

# Impact of Project Structuring Framework and Equity–Debt Composition on ROI and IRR: A Case Study of Residential Condominium Projects Using Financial Modelling

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**Abstract** - Financing structure and equity–debt mix are true drivers of real estate development projects financial profitability. In this paper, a review of a waterfall financial model is used to study the effect of the project structuring, and the equity–debt composition of funds internally reacted to the ROI, and IRR of residential condominium developments focusing on how cash flows are allocated to finance structures. Real-world context of case studies of Gurugram and Pune is explored. The sensitivity analysis focuses on designing the line of investment percentage between developer/investor vs debt/equity vs returns.

**Key Words:** Project structuring, Equity-debt mix, ROI, IRR, Residential condominium, Waterfall model, Sensitivity analysis, Leverage, Debt restructuring, Real estate finance

## 1. INTRODUCTION

Apartment residential development has very technical financial angles to allow projects to be successful. So, some of the most important of these is the financial structuring of the funds — in other words, equity (from the developer or investor side) and debt (the borrowed money side). So, a badly contrived and poorly executed financing package can cause deficiencies in cash flow, interest costs, and reduced returns. Due to rapid urbanization in India, there has been unprecedented growth in residential condominium developments. This applies even more to proper planning for financial security.

Developers typically face a trade-off when it comes to project forms — outright ownership, joint ventures, investor partnerships — each with a different risk-reward profile. A project's ROI and IRR depend heavily on the project's structuring model (legal and operating structure) and equity-debt combination (financing mix). Poorly structured or an inappropriate financing mix can be more expensive, dilute returns, and jeopardize a project's financial viability. Creating the appropriate project model and capital structure is therefore crucial in achieving maximum return and minimizing financial risk.

## 1.1 PROBLEM DEFINITION

The majority of residential development projects face financial structuring issues. Insufficient balance of equity-debt may lead to paying higher interest, constrained cash flows, or imbalanced returns distribution. This negligence can eventually lead to low return on investment (ROI) or internal rate of return (IRR) for developers and investors, and in extreme cases even the project postponement or default. The main question that this study addresses is: how do different approaches to project structuring and financing structures impact the project ROI and IRR in a residential development project, and how can these variables be optimized to improve the project feasibility? By looking at real-life case studies, we find the impact of different structuring models (Joint ventures vs outright purchase etc.) and debt-equity ratio on infrastructure profitability. The aim is to provide recommendations for financial structuring optimization with the view of improving project returns and long-term financial viability.

## 2. METHODOLOGY

The study was undertaken in three case studies, followed by a live financial model exercise with the waterfall method, in order to assess the project organization and financing impact on project financial returns.

### Case Study Analysis:

The three real project case scenarios were selected and compared to understand the results for different structuring and financing approaches:

- Case Study 1: "Silver Gracia," a residential condominium complex in Ravet, Pune, highlighting its financial structure and return ratios.
- Case Study 2: Hypothetical mid-sized residential complex in Gurugram (50 apartments), analyzed under different debt-to-equity ratios (70:30, 50:50, 30:70) to see the impact on internal rate of return (IRR) and debt repayment obligations.

- Case Study 3: Analysis of a problematic large-scale real estate project (2010–2013), assessed by different restructuring methods such as additional borrowing, injection of equity, and asset divestment to examine the recovery of the capital structure.

**Live Financial Modelling (Waterfall Method):**

Developed a dummy Excel based waterfall financial model for a Chennai residential development project (2-acre site, 3-year term). The model mirrored how cash flows are allocated in a waterfall—service of debt payments first, then service of investor IRR expectations, followed by residual profits to the developer. It is possible to calculate an unlevered (no debt) IRR as well as a levered (with debt) IRR for all combinations of equity–debt ratios using the model. All combinations of ownership shares for different developers and investors were simulated, to analyze, for varying ownership stakes of developers and investors, the effect on the returns received by both stakeholder groups.

