A Guide to Factor analysis

StyleAnalytics

Q: What is a "factor" and what is "factor analysis"?

A: We can define a factor as a common driver of security returns that can be measured across most companies.

During the 1950s and 60s, the pioneering work of several academics and Nobel Memorial prize winners gave way to the idea that there was a single common factor – the market risk premium – leading to the concept of market beta, i.e. a stock's sensitivity to the market. This essentially became the first factor.

In the decades that followed this thinking was extended, driven by empirical evidence from equity markets. Multiple common factors were discovered that showed systematic market outperformance. Many of these related to the fundamental or market characteristics of companies.

For example, the 'small firm effect' was discovered, where companies with a small market capitalisation appeared to systematically outperform larger companies. The Value premium was discovered, where cheaper stocks outperformed expensive stocks, usually proxied by measures such as low price to book or low price to earnings. The low volatility anomaly was also discovered, whereby paradoxically low volatility stocks outperformed high volatility stocks.

In recent decades other so-called factor premia have been proposed and largely accepted. For example, the momentum factor is based only on stock returns and essentially says that stocks that have gone up will continue to go up. Quality factors based on fundamental stock measures such as high return on equity, or stability of earnings, or low financial leverage have also been recognised as delivering significant systematic market outperformance.

There are various theories as to why these factor premia exist. One is that investors are actually taking on extra risk. For example, smaller stocks may be recognised as having more volatile earnings or are perhaps more vulnerable to credit conditions. There are also behavioral explanations. For example, the momentum effect may be the result of herding behaviour or because investors may initially under-react to company news.

Investors have become more familiar with this set of equity style factors and nowadays it's common to see the names of investment products explicitly include; Value, Momentum, Quality, Small Cap, and Low Volatility. Sometimes we also see Yield, which is often separated from Value as a distinct category through measures such as dividend yield and shareholder yield.

Factor analysis identifies factors across markets, testing for relevance and checking whether the effects are pervasive across countries, sectors and through time. In turn, holdings-based analysis captures the main exposures to these factors for a portfolio, a fund of funds or a peer group. This enables investment managers to control their factor tilts, whilst advisors and investors can check that their funds are in line with their stated objectives.

Overall, factor analysis frames the behaviour of markets, peer groups and portfolios in terms of the underlying fundamental drivers of risk and return.

Q: Why is factor investing on the rise?

A: Even though factor investing has been around for decades, there have been several forces propelling the rise of factor investing in the past 10 years.

Active managers are under pressure, as they have not performed well over long periods against their index benchmarks, even over recent years. As a result, many investors have become disillusioned with active underperformance. Some Investors have started to move to low cost index funds, but many have started to look for other ways to enhance their returns above the index. These investors are doing this through more systematic, lower risk approaches where they can see more clearly what exposures they are buying. As many of these products are non-discretionary in their approach, they can be produced more cheaply. In addition, the fact that many factor-based products have lower fees than traditional active products is a clear driver of investment behaviour.

> **"Factor analysis frames the behaviour of markets, peer groups and portfolios"**

Factor investing is also driven by the fact that the world's largest investment managers have recognised the fee compression in active management and the disenchantment with traditional, fundamental, active management. As a result, these investment houses have invested heavily in developing and promoting factor-based products and we have seen a notable increase in these strategies. These large investment houses are also educating the market about factor investing and evidence-based investing whilst, simultaneously offering products which are aligned to this.

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Q: What should investors keep in mind when it comes to factor analysis?

A: Consider that the world's most successful investors are often regarded as great stock pickers, and yet their approach is nearly always framed by factors: deep value, contrarian, value and quality, momentum, growth and momentum, the list goes on. One of the commonalities across many of these investors is a disciplined framework for picking stocks, which often reveals a style or factor footprint. Ultimately factors come from stocks and not the other way around.

By studying markets, fund peer groups, and many thousands of individual portfolios in the real world with our institutional investment clients, we found some important aspects that are essential to consider when conducting factor analysis.

Take the Value style category, which refers to stocks that have low prices relative to their fundamental value and is often defined by factors such as book to price, sales to price, earnings yield, or free cash flow yield. However, these factors have performed quite differently from each other over time, for example book to price versus free cash flow yield. Therefore, the choice of factor matters, even within a universally recognised investment style such as Value. This becomes crucial when reviewing different investment approaches and investment products.

Style factor biases are often confused with sector biases. Is a portfolio that has a significant tilt to high book to price a value portfolio or could this be just a result of a decision to be overweight financials? Genuine factor-based style approaches should also consider styles or factors within sectors, rather than just being a by product of large active weights in specific sectors. A similar logic applies to international portfolios where issues arise because of cross border accounting differences. No style or factor analysis is complete without considering sectors or countries.

> **"The approach of the greatest stock pickers is framed by factors"**

Due to factor labelling it's tempting to think that the factor analysis of a portfolio is only suitable for quantitative investment approaches that use systematic strategies or for assessing smart beta products. In fact factor analysis is relevant for any investment approach. Even the most concentrated portfolios will often have strong supporting stories from factor analysis.

Q: Why is independent factor analysis important?

A: The market place has become more crowded and competitive, and fee compression in investment management has squeezed margins. Fund sellers need to position funds more clearly against competitors, which could come in a variety of offerings like smart beta, active quant, or traditional fundamental stock picking, all with completely different investment processes. Investors need an independent and objective lens to compare these products on an "apples to apples" basis.

A factor framework needs to provide a neutral playing field to give a fair comparison across portfolios and products of all types.

Investment products are also getting more complex. Multifactor products are increasingly popular with combinations of styles such as Value, Quality and Momentum or High Yield with Low Volatility. Even single factor products are typically exposed to multiple factors. When you buy a value fund are you agnostic about whether the portfolio has very low-quality or very high quality stocks? When you invest in a low volatility product do you care about the fundamental valuation of that portfolio?

Clearly there is a need for an independent voice, and one which can help investors understand what they are buying.

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