

Risk reduced index strategies with a forward looking view

Philosophy

We believe that substantial information can be derived from diversified sources such as macroeconomic and fundamental variables, but also from the market itself that can be very helpful in forming a forecast for future market behaviour. We strongly believe that in addition to analysing price movements there is relevant information that can be extracted from observing the characteristics of market reactions caused by fundamentally related cross asset classes in a given macroeconomic environment. Characterising the behaviour of a particular market in such a powerful framework not only helps to focus on and understand the specific features of the market which are driving the market performance, but also helps to construct powerful forecast indicators.

An iQ-FOXX Indicators Model is based on five to seven forecast indicators, which in conjunction give a good indication for future market movements. The forecast indicators are aggregated according to a rules-based framework to give a composite signal for future market movements. Each of the forecast indicators adds a different angle to the overall view on the market. Each iQ-FOXX Indicator Model is based on causal and stable relationships between an underlying market and its influencing factors. Only influencing factors based on real experience which aid the understanding of the underlying market and give a reason for a forecast signal to work, rather than relying solely on the empirical results are taken into consideration. Every forecast indicator which is used in an iQ-FOXX Indicators Model offers behavioural reason for why it should work and support future model performance. All indicators are selected based on rigorous out-of-sample analyses and live track-record which provide reassurance that every indicator should be robust in the future.

iQ-FOXX index methodology

An index that forecasts the future

iQ » intelligent index construction takes into account current and relevant market information (macroeconomic, fundamental and technical factors)

F for forecast » consideration of forecasts for the **future** markets' developments in the current index composition (forecast-indicators)

important: **risk reduction** as an overriding criterion in the index weighting (knock-out criterion)

O for optimised » optimisation of the index weightings based on **relevant present and future information** in accordance with the respective index style **smart BETA | enhanced BETA | ALPHA**

XX for index » **better risk-return profile** through the forecast based iQ-FOXX Index

macroeconomic,
fundamental and
technical factors



forecast indicators
for the future market's
direction



risk reduction
(knock-out criterion)



smart BETA
enhanced BETA
ALPHA
factors



**iQ-FOXX
forecast-based
index**

Steps to determine the market exposure

- » identification of the market environment
- » identification of a market reversal or a market pull-back
- » measurement of the market uncertainty
- » selection of the forecast signal
- » determination of the leverage factor
- » determination of the exposure to the underlying market

If you have questions, please contact us!

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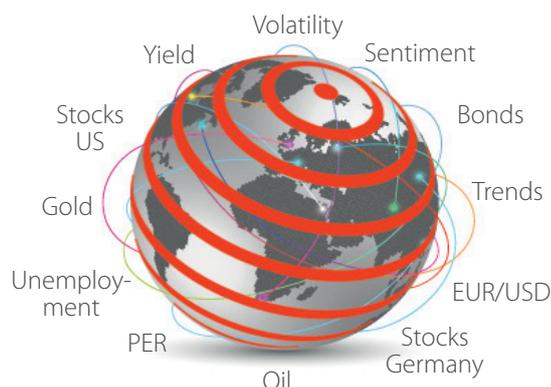
Internet: www.iq-foxx.com
Bloomberg: FOXX <GO>

smart BETA indices for your portfolio

Intelligent risk reduced index concepts for different asset classes

Influencing factors for a underlying market

Definition and selection of the driving factors responsible for the future price movements of a specific underlying market is very important. Over a decade we have built expertise and Know-How in selecting influencing factors from macroeconomic, fundamental and technical variables. Influencing variables which do not depend on the price movement of the underlying market are known as exogenous or explicit variables. Hence, all macroeconomic and fundamental variables are exogenous variables. Many technical variables are well known as implicit or endogenous because by definition they depend on the price of the underlying market.



Macroeconomic variables » provide important information about the future behaviour of the overall economy rather than of a particular industry sector. The main purpose for using macroeconomic variables is to characterise the current state of the economy in the economic circle and to measure the corresponding behaviour of the underlying market. This is very helpful for the creation of iQ-FOXX forecast indicators which formulate expectations about the future behaviour of the underlying market according to the expected state of the economy.

Therefore, the influencing factors extracted from macroeconomic variables provide mid-term to long-term insight about future price movements of the underlying market. Important macroeconomic variables include inflation, unemployment, industrial production, purchasing manager indices, leading indicators, business and consumer expectations, consumer confidence, retail sales, GDP and current account balance.

Fundamental variables » show an empirical evidence for a causal fundamental relationship to the underlying market. The basic premise is that all financial markets are related in some way. We strongly believe that any important market move should be caused by underlying fundamental factors. For example, the future market is fundamentally linked to the cash market by short term interest rates, the dividend yield and the number of days until expiry of the corresponding future contract. The equity market is influenced by the direction of interest rates. During recessions bonds rise while equities fall. The opposite is true in an inflationary environment, bonds fall while equities rise. Bonds move in the opposite direction of the interest rates and are usually influenced by commodities. Hence, the driving fundamental factor is the expected inflation. A strong USD usually has a negative impact on most of the commodities. Therefore currencies tend to be leading fundamental drivers of commodities. Commodities tend to be the fundamental driver for bonds. Bonds and market sentiment influence equities. These fundamental relationships may vary on occasion, but they are always present. Extracting information about such fundamental relationships helps to understand what is going on in one market and what is likely to be the reaction in other market(s).

