



## Factor Timing and the “Fundamental Law of Active Management” ...

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... should be considered jointly by investors and portfolio managers alike, when deciding on investments in or setting up factor timing /rotation - strategies.

“**Investors embrace active implementation as they move to dynamic factor approaches**” is one of the key themes in this year’s **Invesco Global Factor Investing Study** released in October ([Link](#)). More active approaches scored high on the agenda of many investors, which is not surprising, because a lot of single- and multifactor indexes and products as well as alternative risk premia - funds underperformed during the last 24 months. Many of those solutions performed quite well before entering in severe drawdowns in 2018/2019, some of them for a long time and even during the financial crisis- quite often an important decision criterion for many investors.

Nevertheless, **factors are beta and not alpha** and as all betas - or systematic risk factors - in financial markets, they exhibit **time varying returns, sometimes enduring and severe downturns, skewness and fat tails**. But all this characteristics shouldn’t come as a surprise, because as in other betas like bonds, credit and equities, **that’s why there is a risk premium to be earned over the long run**.

More active and dynamic exposures typically can be achieved via “**tilting**” **within equity or multifactor-portfolios** or alternatively by **allocating across factors**. As in other fields of active investment management, views with respect to the potential of success differ materially in the empirical literature. A plethora of research papers, discussing the merits and pitfalls of factor timing, have been released over the past few years.

Optimistic proponents like

- Arnott, Beck, Kalesnik; 2016; [“Timing ‘Smart Beta’ Strategies? Of Course! Buy Low, Sell High!”](#)
- Ehsani, Sina, Linnainmaa; 2019)“[Factor Momentum and the Momentum Factor](#)”
- Zhang, Newfound Research; 2019 ([Macro and Momentum Factor Rotation](#))

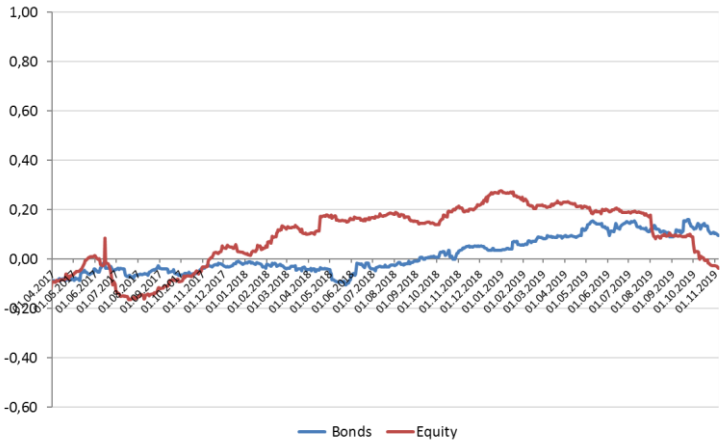
show, that using macro, valuation or momentum as signals, factor timing strategies can be implemented successfully.

On the other hand, pessimists like

- Asness et al, 2017;“[Contrarian Factor Timing is Deceptively Difficult](#)” or
- Lee; 2017 ;“[Factors Timing Factors](#)”

claim, that factor timing strategies are of limited value to investors over the long run.

One of the points to consider is, that excess returns of equity factors typically exhibit low correlations among each other and excess returns of a portfolio of factors shows low correlation to standard risk premia like term- and inflation premia in bonds or the overall equity risk premium over the long run. The chart shows correlation of iSTOXX Europe factor excess returns to the overall equity- and bond market in Europe.

