


Case Study

The HSG Bank is specialized on thematic equity baskets. These baskets contain a set of equities that belong to an economic or political theme. A popular basket of HSG bank is the Alternative Energy Basket which contains a range of blue chip companies investing in the booming alternative energies sector.

HSG bank wants to issue a new thematic basket. You are the structuring team and have to come up with a new theme. Describe the theme and its economic rationale in a clear and stringent fashion. Reference academic theory and publications where available. Then identify equities you want to include into the basket according to characteristics you choose. These equities are your investment universe. Summarize this preliminary work on a maximum of one page. 

Once the basket universe has been chosen, the following items have to be addressed using the software tools and finance concepts you learned during your Masters studies. While the details of the analysis and the basket design is completely up to you, the board requires the following steps:

1. Retrieve the data for your empirical analysis (e.g., from Datastream, Bloomberg, and Reuters). Use monthly data as base case.
2. Find a portfolio construction mechanism and implement it (e.g., Mean-Variance Portfolio optimization, equally weighted portfolio, etc.). Comment on the weight restrictions used in your analysis. Deliver the precise formulas used to come up with the portfolio weights and elaborate on rebalancing frequency.
3. Determine the performance of the basket given the chosen investment universe and portfolio construction methodology in the last 5-10 years.
4. Calculate the basket risk characteristics, e.g. Value-at-Risk, shortfall measures, volatility...
5. Calculate performance measures for the basket. Among others: Mean returns, return skewness, return kurtosis, Sharpe Ratio, Treynor Ratio...
6. Determine the factor exposure of the basket using the Fama-French risk factors. These factors are available for download at "http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html" in the "Historical Benchmark Returns (Downloadable Files)" section. Choose "Fama/French Benchmark Factors."
7. Additionally, the analysis should consider exchange rate risk and transaction costs where applicable. Ensure that exchange rate effects are properly accounted for in your performance calculations and describe concisely how this is achieved.

Prepare a document of 5-8 pages length which the board will use to approve or decline your suggested basket. This document should contain tables and graphs detailing the different performance measures of your suggested product. It is important to give a detailed discussion of your results. The evaluation (i.e., grading) of your proposal will be significantly driven by your interpretation of your results in the context of the chosen equity basket and the demonstrated understanding of the relevant financial concepts. The board will evaluate your performance on the quality of the work, not on the basis of the performance of the suggested basket.

Send your document as a pdf file to stephan.kessler@unisg.ch. Do not forget to include the code of your routines. For full credit, answers must be concise, clear, and convincing, not just correct.

Good luck!