Equity Strategy

A Research Publication by DZ BANK AG

Methodology sector favourites

EQUITIES

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Risk budgets are currently becoming more popular as a tool for taking investment decisions relating to sector allocation. The fact that profit estimates are not dependent on historical data makes such strategies attractive. Allocation is only carried out with the help of risk measures and/or diversification arguments. A sector's risk profile is much more stable than historical returns. For strategies based on this premise, the risk of getting it completely wrong is also therefore less than, for example, with a trend-following strategy based on volatile returns.

We have tested a number of such strategies to determine whether they can be used profitably for sector allocation to achieve a sustained outperformance versus the overall market index. To this end, at DZ BANK Research we analyse the 19 sector indices of the Euro Stoxx Index, which comprises approximately 400 individual stocks. The best of the strategies analysed forms the basis of our sector recommendations.

Based on the abovementioned model which is described in detail on the following pages, the nine sector indices with the lowest beta relative to the Euro Stoxx are designated "DZ BANK sector favourites". The ten other sector indices are not evaluated.

The DZ BANK Research sector recommendation is based on the Volksbanken and Raiffeisenbanken (cooperative banks), customers of those banks with sufficient knowledge and experience of equity transactions, and institutional customers at home and abroad.

The analysis of the Euro Stoxx sector indices thus described is based on the theoretical model approach of portfolio theory and the Capital Asset Pricing Model "CAPM". We diverge from this purely quantitative approach if we see clear signs of an opposite trend in the stocks in a sector which are outside the scope of the model.

TABLE OF CONTENTS

THEORETICAL BASIS 2
Portfolio theory 2
Capital Asset Pricing Model 3

FORECASTING PROCESS 3
Beta risk measure 3
Diversification 4

SOURCES: PRICE DATA 5

I. IMPRINT 6

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THEORETICAL BASIS

The theoretical basis for the sector recommendations is portfolio theory and the Capital Asset Pricing Model (CAPM).

Portfolio theory

Portfolio theory is an element of capital market theory and examines investment behaviour in the capital markets (e.g. the equity market). Modern portfolio theory is based on the work of the US American economist Harry M. Markowitz from the year 1952. He made certain assumptions about investor behaviour which then led to statements about investment patterns. Subsequent developments, such as the Capital Asset Pricing Model, represent further stages in Markowitz's portfolio selection theory.

The objective of portfolio theory is to issue guidelines on the best possible combination of investment alternatives to create an optimum portfolio. In this optimum portfolio the investor's preferences with regard to risk and return and liquidity are taken into account. The intention is to minimise the risk of a securities portfolio, without reducing the expected return. A necessary precondition here is that the securities are not completely correlated.

Portfolio theory is the basic theoretical framework of the process used in the practice of portfolio management. It assumes that investor behaviour is geared solely to cash flows and to increasing asset value. Investors act rationally and in order to maximise utility: this means that they inform themselves about capital market conditions and reach decisions by weighing up the relative risks and opportunities. In so doing they shun risk ("risk aversion"). Risk-averse behaviour means that a higher risk is only accepted if the expected return increases disproportionately.

The core of portfolio theory is the distinction between systematic and unsystematic risk. All securities in the market are subject to systematic risk, which cannot be diversified, and which represents the risk of the investment itself. Conversely, unsystematic risk can be minimised by means of diversification, i.e. with an increasing number of different securities. Investors cannot therefore expect any market premium for this risk.

One portfolio dominates another portfolio if the expected return is greater or the same as that of the other portfolio, and if the standard deviation ("the root of the variance") of its value is smaller than that of the other portfolio, or if the expected return is greater and the standard deviation is the same. The two portfolios cannot have the same composition. The standard deviation is based on price fluctuations (spread) and is thus the gauge of the portfolio risk.

A portfolio is regarded as efficient if it is not dominated by any other portfolio, i.e. if no other portfolio exists which has a lower risk for the same expected return, or a higher return for the same risk.

Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) is a capital market equilibrium model, which extends portfolio theory to include the question of which element of the overall risk of an investment cannot be eliminated by risk diversification, and explains how risky investment opportunities can be evaluated in the capital market. The CAPM was developed in the 1960s by William F. Sharpe, John Lintner and Jan Mossin independently of each other and is based on the portfolio theory of Harry M. Markowitz.

The risk element of each security in a well-diversified portfolio is referred to as beta (β). The risk of the market portfolio (here the Euro Stoxx overall index) itself is one. The β factor of an individual security is defined as the quotient of the statistical covariance of the security in question relative to the market portfolio and the variance of the market portfolio. The beta factor relates solely to the risk which cannot be reduced further in a portfolio context (the so-called “systematic risk”) and thus represents the significant contributory factor to the risk of each portfolio.

In this context, the higher a security’s beta factor, the higher its expected return and vice versa. In other words: investors are only prepared to hold a security with a high risk (β) if they expect it to yield a correspondingly high return.

