Years: ₹ 43.62 million

Number of Periods (Annually)	20
Starting Amount	₹ 2.5 million
Interest Rate	7 %
Periodic Deposit (Annually)	₹ 68,997.68 * 12 = ₹ 8,27,972.16
Future Value	₹ 43.62 million

Comparison

- Amount that can be saved at end of 20 years if rented: ₹ 46 million
- Present value: $\mathbf{PV} = \frac{\mathbf{A_t}}{\mathbf{(1+r)^t}}$ where r = 7 %, t = 20, A = 46 million
- PV = ₹ 11.27 million
- PV of apartment = ₹ 12.5 million
- Net Present Value = **PV of cash inflow – PV of cash outflow**
- NPV = 11.27 - 12.5 = -1.23 million

Since NPV < 0 for renting the house, Naresh Jain should go ahead with purchasing the apartment for ₹ 12.5 million.