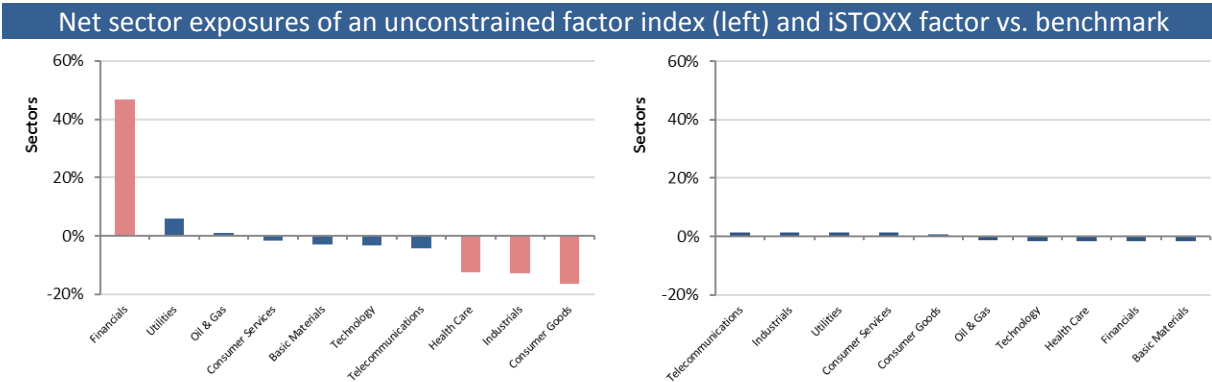


Correlation of an equal weighted iSTOXX factor set to European equities and German Government bonds

As the volatility of excess returns is quite low as well, **investors should be aware, that strong active exposures might undermine the general purpose and benefits of factor investing.**

**Factor Selection is a critical step** to harvest these returns. Apart from different metrics for single factors (e.g. Price/book, Price/Earnings etc. for Value), different **portfolio construction methods can lead to considerably net exposures** in sectors or countries and currencies in regional aggregates or global factor indices. As a result, **“unintended bets”**, which have nothing to do with the target factor exposure per se, **are dominating the risk of a factor** – in most cases **without contributing to positive return** of the factor. Moreover, for investors who deploy active country-, sector- or currency allocations, these **unintended bets in factors can amplify or undermine decisions in other areas.**

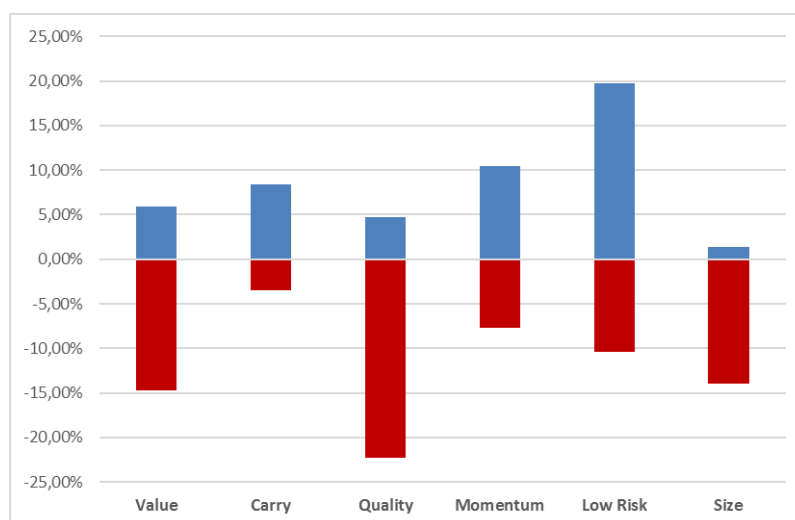
As an example, the charts show net sector exposure of a factor index compared to benchmark on the left and the net exposure of a corresponding iSTOXX factor on the right:



Finally, **these unintended exposures vary considerably over time.** Implementing factor timing programmes without monitoring these deviations either by looking into the factor portfolios or using a risk model **looks like a “blind flight”.**

In a recently published paper by Daniel et al ([The Cross-Section of Risk and Return](#); Daniel, Mota, Rottke, Santos, 2019), the authors state: ***“In the finance literature, a common practice is to create characteristic portfolios by sorting on characteristics associated with average returns. We show that the resulting portfolios are likely to capture not only the priced risk associated with the characteristic, but also unpriced risk”***

In contrast to market cap, where differences in performance between index providers are quite low, the opposite is true in factor investing, where large differences are the norm than the exception: The following graph shows **differences in excess returns** across eight providers of equity factors in Europe since “Going Live” of the iSTOXX Europe factors in April 2016.



