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RISK MANAGEMENT IN THE INDEX BUSINESS

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INTRODUCTION

The financial crisis over the last years has led to the most difficult economic crisis since the previous century's Great Depression, and has resulted in a fundamental change in the handling of risks – particularly the controlling and regulating of the financial sector.

With regards to investment business for private customers, the financial crisis has led to an increased need in transparency, whereby the passive investment business has especially profited. This is because passive index-based financial products, such as ETFs, are significantly more transparent and cost-efficient than exotic financial products or actively managed funds.

Furthermore, regarding index business, which represents the main components of passive investment business, the financial crisis has resulted in fundamental changes. Before the crisis, the focus of index business was on the calculation of simple indices, which were weighed according to the market capitalization of the components included and that represented the performance of the respective market clearly and transparently. After the crisis, the demand for "refined" index concepts grew extremely: as before the crisis, these concepts represent the performance of a certain market segment; however, the index's risk profile has been decisively improved due to the use of advanced methods for selecting components and/or the weight of components in order to minimize certain risks that may arise in a financial crisis. The challenge, therefore, is to utilize robust risk control methods, which are known within trade and active investment business, in the form of a strictly rules-based index calculation method for passive investment business, too, in order to better protect investors from the negative effects of potential crisis situations in the future.

The specific difficulty in this case is to find a way to cover the different risk categories in investment business with the appropriate methods, whereby the following categories are particularly noteworthy:

- General market risk, i.e. the risk of the portfolio losing value due to generally falling prices.
- Single-name risk, i.e. the risk that a company completely fails. This was clearly seen during the financial crisis, when even renowned companies that were considered to be "too big to fail" suddenly did fail.
- Liquidity risk, i.e. the risk that certain stocks are hardly tradable during a financial crisis and, thus, a sale can be associated with additional losses.

ADVANCED INDEX METHODS

The methods that index providers leverage to react to these challenges in risk management are different from those used in active trade business. The latter strives to measure risks in stress situations (tail risks) by using advanced mathematical models and to integrate these tail risks into risk control, which is significant mainly due to the continually far-reaching proliferation of very exotic derivatives in trade business that can fluctuate extremely in stress situations.

In index business, however, the index methods developed are based on improving the index's risk profile, compared to capitalization-weighted indices, by using advanced selection criteria and/or index weighting methods.

Below, we present a few modern index methods, which were developed in connection with the financial crisis and can result in a considerable reduction in risk:

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1. Volatile-reducing index methods: To reduce the general market risk of equity indices, the weights in the index components are changed by pre-determined rules such that the portfolio's volatility is significantly reduced, compared to a capitalization-weighted portfolio. Current index methods that can accomplish this are:
   a. Minimum-variance indices: The index weights are selected according to the known portfolio model by Harry Markowitz, who was honored for this with the Nobel Memorial Prize in Economic Sciences, and such that the volatility of the entire portfolio is kept to a minimum. The main idea behind this method is that different stocks within an index portfolio show very different correlations. For example, stocks from different sectors typically correlate more strongly than stocks from very different sectors. The mathematical model by Markowitz uses this information to allow as little positive correlations as possible within the index portfolio and to guarantee optimal diversification for the stocks. Therefore, minimum-variance indices have the same stock components as the applicable standard indices; however, they achieve a considerable reduction of the general market risk by using a purely rules-based optimization of the index weights.
   b. Risk-controlling indices: The main idea behind risk-controlling indices is, in turbulent markets, to park a portion of the investment in a secure money market. The relative weighting between the investment in a stock portfolio and the money market is controlled on the basis of rules by the volatility of the underlying stock portfolio – the higher the market's volatility, the higher the money market investment's weight. This robust rule for weighting leads to a remarkable reduction in risk in difficult markets, which can be accounted for by the extremely negative correlation between the markets and the volatility of the markets: in turbulent markets, the stock volatility is very high and, therefore, the index increasingly invests in the money market in order to protect investors. In good markets, however, the market volatility is typically low and the index invests completely in stocks in order to benefit from positive market changes. Examples of such indices are the STOXX® Risk Control Indices, which are available worldwide and for every region around the globe.

2. Selection and weighting methods: These methods are particularly targeted at reducing single-name risk:
   a. Diversification methods: Optimized index methods limit the weights of index components in order to avoid a concentration of just a few names that is too strong. The methods used range from a simple components "capping", which is typically adjusted according to the so-called UCITS rules predefined by the regulator and that specify the minimum diversification guidelines, to the portfolio-oriented methods, which improve diversification on the basis of models. The simplest examples of this are same-weighted indices in which the weights of all components are regularly set to the same value. Comprehensive simulations have shown that this procedure not only leads to investors investing less in individual titles in the end, which represents an important improvement in light of the experiences made from the financial crisis, it also prevents a concentration of individual sectors, e.g. a concentration of the financial sector, which had an overly proportional weight in the standard indices due to the boom phase of 2003 to 2007 and, thus, led to extensive losses in these indices during the financial crisis.
   b. Selection methods: The main idea behind the selection methods is to use certain filter criteria when selecting components to be included in the index in order to reject above-average risky components from the index. It is interesting to note that indices, which are based on a so-called ESG (environmental, social, governance) "screening", in particular – comprising select components from the stock world that meet the high demands placed on a company in terms of its management's environmentally conscious, social and good Corporate Governance – showed to have an enormously better performance than standard indices during the financial crises. Detailed studies have shown that this improvement in performance, particularly in crisis situations, is based on the fact that especially risk-managed companies are normally identified within the framework of such an ESG

screening and excluded from the index world. As a result, the interesting opportunity arises for investors to achieve an enormous reduction in risk with an ESG investment, which is made on ethical principles, compared to standard stock portfolios. An example of this is the STOXX® Global ESG Leaders Index family.

3. Liquidity-optimized indices: To reduce the risk from non-liquid securities in the index portfolio as well as the problems that arise from "tracking" an index, there is a concept for liquidity-optimized indices. Such index concepts are based on the same securities world as standard indices; however, they filter securities out of the index world that feature a trade volume which is too low and/or change the weights in comparison to the pure capitalization weighting in which the weights of relatively liquid instruments are increased in relation. This results in the investor receiving and index which represents the same market in principle as a comparable standard index, but which is significantly more liquid and, thus, replicable at lower cost. An example of a liquid-optimized index is the STOXX® Europe 600 Optimised Supersector Index for the European market.

SUMMARY

As a result of the financial crisis, the index business has changed such that index providers develop and offer risk-optimized indices, in addition to pure standard indices which are traditionally weighted according to capitalization, that improve the index's risk profile by the use of advanced and strictly rules-based selection and weighting of the index components. The general market risk and the risk of failure of individual components, in particular, are reduced, as well as decisively improve the index's liquidity profile, without any negative influences on the long-term performance of the index compared to standard indices.

Dr. Guido Giese - STOXX Ltd.

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