**3. RESULTS AND DISCUSSIONS**

**Silver Gracia Project (Pune)**

The "three principal thresholds" derived is from the 40% equity and 60% debt framework to Silver Gracia identified.

Pre-sales break-even: Since 77% bookings were realized before completion, project NPV was reset to zero, and IRR surpassed the 10% hurdle rate. Full absorption upside: 100% presales at time of handover increased IRR to 42.7%, despite prospecting project returns illustrate a powerful leverage effect on returns from initial cash inflows. Timing Sensitivity: Extended construction over 57 months reduced IRR to the breakeven point, and later delays made NPV negative.

**Gurugram Housing Project (Debt–Equity Scenarios)**

So, for a 50-unit, 900 sq. ft. flat project resulted in:

70% debt / 30% equity: Project IRR –5.3%, equity IRR 3.96%, DSCR 0.32 (unsustainable). 50% Debt/50% Eq: IRR ≈0%, Equ IRR 8%, DSCR 1.0 (marginal viability) The financing is typical for a low-leverage project: 30% debt / 70% equity: IRR 4.5%, equity IRR 12.3%, DSCR 1.32 (comfortable).

Moderate use of leverage (approximately 50:50) strikes a balance between risk and returns being enhanced; too much debt incurs interest charges and risk of default, while less debt removes the benefit of yield enhancement from leverage.

**Debt Restructuring of a Distressed Project**

For multi-tower development (land cost ₹87 Cr; construction ₹620 Cr) facing shortfalls and delays:

While the direct sale of the assets proved to be most successful at achieving positive NPV and IRR stability. Finishing required more borrowing—but borrowed money meant interest. Debt restructuring and equity infusion gave a moderate relief.

Hybrid restructuring—speedy disposal of inventories and eased terms—leading to quickest path back to recovery Initial structuring for anticipatory purposes may have prevented distress.

**Live Financial Modeling & Sensitivity Analysis**

A waterfall model of a typical urban condo (3-yr buildout, 5-yr sellout) displayed the following:

- Unlevered Performance:

The unlevered IRR of the project stands at 18.1 %, pointing toward solid inherent feasibility without the influence of financing costs.

- Leverage Sensitivity:

**Table -1:** Impact of Debt on Equity IRR

Debt Ratio	Levered Equity IRR (%)
0 % (Unlevered)	18.1
10 %	13.1
70 %	14.9
90 %	12.4

If more debt is added, ranging from 0 % to 70 %, the equity IRR ranges from 18.1 % peaking to 14.9 %. Beyond 70 %, borrowing costs erode net returns.

- Equity Waterfall Dynamics:

**Table -:** 2IRR outcomes for different equity splits.

Developer/Investor Equity (%)	Developer IRR (%)	Investor IRR (%)
10/90	80.0	5.3
70/30	15.1	15.1
90/10	16.1	36.0

However, when we calculate a 70/30 developer/investor split, both the investor and developer get more or less 14 % IRR, as each one realizes above its required burden rate. More developer equity lowers IRR for developer but raises that of investor — and vice versa.

#### 4. CONCLUSIONS

This research illustrates how both project-structuring type choice and capital structure mix between equity and debt has a relevant impact on the returns of residential condominiums. This creates a tiered waterfall in which it exploits the mismatch well between developer/investor interests, the capital-efficient implementation of that waterfall, and each side achieves its IRR hurdle. Sensitivity analysis suggests that debt leverage of up to 70 %, but excessively 70 % leverage reduces equity IRR (up to a maximum of 14.9 %) through increasing interest costs. Even a 70/30 developer–investor equity split balances returns for both optimally. For maximum ROI and IRR, developers should (i) achieve 70–80 % pre-sales to provide early liquidity for positive cash flow (ii) moderate leverage (iii) exercise tight schedule control. In the midst of financial distress, rapid liquidation of assets and restructuring of debt can restore viability. These findings offer a quick, actionable advice to shape and fund successful, sustainable residential projects.

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