**Astonishing large discrepancies** occur in Low Risk (30%), one of the factors most in focus over the last several years, followed by Quality (26%) and Value (21%). The decision of factor design - or of a provider - seems as important as the decision across the individual factors in the light of these results. (find more information on the iSTOXX indices [here](#)) The **top differences within those factor families** mentioned in the graph are 34,6%, 27,8% and 18,87% for iSTOXX Europe indices. **“Design matters”** and the **dispersion within a family is an important precondition** of a successful factor timing programme.

**Signal selection and – processing** as well as the **portfolio construction mechanisms** like mean variance, risk parity, Black-Litterman etc. are important but not our focus here per se. Most investors try to diversify their signal generation- process by relying on a combination of macro-, momentum/sentiment and valuation measures to generate their views. Macro-regimes have been one of the drivers of excess returns between factors **over the long run**. But **time – varying causal links** as well as ever **changing lead/lag - times** (Bender et al, 2017; [The promises and pitfalls of factor timing](#)) between macro signals and excess returns pose a challenge for investors.

Moreover, **dimensions of positive and negative excess returns varied considerably** over different cycles in the past. The performance of **value and size** during the last 18 months is an example, as both **underperformed their benchmarks in Europe and US more than during the financial crisis**.

Nevertheless, both play a major role for success in the light of **Grinold/Kahn's "Fundamental law of active management"**. Their formula

$$IR = IC \cdot \sqrt{BR},$$

with IR = the information ratio, IC = information coefficient and BR = number of independent bets states, that investment performance is a function of an investment managers' "skill times breadth". The information coefficient is defined as

$$(2 \times \text{Proportion Correct}) - 1,$$

where "proportion correct" is more or less the hit ratio of signals. "Breath" is determined by the number of independent active bets in a given timeframe (i.e. a year). It is a function of how often a decision-making process is conducted per unit of time and the opportunity set – how many (independent/uncorrelated) investment targets are part of the universe. **In factor space, this opportunity set is quite small**, typically five to six factors per region or globally.

As an interesting real-life example, we **test the formula on the S&P 500 excess return vs. cash** over the last 20 years. What might come as a surprise to many investors, the **S&P 500 Total Return index outperformed cash only in 51% of all trading days** during that time:

- 51% of the time correct will give an IC of 0,02
- 1 factor, 250 runs (daily signal generation)
- will result in a breath number of 15,81
- and a prospective information ratio of 0,32.

Volatility (daily returns) has been 18,5%, which **translates into a return of 5,85% p.a.** Subtracting 2% cash return ("opportunity costs") during that time will finally result in an **excess return of 3,85% p.a.** That's the prediction of Grinold/Kahn's formula, which is **quite close to realized numbers** as the **S&P delivered 5,73% p.a. and an excess return of 3,72% p.a. versus cash over the last 20 years.**

