Structured Investment Products – Mini-case

Structured Investment Products are retail financial products sold by banks or financial firms to individual investors. Typically, these products require an investment at an issuance date, and they offer to pay, at a specified maturity date, a return calculated according to a pre-defined formula combining the variations of a market index and/or a basket of securities over the period between issuance and maturity. Structured products often offer capital protection, that is, 100% of the initial investment (minus subscription fees, if any) is guaranteed if held to maturity. This type of investment products became popular with individual investors in the years 2000.

An example of such product is described here below[*]. This product was commercialized by the Crédit Lyonnais bank under the name "Talisman" between 2001 and 2007.

Talisman, A Pearl Among Investments: *Up to 12% return over two years, Your initial capital 100% guaranteed. Better than a lucky charm to invest your money!*

The objective of the *Talisman* investment product is to yield a return of up to 12% over a 2-year period (that is, a compounded annual return of up to 5.83%) while insuring 100% of the principal amount. The minimum investment required is €3000. The return from *Talisman* will be based on the performance of a basket of 25 high quality stocks selected among the largest stocks (by market capitalization) of the world leading indexes: the top 10 stocks of Euro Stoxx 50, top 10 stocks of S&P 500, top 3 stocks of Nikkei 300, top 1 of SMI, and top 1 of FTSE.

The *Talisman* return will be determined by a combination of the performance of the 25 stocks over a 2-year period. At the two-year maturity date, the 25 stocks will be ranked by performance, then the *Talisman* return will be calculated by taking the arithmetic mean of the following:

a) For each stock whose two-year return ranks among the top 10: its return will be taken as 12%.

b) For each of the remaining 15 stocks: if the stock's two-year return is greater than or equal to zero, its return will be taken as 12%; if the two-year return is negative, then the actual return will be retained.

If the arithmetic mean of the 25 values so calculated is negative, then the *Talisman* return will be set at zero percent (hence capital protection).

[*] This is a summary translation of the details contained in the French language brochure of the investment product.

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Case questions

Your task is to analyze the performance of the Talisman product described above.

- Build an Excel model that replicates the formula described in the product brochure. Then run Monte-Carlo simulation on your model to assess the distribution of possible returns from the product. You can make the following simplifying assumptions, if you wish:

  - Yearly returns for any stock in the basket: Mean = 6%, Standard Deviation = 15%
  - For any stock, the returns on two consecutive years are independent
  - Returns on different stocks are independent

  If you wish to make different assumptions, state them clearly. If you use historical stock performance data as a basis for your assumptions, indicate your sources of information.

  Note: You may find the Excel formula =RANK(Value, List of Values) helpful to rank the stocks by performance. As always, there are alternative ways to come up with a model formulation, relying on different formulas, so this is just a suggestion.

- Based on your MC simulation results, provide the following estimates:

  - the expected return from the Talisman product
  - the probability that the return from the Talisman product will exceed 5.0% over the two years.
  - the probability that the Talisman product will outperform the average of the 25 composing stocks.

  Also provide a graph of the frequency distribution of the Talisman returns.

- Briefly discuss the attractiveness and merits of the Talisman structured product. For example, you can consider questions such as: what makes the product attractive; what type of investor would be interested in the product.