MACKENZIE
Investments

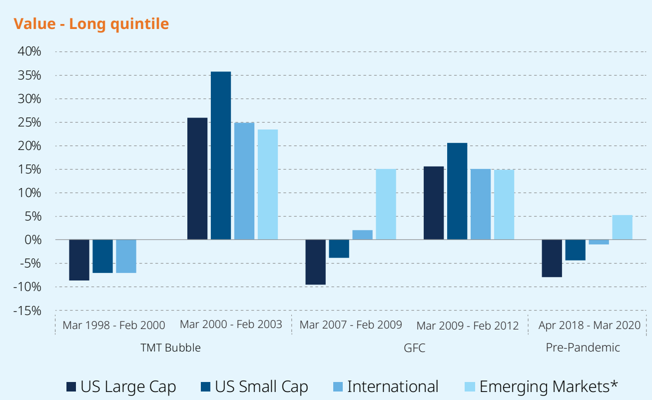
Emerging Markets

Quantitative investing in a pandemic

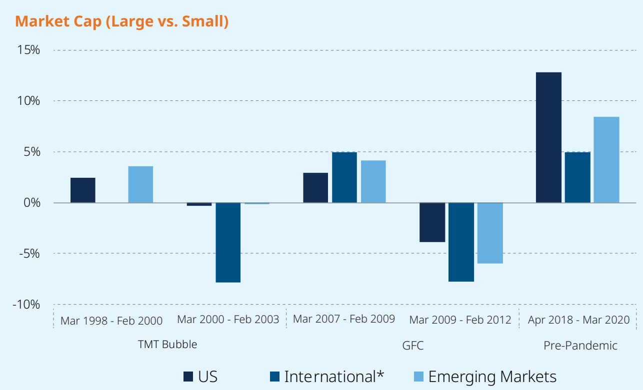
For institutional use only

A core approach provides balance

While COVID-19 spread quickly throughout the world, the inability to contain the virus sent shockwaves through the global financial markets, leading to fear and uncertainty as volatility spiked. The speed of market moves from mid-February to mid-March were like nothing we have ever experienced. But we have seen similar macro-dominated environments in the past (i.e., the tech bubble in 1998-99 and global financial crisis in 2007-2008) where quantitative managers struggled due to their existing exposures. Quantitative investors typically tend to be micro focused; many have a higher exposure to value factors and most have a lower capitalization bias in their portfolios as compared to fundamental managers. These biases did not help during the early expansion of the virus. Looking forward however, as highlighted in the charts below, the same exposures that have recently hindered quantitative managers tend to help their portfolios coming out of macro-driven market dislocations. Through a quantitative lens, the investment team constructs portfolios in emerging markets with a “core” focus, which aims to provide a balance between growth and value characteristics and seeks to outperform in various market environments. Sticking to our core approach has proven to be helpful during volatile environments in the past.



* Emerging Market data unavailable for TMT Bubble time period



* International data unavailable for TMT Bubble time period

US = S&P 500 - Russell 2000
International = MSCI World ex USA - MSCI World ex USA Small-Cap
Emerging Markets = MSCI EM - MSCI EM Small-Cap

Annualized Returns. Source: Mackenzie Investments

Nimble in a pandemic

Our quantitative approach allows the investment team to be nimble and incorporate daily changes in stock alpha forecasts for the entire investment universe. During normal market environments, quantitative managers purely rely on models to help guide their stock selection and portfolio exposures. Conversely, during unique periods of volatility, successful quantitative managers must adapt to the current environment and guide the portfolio construction process through the human validation of statistical data. Therefore having a seasoned portfolio management team in place is vital to help guide portfolio exposures and manage risk during a crisis.

Mackenzie's Global Quantitative Equity team leader, Mr. Datta, has managed quantitative portfolios successfully during turbulent times in the past. Most of the investment team he has assembled at Mackenzie has worked together before at prior firms. Based upon his experience managing portfolios during the technology, media and telecoms (TMT) bubble and the global financial crisis, he was able to weather the storm by applying a "human overlay" during the peak of the recent COVID-19 crisis. Datta emphasizes that, "For quantitative managers, there must be a bit of 'hand-holding' during volatile events and environments. Initially, when the virus spread, we reduced our exposure to the industries that were hit hard, such as airlines, restaurants and casinos." The team identified eight "risky industries" in which they have reduced individual security active weights by half. This move has successfully provided stability to the portfolio.