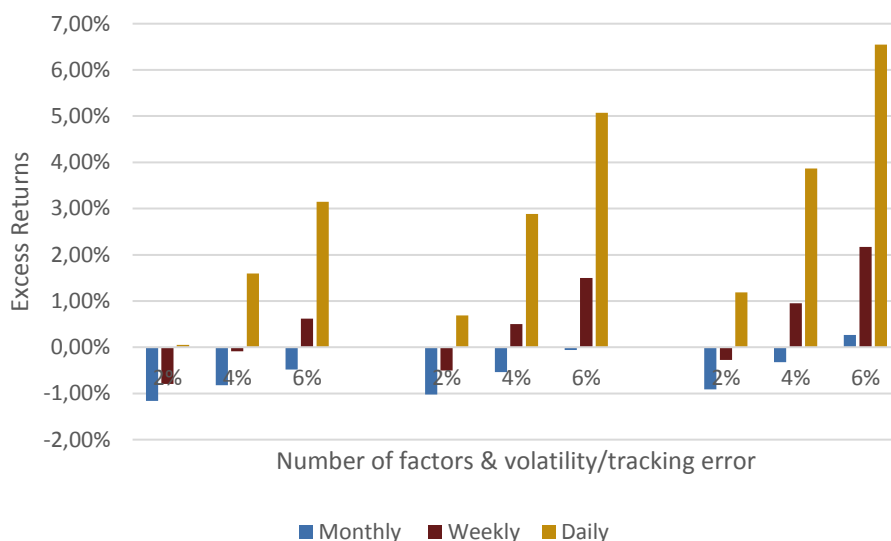
To find out the potential for excess returns on factor timing, the questions to answer for investors and portfolio managers alike are:

- How many factors will be within the program (global; one or several regions)?
- How about signal quality in the light of a 51% hit ratio for the overall market?
- How often will the process be conducted (daily, weekly, monthly)
- What level of portfolio volatility (or tracking error) and leverage should be targeted, bearing in mind, that excess return correlation is low and thus diversification benefit high?
- What will be the "total cost of ownership" for an end investor (transaction costs within the factors, rebalancing of a factor rotation portfolio, fund expenses, management fee etc.)?

To give an indication, we calculated several examples:

- 6, 12 and 18 factors (i.e. Europe, USA, Japan)
- monthly, weekly, daily runs for the process
- 1,5% total cost of ownership
- target volatility (or tracking error) of 2%, 4% and 6%

The graph shows **expected excess returns** for various levels of portfolio volatility/tracking error and investment process - runs grouped into three buckets of factors. The left bucket shows results for using only 6 factors, the bucket in the middle shows 12 factors and on the right-hand side is an example with 18 factors as a basis for a timing/rotation strategy.



#### Key takeaways:

- there's a quite high probability, that factor rotation programs deploying only 6 factors (globally or within one region) won't be able to deliver excess returns on top of a simple balanced or equal weighted factor strategy
- conducting investment processes on a monthly basis will need a much higher hit ratio than the overall market to deliver positive excess returns on an after costs-basis, even on a broader opportunity set of 18 factors
- the tracking error needed to outperform an equal weighted portfolio of factors might be even higher than the tracking error of the equal weighted portfolio vs. the market itself

iSTOXX factors offer a consistent set of factor exposures for Europe as well as US (Japan on request), which can be traded liquid and cheap via EUREX future (see more on [EUREX landing page](#)) or swap.

#### Conclusion:

Factor investing offers new sources of return and diversification and factor rotation programs can add value on top of that, if certain preconditions are recognized and considered. Or - as Bender et al (see above) put it: **"The promises of factor investing are undeniable, but the perils are real!"**

