

Alternative Risk Funding Solutions for Financial Risk - Part 1

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Abstract

In autumn 2007, Dr. Niederau Consulting&Research decided to open a discussion on alternative risk funding solutions for financial risks in an insuritization context. In a series of three contributions we will be more concrete on how such strategies could work. This is the first part of this series which links up with the introductory post [3] in our Journal.

1 Introduction

In the production and consumer goods industry, we typically distinguish three types of diversification:

1. *vertical* diversification, in essence relating to the value chain (i.e. fore- or backward integration),
2. *lateral* or *diagonal* diversification which works across various industries or product families, and
3. *horizontal* diversification, which counts on diversity within a certain family of products.

Due to the different nature of the finance industry the translation of these various types of diversification is not straight forward. For the sake of argument, before some analogies are exemplified below, we put forward the a working definition of diversification first.

By diversification we understand any means or combination of insurance (or investment) products (or instruments) which are employed in order to smooth risk

- across a portfolio of either independent or merely weakly correlated risk entities ($:\Leftrightarrow$ insurance solution) or
- along the time axis for the very same risk entity or a portfolio of notably dependent risks ($:\Leftrightarrow$ alternative risk funding solution) or
- by a a combination of the latter.

Multi-line or multi-year covers are typical examples of horizontal diversification in (re-)insurance. Likewise, structured products such as offered by investment banks or other alternative risk transfer

vehicles also belong to this category of diversification. Blending with securitization products (e.g. asset-backed securities, such as CDO's) includes vertical diversification.

Strategic asset allocation, mixing between various asset classes (e.g. stocks, real-estate, raw materials, commodities, etc.) would in turn be a typical example of diagonal diversification. From an ALM perspective, life insurers or pension funds are highly dependent on lateral diversification to work effectively with respect to long-term fixed assets.

The blast of the globalization bubble mid 2007 and the ensuing bear market have shown that diagonal diversification with respect to asset allocation only works in a limited way. This is due to the fact that all asset classes relating to stock markets, such as industrial materials (e.g. copper, zinc, nickel, etc.) or real estate in the capital cities (e.g. New York or Tokyo) follow the expectations expressed in stock prices. The consequence is a huge cluster risk in fixed asset positions typically shown in the balance sheets of life insurers or pension funds.

Also derivative based strategies (e.g. stock or index based Put options), resorting to horizontal diversification while aiming to mechanically insure (hedge) against down-side risk are less effective these days. This is in turn due to model risk rather than to market risk such as alluded to in the previous paragraph. Option prices are typically set according the model of Black and Scholes which assumes

- efficient markets, i.e. markets with perfect information and investors undertaking mean-variance optimization in the sense of Makrowitz. In up-turn periods this assumption is not too far-fetched. However, it is not a secret that just in down cycles investors are expected return optimizers rather than expected return/varaince maximizers (this difference was important in project [4], such as presented in our Journal). The latter inevitably leads to market inefficiencies (auto-correlations) with flaws for hedging bases strategies in the following sense;
- although Put options for instance resemble a traditional stop loss cover in insurance it is essential to understand that while the price of a stop loss cover depends upon loss statistics the price of a Put option reflects the transaction cost encountered in order to replicate the contingent claim of the option with a mixture of the underlying, e.g. an index such as the Dow Jones, and a risk free bond, such as a treasury bill. This replication strategy works perfectly well under the above conditions of market efficiency. If in turn these conditions are not met transaction cost of replication may inflate substantially. As a consequence the issuer of the option will naturally load up the option price with a (likewise substantial) safety margin. Excessive pricing is the detrimental consequence to customers. The latter should not be mistaken as rip-off on behalf of banks or other issuers or such instruments but it just mirrors the increased transaction cost encountered due to market inefficiencies;
- it adds to the above that the timing risk when deploying derivative based instruments is hard to manage in down turn cycles because of the intrinsically high volatility load and the difficulty in predicting market movements.

2 Motivation

The above mentioned limitations in down turn periods are serious to the extent that they basically hamper natural diversification in the lateral sense. In addition they question the effectiveness - and with that the reasonable employment - of derivative based hedging in the light of timing risk and excessive pricing of hedging instruments, such as Put options, due to high volatility loads and the built-in safety margins as highlighted above.

In project [6] that is published in our Journal, we aimed at exploiting just these drawbacks typical of inefficient markets by means of trying to predict very short-term trends which were discovered to typically show up when markets are volatile. To the extent that this trend prognosis would show some systematic hit-ratio rather than a purely random one, the idea came up to engineer a natural diversification strategy along the time axis (i.e. of finite type) to smooth down-turn risk in the long-run. Since life insurers or pension funds would be typical beneficiaries of such a strategy due to their natural overhead in fixed asset positions, the ensuing business case in parts 2 and 3 is developed for organizations of this type.