Simple formulation for risk transfer at divisional level:

We consider two levels in our risk standalone distribution, namely the top of the house value is calculated as the Variance – Covariance approach on ERC values of each division, using the correlation matrix across divisions

The vector has as components the total ERC value per division, each division ERC value is the result of the covariance – variance method applied to the individual standalone risk components (TRADED RISK, CREDIT RISK, DIRECT INVESTMENT etc…), denoted as , and the internal correlation matrix among divisional internal risks, :

We target the possibility of simulating transfers of risks across divisions.

We could simulate a transfer a% of the **Traded Risk** from i-th division into **Credit Risk** of the j-th division as follows:

Where xi and xj correspond to the vector of standalone internal risk of the divisions i and j.

Following this notation, a general transfer of risk in between internal risk across division can be expressed as:

Where for the each division we define the vector   as the vector of standalone internal risks plus a diagonal transfer matrix to denote the reduction or increment of each individual standalone risk,

The optimization problem associated to the transfer of risk could be simply the minimization of the Risk over expected returns per division or at the top of the house level:

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