During the recent period of volatility, the team also heightened their level of security and sector validation and scrutinized their level of conviction of securities amidst new external factors. On a daily basis, the investment team reviews every trade based on the current environment. This human element has proven to be even more important during the recent crisis given the uncertainty and elevated volatility. This review process allows the team to identify securities that their alpha model may want to trade, but where it may not be taking into account recent market activity.

Another key area that the team focused on was efficient trading. By initially slowing down portfolio turnover, the team was able to reduce trading cost during the early phase of the pandemic when market prices were extremely volatile. This helped the portfolios by limiting trading in and out of a noisy market. As volatility came down, the team resumed their daily trading across the securities within their investment universe.

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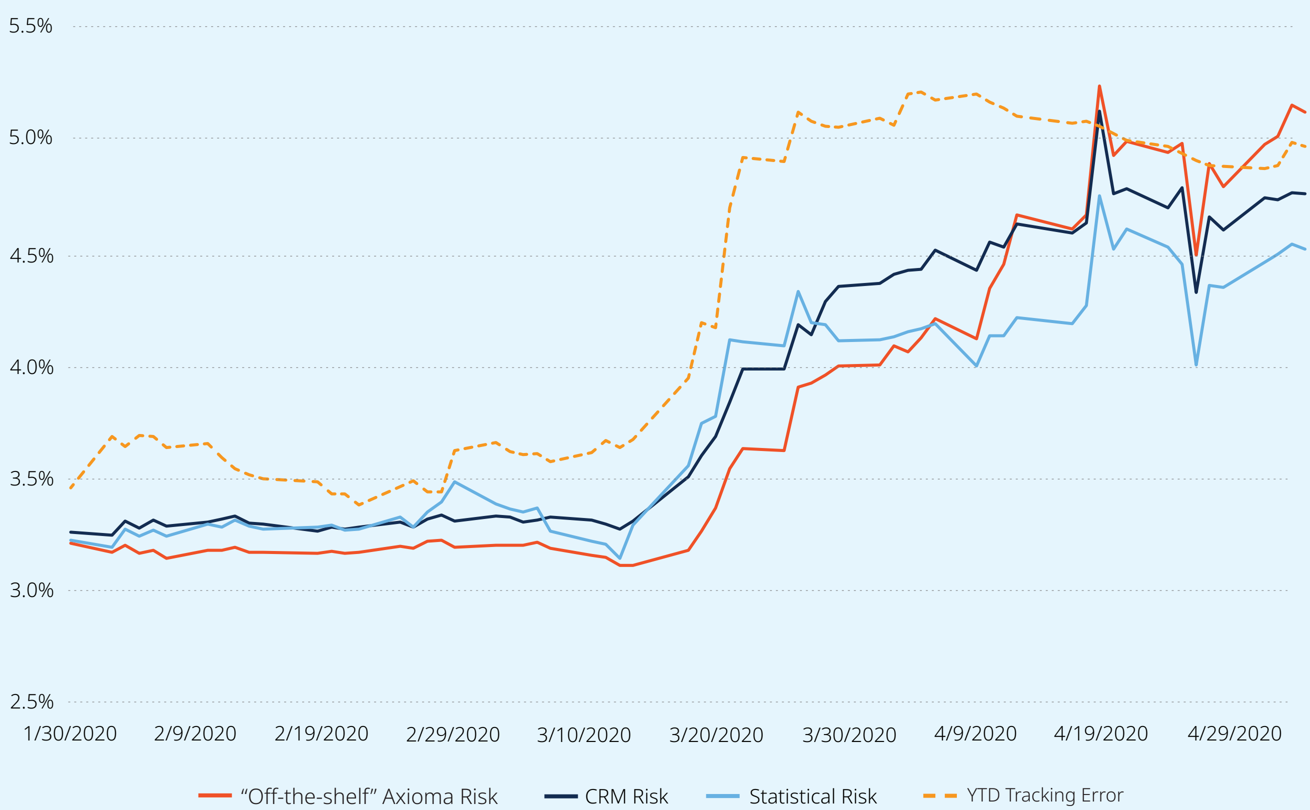
Custom risk models keep us on track

Successful quantitative managers are in tune with their portfolio risk through the use of custom risk models. Rather than using an off-the-shelf model to predict risk, our investment team employs a proprietary risk model. A custom risk model is critical to understanding portfolio risk because it incorporates the specific alpha factors that are used by the quantitative manager. This is even more critical during crisis marked with elevated volatility. For example, in the chart below it is evident that the "off-the-shelf" model did not predict portfolio risk in the chosen strategy as well as the team's custom risk model ("CRM") and statistical risk models during the height of the crisis (under predicted) and during the rebound period (over predicted).