The main purpose for using fundamental variables is to characterise the features of the underlying market and to extract the fundamental influencing factors for future market movements. This is very helpful in order to measure sentiment and to quantify important fundamental relationships between the underlying market and various asset classes and industry sectors. The iQ-FOXX forecast indicators based on fundamental variables give a very good insight about the mid-term future behaviour of the underlying market. Important fundamental variables include traders' net positions, put/call and price/earnings ratios, open interest, interest rates, exchange rates, commodities, equities, sectors and credit default swaps.

Technical variables » are derived from observing the characteristics of market movements along certain dimensions such as trend, psychology, volume and volatility. Technical variables aim to identify trends and reversals in early stages of their development. Therefore they are very helpful to identify trending-up, trending-down, turning points, or sideways-trading markets. Because many markets have built-in economic and fundamental relationships and react to similar economic and fundamental factors, technical variables may give additional non-correlated and very valuable information to the future direction of the underlying market.

iQ-FOXX indices for your portfolio

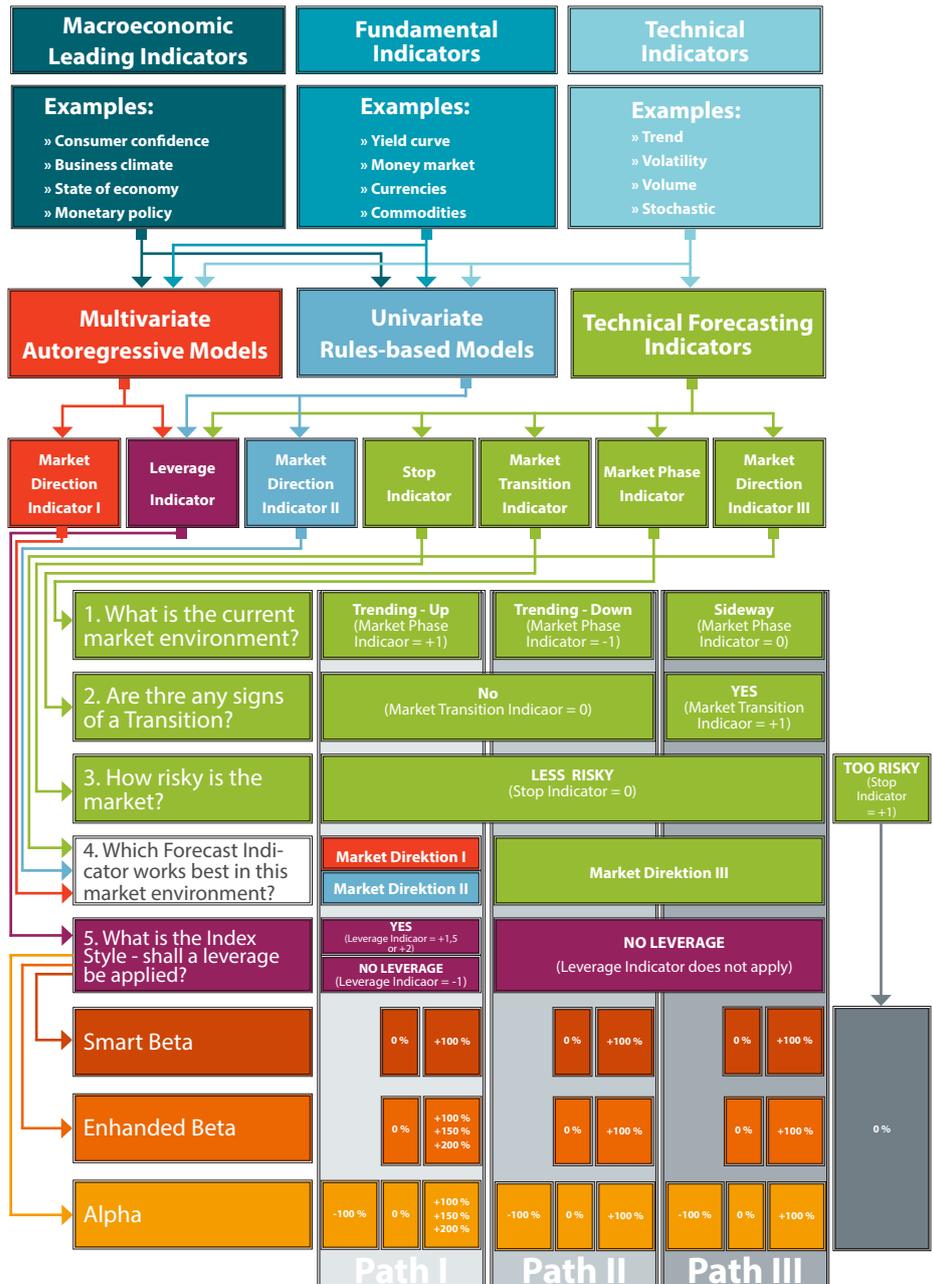
Index construction with the FOXX-Factor

Rules-based aggregation of forecast indicators

Market's environment » The first objective of the iQ-FOXX Index Methodology is to identify the market environment of the underlying market. The Market Phase Indicator aims to identify whether the market is in a trending-up, a trending-down or a sideways-trading phase. This indicator acts like a switch between three possible paths of a virtual decision tree and determines which of the Market Directional Indicators should be used in the current market environment.

Market's reversal or pull-back » Important changes in trend usually require a period of transition. It is very difficult to identify a trend reversal during a transition period. Very often sideways markets indicate a consolidation in the existing trend after which the original trend is continued. During transition periods markets face resistance after an overshooting or are looking for support after a reversal has taken place. The Transition Indicator aims to identify whether an important reversal in trend is likely to take place or after a short pull-back the existing trend is likely to resume. This indicator aims to detect turning points at an early stage.

Market's uncertainty » One of the most crucial parts of a rules-based methodology is the control of down-side risk. To avoid losses, to reduce draw-downs and to let profits running is easy to be said, but very difficult to implement. The risks related to the underlying market could be manifold. To measure market uncertainty caused by specific internal, but also external factors is very important for preserving capital. Many causal fundamental relationships and established correlations between the underlying market and the influencing factors break down in periods with increased market uncertainty. This leads to non-normal and irrational market's behaviour. In such non-normal environment markets tend to overreact to new information which increases the market's volatility.



As a consequence, the predicting accuracy and reliability of forecast signals is reduced, which requires many systematic models to be redesigned and adjusted. The Stop Indicator aims to identify risks associated with the current and future movements of the underlying market in order to set exit points.

Cost-efficient and transparent indices for your portfolio