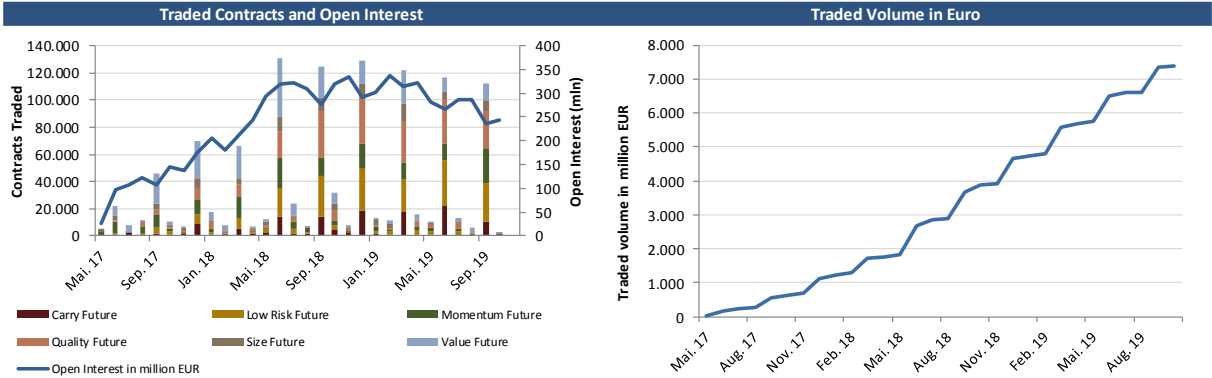
**Factor performance**

Q3/2019 has been a challenging quarter for equity factors in general, as ongoing rotation among single factors led to underperformance of most factors during the quarter – quite unusual by historical standards. We elaborated extensively on that in our [Q2/2019 iSTOXX publication](#).

Momentum outperformed by 0,9% and Quality ended in line with the overall market, while Carry underperformed by more than 2%.

**EUREX Futures**

Open interest is still oscillating between 250 and 350 mln Euros since May 2018. The tables show developments in traded contracts, open interest and overall traded volumes since introduction in May 2017. The traded volume exceeded 7 bln Euros.





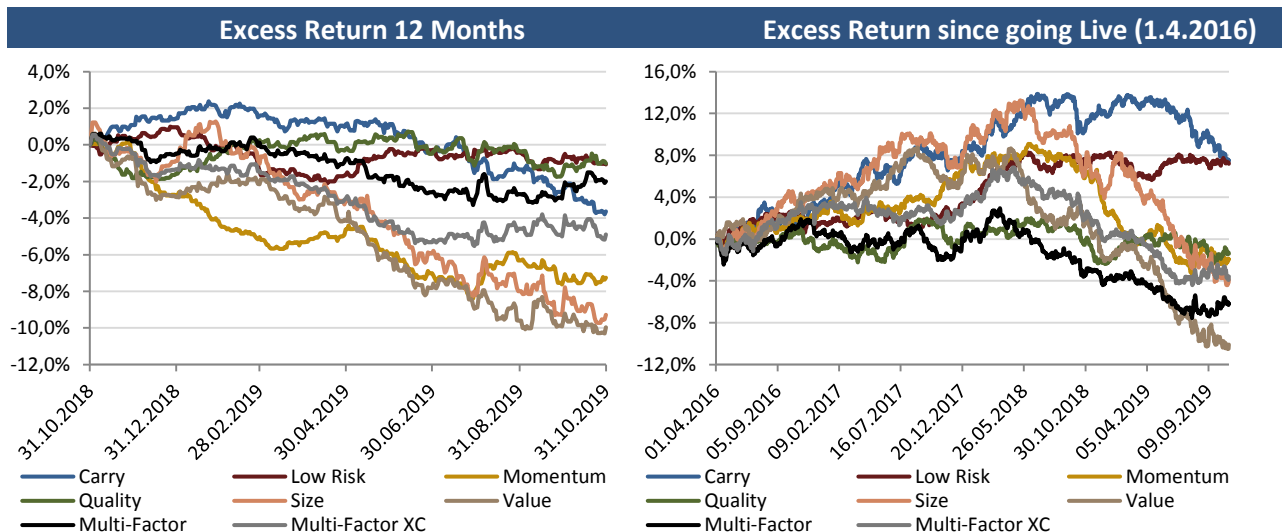
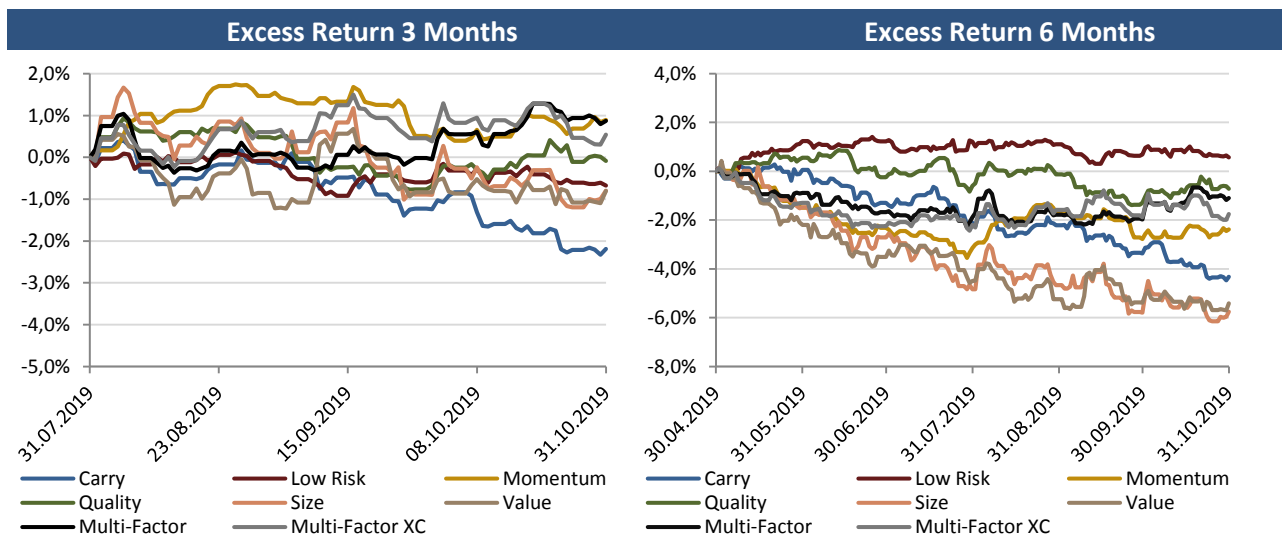
# Alpha Centauri Indexing - Data as of 31.10.2019