Predicted Risk (Custom and Off-the-shelf) vs. Realized Risk



Source: Mackenzie Investments. For illustrative purposes only. Represents predicted risk calculated by Mackenzie's Global Quantitative Equity team. Emerging Markets Small Cap strategy only.
For the period January 30, 2020 to April 29, 2020

Emerging Markets

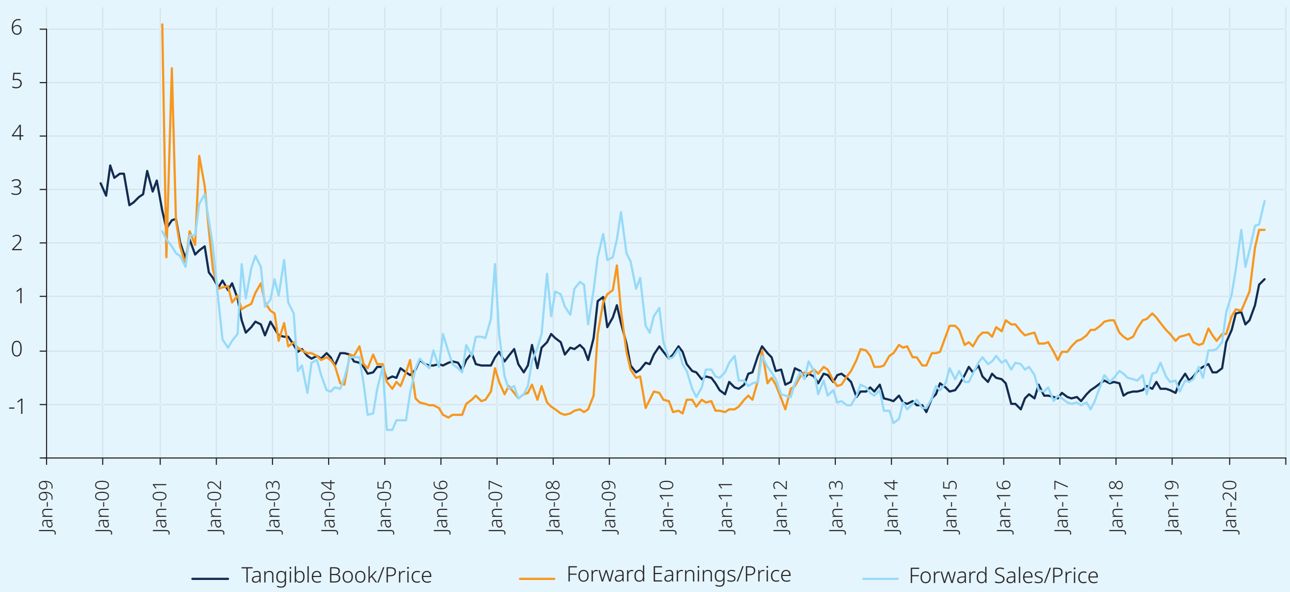
Opportunity in EM – value vs. growth debate

The COVID-19 virus initially affected China and quickly spread through emerging market countries and their economies. Developed markets were affected soon after and stock market performance quickly descended as a result. However, as developed countries struggled to contain the virus some of the larger emerging economies (China, South Korea and Taiwan) were able to successfully combat the virus and begin to revive their economies. Overall, we see emerging markets as being resilient and historically have bounced back from crisis to thrive. Over the past few years, we have seen emerging markets equity valuations trading at a steep discount relative to developed markets.

The Global Quantitative Equity team closely monitors the historical and current valuation spreads in global markets. This year we have seen that the spread between cheap and expensive stocks are as high as we experienced during the two prior macro crises. The chart below shows the disparity increasing between cheap and expensive stocks, very similar to the global financial crisis in 2007-2008.