Rules-based algorithm for calculation of market forecasts

Market's forecast » We believe that a very important part of a rules-based methodology is its ability to anticipate future market movements. We believe that diversity among methods, influencing factors and time frames is the key for superior above-average performance results. Based on this philosophy iQ-FOXX Index Methodology applies three different and non-correlated Market Direction Indicators based on three different forecast methods. Each of these indicators aims to correctly predict future market movements based on its own specific assumptions about the characteristics of the underlying market.



Market Direction Indicator I » is generated by the multivariate regression method based on information contained in exogenous macroeconomic and fundamental as well as endogenous technical variables. The accuracy of this indicator is above the average in trending-up markets. Its reliability usually decreases in transition periods and trending-down markets

Market Direction Indicator II » is generated by the univariate rules-based method which quantifies macroeconomic, fundamental and technical influencing factors. This indicator is very reliable during trending-up markets. Its forecast accuracy usually is reduced in sideways-trading and trending-down market environment. Many fundamental and economic relationships do not hold in a market environment with high uncertainty, market volatility and irrational behaviour. The iQ-FOXX Methodology aggregates the Market Direction Forecast Indicator I and the Market Direction Forecast Indicator II into a composite forecast signal in trending-up market environment.

Market Direction Indicator III » is generated by the technical forecasting method based on technical factors. It has an above average accuracy in trending-down markets and it is very reliable in sideways-trading markets during transition periods.

Market leverage » The reliability and accuracy of any rules-based Methodology usually vary between different market phases. It is obvious that to predict reversals of an existing trend and to time sideways-trading markets is an extremely hard job. The accuracy of iQ-FOXX forecast signals is more robust and reliable in trending-up markets. The Leverage Indicator aims to systematically apply dynamic leverage only for a long exposure to the underlying market in a trending-up market environment by taking into account the accuracy of the forecast signals.

Market exposure » The Forecast Signal which determines the exposure to the underlying market is generated in the final stage of the iQ-FOXX Index Methodology. This is the result of the rules-based combination of the Market Phase Indicator, the Transition Indicator, the Stop Indicator, the three Market Direction Indicators and the Leverage Indicator. The exposure to the respective market depends on the index style. A smart BETA index can have 100 % long or 0 % neutral exposure. An enhanced BETA index can have 100 %, 150%, 200 % long or 0 % neutral exposure. An Alpha index can have 100 %, 150 %, 200 % long, 0 % neutral or -100 % short exposure to the underlying market.

The iQ-FOXX Index Methodology applies three different methods to quantify the importance of the influencing variables in accurately predicting the future market movements. Every method has its strengths based on its nature and its different assumptions about the properties of the influencing factors and their relationship to the underlying market. Our index methodology aims to anticipate the market's reaction in accordance with these influencing factors. Its goal is to achieve a superior above-average return over a medium to long term horizon while protecting capital, reducing draw-downs and avoiding losses.

