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LIFTING THE LID ON QUANTITATIVE EQUITY INVESTING'S BLACK BOX

Different themes drive the market at different times, writes Seeiso Matlanyane, Portfolio Manager at Prescient Investment Management.

When it comes to equity investing in South Africa, the word *quantitative* carries with it a somewhat negative connotation. Even the more astute investors among us are usually quick to dismiss this approach briefly as backward looking, or rather elaborately as an unnecessarily complicated and incomprehensible black box that dispenses largely unsubstantiated investment ideas. This is the euphemist's likely description, and is to some extent understandable. People *are* generally sceptical or fearful of what they do not fully comprehend. Therefore, in response, this is a modest attempt to lift the taboo-like lid that sits on quantitative equity investing, and at the same time hopefully shed some light into the mechanics of our proverbial black box.

The fact is that the majority of South African based managers employ a fundamental approach to equity investing. The typical analyst will spend hours studying a given company. They will likely assess, among other things, the broader macro-economy and industry trends, the company's strategic objectives, the strength of its management team, their corporate governance policies and so forth. With a firm view on these the analyst will then form an opinion on how the company is most likely to fare given their assessments of the expected forthcoming landscape, before proceeding to the meat of their analysis which typically transpires within the company's financial statements. This is where the analyst will spend time understanding the drivers of financial performance and try their best to model its future performance based on all the information available to them. This analysis typically culminates with an estimate of the company's intrinsic value, which then informs the portfolio manager's investment decision: overweight companies that are trading cheaper than their intrinsic value, and underweight those that aren't.

South African equity funds *have* performed very well relative to their global counterparts, and given that most employ the fundamental approach described, it is difficult to argue that there are no merits to this type of investing. The question that should be asked, however, is if this method can be applied systematically to deliver superior performance. The short answer is that this is extremely difficult to do.

For instance, imagine a brilliant analyst with a knack for accurately assessing material upcoming economic or political atmospheres and their impact on a company's prospects. This analyst, employing the fundamental approach, will still have to accurately model the company's future financial performance, within what's reasonable, and then accurately determine its intrinsic value. This is not a menial task. It involves appropriately forecasting the company's revenue, costs, operating expenses, capital expenditures, funding costs, impairments and so forth in order to estimate the upcoming cash flows. Even after having done this with reasonable accuracy there's still the task of obtaining the company's intrinsic value. Whilst there are various ways to estimate intrinsic value, the most commonly employed method today is still some variant of the discounted cash flow method. This method makes intuitive sense, particularly for fixed income instruments where both the amount and timing of the cash flows are known in advance. Applying the method to equity valuation, however, introduces a fair amount of error to the appraisal, as not only must the analyst estimate both the amount and the timing of the cash flows, but also the appropriate discount rate to apply to the cash flows. Any small amount of error or misjudgement in any of these 'guesstimates' will likely lead to a material impact on the resulting intrinsic value and hence the investment decision.

Assuming the analyst gets everything spot on and correctly identifies companies that are undervalued to invest in, the implicit assumption is that the rest of the market subsequently recognises the mispricing and that as the company's share price re-rates the investment manager realises that favourable performance. This would be the best-case scenario for the fundamental value manager, but it can be appreciated that a there is a fair amount of room for error in this approach and that systematically realising this 'best-case scenario' becomes a challenging proposition at best.

What we have in fact witnessed is that different themes drive the market at different times.

Value investing might be in favour for a period but may also be completely out of favour for another period when undervalued shares continue to trade cheaper for extended periods of time, hurting the manager's performance. For instance, share prices in South Africa have been largely driven by the Momentum factor in recent years. This is whereby shares that have performed well in recent periods continue do so due to favourable market sentiment. A pure value manager, even having accurately analysed and determined those value offering shares would have still severely underperformed the market during this period.

It is for this reason that a different approach is essential to manage the risk of continued underperformance.

Regardless of the approach, the cornerstone principle to investing in equity markets is uncertainty, and the larger the uncertainty the larger the *potential* reward. By investing one assumes risk. This is why at Prescient we consider whether or not the risk being assumed has proven to offer the commensurate reward overtime. Our quantitative approach focusses exclusively on this uncertainty and specifically evaluating the risk that we are taking on when making investments.

Instead of trying to project or forecast the future performance of a company, we try and determine what risks drive the share performance of the company and if these are risks that we are willing to expose our clients' funds to given current market conditions. The core of our analysis, therefore, is in determining those factors that systematically drive returns and how best to measure and exploit them.

There is extensive literature with comprehensive behavioural and economic reasoning for Value, Momentum, Growth and Quality, among others, as systematic drivers of return, or risk factors. Using Momentum as an example, a quantitative analyst would first try and determine the best way to define and measure Momentum. Suppose we can either define Momentum as net income growth or share price appreciation over the preceding year. One of the simpler ways to determine which is best would be to take a given universe and simply rank each share based on each measure, then create equally weighted portfolios consisting of the higher ranking shares and the lower ranking shares. If this is done on a periodical basis going back in time, the performance of the higher-ranking portfolios for both measures can be compared to determine the best definition. To avoid cherry picking the best measure, however, the quantitative analyst will typically average across the measures.

Having found a suitable measure for each factor, the analyst will quantitatively determine which of the factors most explains current market performance. What we have found is that just as the bulk of active returns can be attributed to asset and sector allocation, rather than specific stock selection, active performance within equities can be explained largely by factor allocation. Typically, a regression model is utilised to determine the extent to which the market performance is driven by each of the risk factors.

So, by tilting a portfolio towards those factors or risks that are paying off, the likelihood of outperforming the market is maximised. The quantitative manager's dilemma at this point is to construct risk-managed portfolios that are tilted towards those risks that are offering the appropriate rewards and tilted away from those that are not. Again, the analyst will have a choice from various factor rotation models that can be used to this effect.

In addition, we will perform, albeit to a lesser extent, similar macroeconomic and political analyses as a fundamental analyst to ensure that the portfolio is insulated from severe underperformance by screening out blatantly bad or volatile investments. This can range from screening out shares that are not sufficiently cash flow generative, or are illiquid to trade, or have material governance issues, or those that derive their earnings from regions subject to material political or economic shocks.

By doing this we ensure that we systematically exploit factors that have proven to work overtime and that are currently in favour, while avoiding those that are out of favour. This approach allows us to slowly but consistently outperform as we are not confined to a particular investment style.

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Seeiso joined Prescient in February 2015 in the Africa Equity Fund where he is responsible for research, development and maintenance the quantitative equity portfolio models, assisting with the management of equity portfolios and general equity and quant research. Seeiso is a 2013 Business Science (BBusSci) Graduate from the University of Cape Town, specialising in Economics. He is currently pursuing the Chartered Financial Analysis (CFA) designation. Seeiso joined Bloomberg L.P as a Fundamental Analyst Temp in the Global Data department in 2014 where he conducted market and data analysis for the Sub Saharan African Markets.

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