CHAPTER **5**

Effects of Financial Leverage on Real Estate Investments[1]

This chapter presents the effects of financial leverage on real estate investments. As such, the chapter has three main objectives:

- to examine the impact of financing on the risk-return ratio as a function of two critical elements:
    - the loan to value ratio;
    - the difference between unlevered returns on investments and the debt servicing costs;
- to clarify the circumstances in which financial leveraging is appropriate;
- to provide some illustrations of the use of financial leverage.

The conduct of the analyses carried out in this chapter implies the inclusion of certain assumptions for the purpose of simplification regarding the return generating process and recourse to financial leverage.

A mono-period model has been used, as a variant of the Modigliani and Miller theorem,[2] which assumes that there are no failure costs associated with the investment:

$$K_e = \frac{K_a - K_d LTV}{1 - LTV}$$

with:

$$K_e = \left(levered\right) \; equity \; return, \; K_d = cost \; of \; debt$$

$$K_a = \left(unlevered\right) total \; return, \; LTV = loan \; to \; value \; ratio$$

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[2] See Modigliani and Miller (1958).

A situation involving financing with no failure costs implies that there is no correlation between the loan and total return. Consequently, the volatility of the equity return may be calculated according to the following expression:

$$\sigma_e = \frac{\sigma_a}{1 - LTV}$$

with:

$$\sigma_e = volatility \ of \ \left(levered\right) \ equity \ return$$
$$\sigma_a = volatility \ of \ \left(unlevered\right) \ total \ return$$