

# Quantitative financial risk analysis for a European shopping centre



## Background

We undertook a quantitative financial risk assessment of a large European shopping centre to support decisions about the preferred redevelopment options.

- We developed a high-level financial model of the centre, to examine its overall value under a 'neighbourhood' redevelopment scenario
- We worked with the local team, plus specialist advisers, to quantify the main drivers of uncertainty in the centre's value
- We ran the quantitative model with the identified uncertainties included, and we reviewed and discussed the financial outcomes with the development managers.

## Quantitative approach

The model was based largely on the cash flows generated by categories of tenants (Table 1). For each category, the primary drivers of income were the gross lease area (GLA, in square metres), productivity (in turnover per unit of GLA) and base rent.

Expense drivers were also considered.

Table 1: Tenant categories

<b>Primary category</b>	<b>Sub-categories included</b>
Ground Floor Anchor	Hypermarket
FMCG	Food, beverages & tobacco; health & bodycare
SMCG Clothing	Textiles & clothing; shoes & leather
SMCG Durables	Technology; household & personal needs; DIY & gardening; furniture & furnishing
Food Court & Restaurant	Food court; restaurants
Level 1 Anchor	Sports megastore

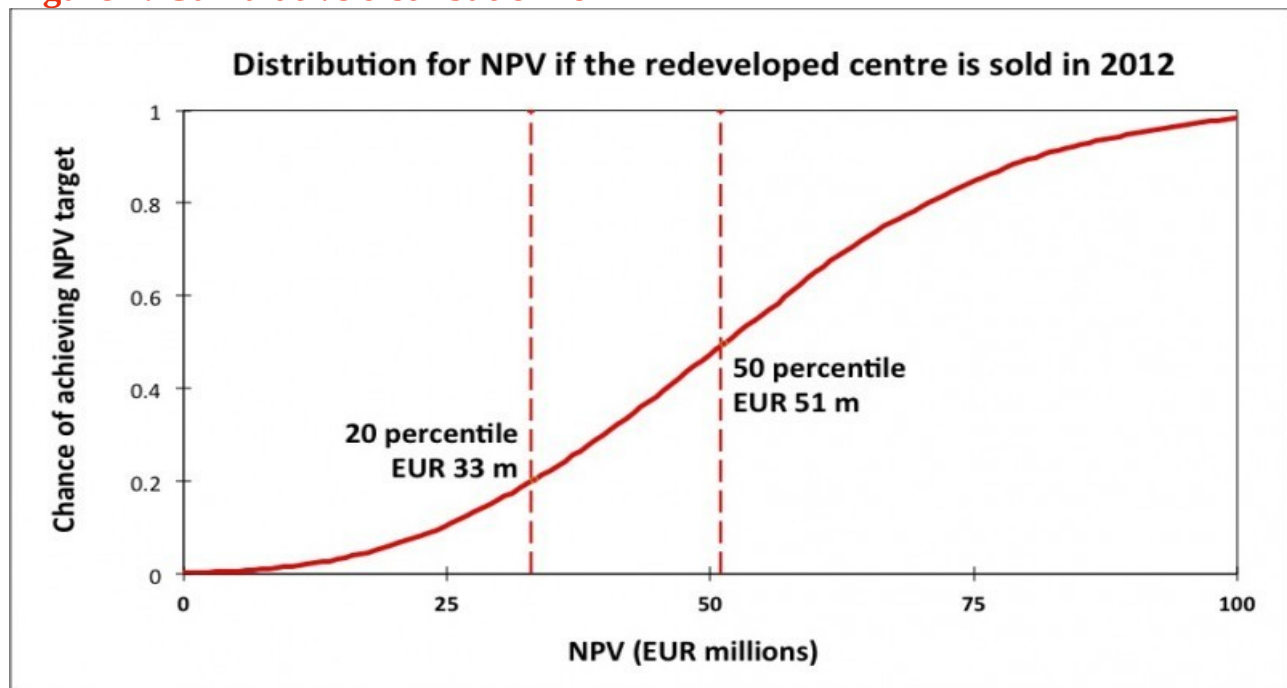
During the workshops, each item in the model structure was addressed. The main assumptions, sources of variation and high, low and likely scenarios were discussed, and values associated with each of the scenarios were assessed. Detailed notes on the discussions were maintained in data tables.

The quantitative risk model was built in Excel, and distributions were combined using simulation with @Risk. Correlations were included – for example, the productivities for most categories would rise or fall together according to the characteristics of the local catchment for the centre, with the Level 1 anchor tenant following a different but related pattern due to the different nature of its target customer base.

## Outcomes

In any specified year, the quantitative model developed a distribution of the net present value (NPV) of the centre if it were to be sold in that year (Figure 1). The NPV was based on the estimated net cash flows from now to the year of sale, with associated assumptions about the overall redevelopment plan and the terminal value.

**Figure 1: Cumulative distribution for NP**



The principal driver for the variation in NPV was the terminal cap rate for the retail component, followed by the base rent for the ground floor of the redeveloped centre. Non-recovered charges for the Level 1 anchor tenant, capital cost variation for the construction activity and productivity were of lesser importance. (The rent for the Level 1 anchor tenant was linked to the ground floor base rent, and the terminal cap rate for the office component was linked to the terminal cap rate for the retail component.) The productivity was of relatively low importance because the base rent dominated turnover rent for several important categories of tenants in the early years.

Figure 2: Tornado diagram