FORECASTING PROCESS

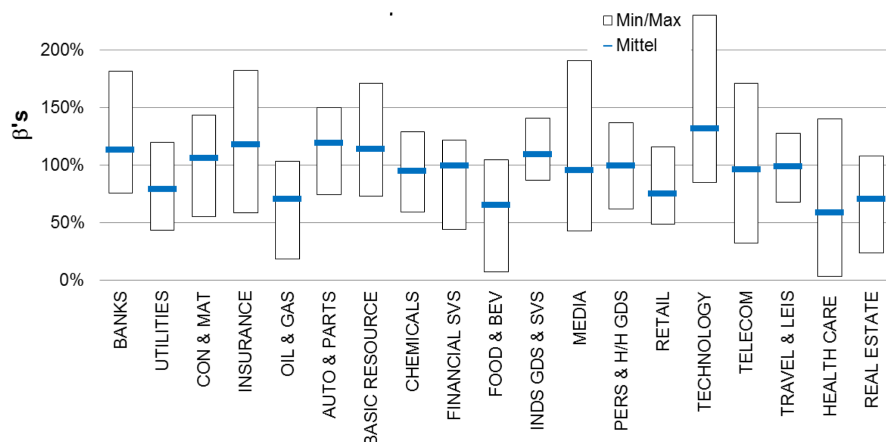
Beta risk measure

The basic component of our sector model is the “beta” risk measure. The beta of a sector indicates how strong the price movement in the sector index will be if the price of the overall market index, in this case the EuroStoxx, alters by one unit. The lower the beta, the lower the market risk of the sector.

The sector beta depends on the period for which it is calculated. A long calculation period produces stable betas over time. This is needed to calculate the long-term risk characteristics of a sector. However, in the process, the ability to react to changes in the risk measurement over time is lost. A small element of both features is needed for a sector allocation strategy. A window of three years has therefore been selected as the calculation period.

The graph below shows the average values and range of values of the betas (β) for the EuroStoxx sectors. It is evident that less cyclical sectors such as oil & gas, healthcare, or food & beverages also show low betas. As expected, the technology sector has the highest betas. However, the wide ranges in some instances also demonstrate that the betas change over time, ensuring that the composition of the portfolios on which they are based alters too.

BETAS OF EUROSTOXX SECTORS (3 YEARS, PERIOD OF ANALYSIS 1993-2013)

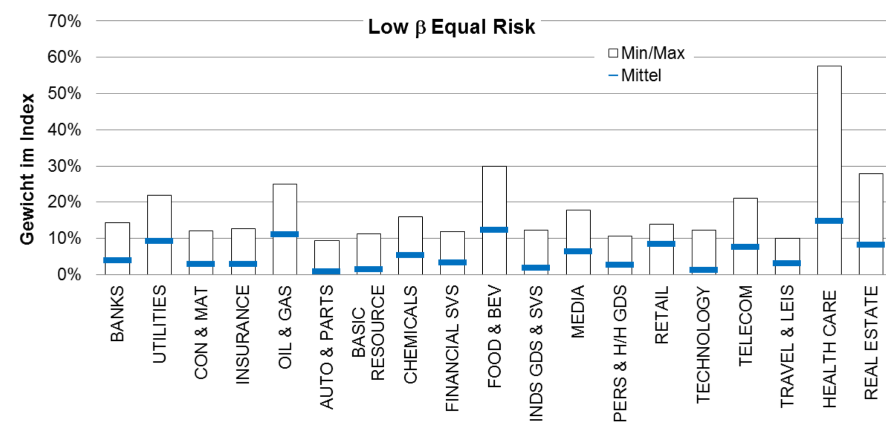


Source: Datastream, own calculations

Diversification

The second idea - the Equal Weighted Risk Strategy – is aimed not at risk minimisation, but purely at achieving good diversification. Here, every sector is weighted in such a way that it makes the same contribution to market risk. Sectors with high risk levels are given a smaller weighting, and low-risk sectors a larger weighting. This strategy can be regarded as a further development of the equal weighting. This second component ensures that the performance of the overall sector strategy is not determined by one or only a very small number of sectors, but that good diversification is achieved at any given time.

DISTRIBUTION OF SECTOR WEIGHTINGS (BACKTEST 1993-2013)



Source: Datastream, own calculations

The graph above shows the figures for the distribution of sector weightings. All sectors are represented at least once in the portfolio. Conversely, however, there has also been at least one time period in which each sector has not been represented. On average, the defensive sectors feature most frequently. The main focus is on utilities, oil & gas, food & beverages, retail, real estate, telecoms and

health care. The average composition is fairly broadly diversified. Only four sectors have average weights close to zero.

A window of three years has been selected as the beta calculation period. In order to create a low-risk portfolio, the sectors with the lowest betas are selected. Investment recommendations are given for the half of the EuroStoxx sectors with the lowest betas. Since there are 19 sub-indices in the Euro Stoxx, we round the calculation down and only "invest" in nine sub-indices. The other ten are not taken into account.

Within the Equal Weighted Risk Strategy, each sector is weighted in such a way that it makes the same contribution to market risk. The weighting is based on the reciprocal value of the beta. In this way, high-risk sectors are given a smaller weight, and low-risk sectors a larger weight.

Based on the abovementioned model, the nine sector indices with the lowest betas relative to the Euro Stoxx are designated "DZ Bank sector favourites". The ten other sector indices are not assessed. The overall strategy is reviewed on a monthly basis and the sector selection and theoretical portfolio weights are adjusted as necessary.

We reserve the right to diverge from this purely quantitative method if we see clear signs of an opposing trend in stocks in a sector which are outside the framework of the model. However, this has not yet happened since the model was first used in 2014 up to the present time (September 2016).

SOURCES: PRICE DATA

Since the sector model represents a purely quantitative approach, only the monthly closing prices of the 19 sector indices of the Euro Stoxx index and the Euro Stoxx itself over a period of three years and the respective market capitalisation of the total of 20 indices are needed. This data is obtained from the Datastream platform.

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"**Stable**" is given if the agencies S&P, Moody's and Fitch are expected to leave their ratings unchanged in the next twelve months
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Commodities:	one month

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