## Description:

The iSTOXX Europe Single Factor index family developed by STOXX in collaboration with Alpha Centauri offers investors a unique and very innovative way to target and capture premia. It consists of six single factors that aim to capture well-known risk premia and one multi-factor that aims at simultaneously capturing premia from the aggregate of all single factors rather than from just one source of risk alone. All indices are constructed to maximize the exposure to their particular factor and minimize unwanted risks. While constructing the final indices the FIS APT risk model is used to measure and restrict risk.

For more information go to [www.alpha-centauri.com](http://www.alpha-centauri.com) or [www.stoxx.com](http://www.stoxx.com)

Performance and Volatility Breakdown							
Name	Ticker	Return 3 Months	Return 6 Months	Return 12 Months	Return Live (1.4.)	Vola pa	Vola pa Live (1.4.)
Carry	ISECFER Index	1,2%	-1,3%	9,4%	39,8%	14,1%	12,9%
Low Risk	ISERRER Index	2,7%	3,5%	12,0%	39,4%	12,9%	11,9%
Momentum	ISEMFER Index	4,3%	0,6%	5,8%	30,3%	13,7%	12,6%
Quality	ISEQFER Index	3,3%	2,3%	12,0%	30,8%	13,8%	12,8%
Size	ISEZFER Index	2,6%	-2,8%	3,7%	28,3%	14,0%	13,1%
Value	ISEVFER Index	2,6%	-2,4%	3,1%	22,1%	14,6%	13,4%
Multi-Factor	ISEXFER Index	4,2%	1,9%	11,0%	26,1%	13,4%	12,3%
Multi-Factor XC	ISEXFCR Index	3,9%	1,2%	8,1%	28,6%	13,5%	12,4%
Benchmark	SXXR Index	3,4%	3,0%	13,0%	32,2%	13,9%	12,7%



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