Valuation spreads - Emerging Markets

Cheapest quintile vs. Remaining quintiles



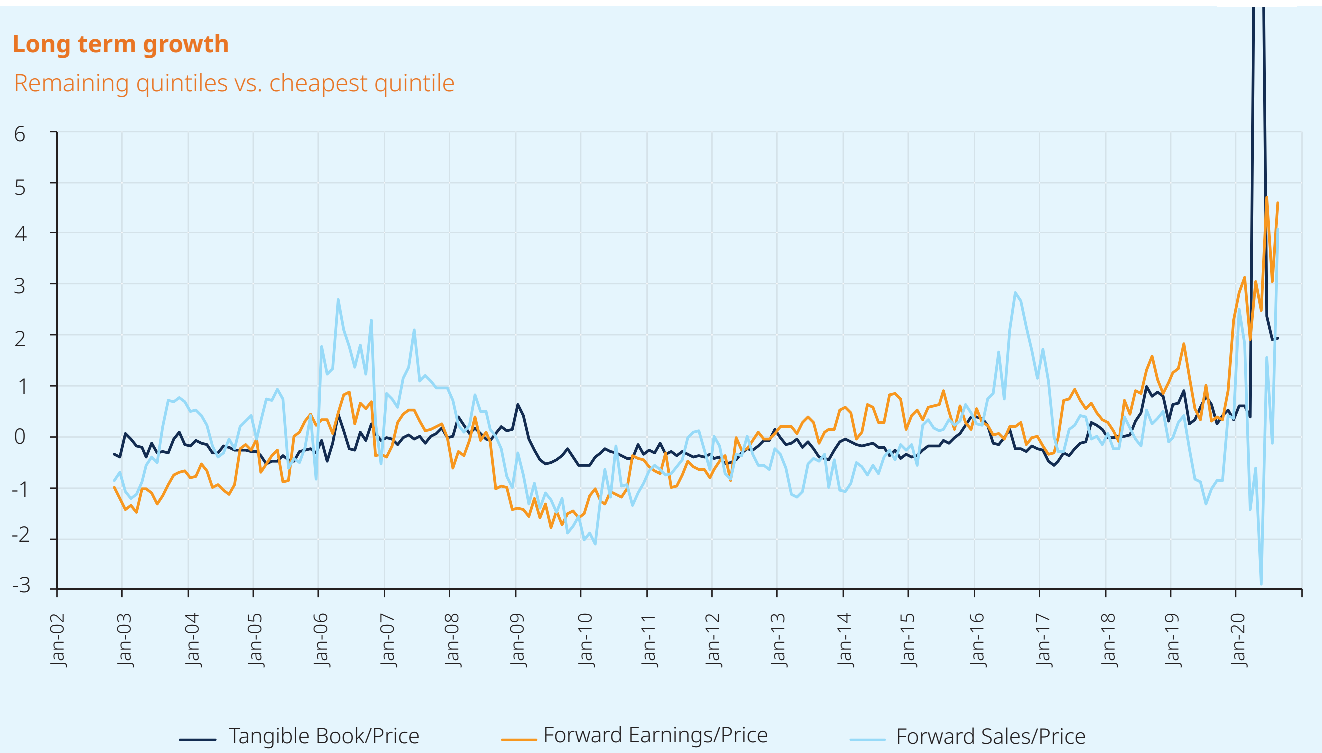
Source: Mackenzie Investments. Represents selected standardized factor spreads calculated by Mackenzie's Global Quantitative Equity team.
Not specific to a single strategy or mandate.
As of August 31, 2020

Emerging Markets

However, as the following chart shows, it is also clear that the cheapest stocks lack growth, which we did not see in past events. In emerging markets there are several growth names, particularly in technology, that have done well and are expected to continue their rapid growth in a post-pandemic environment.

Long term growth

Remaining quintiles vs. cheapest quintile



Source: Mackenzie. Represents selected standardized factor spreads calculated by Mackenzie's Global Quantitative Equity team.
Not specific to a single strategy or mandate.
As of August 31, 2020

In emerging markets, we stick to our core

Based on their experience, Mr. Datta and his team were aware of how best to adapt their quantitative process as the outbreak occurred. The experience of the investment team led them to focus on their intended exposures while reducing risk in a highly volatile environment. The team believes in a core process, while considering the significant value opportunity which is offset by significant differential in expected growth expectation. While emerging markets have historically encountered high volatility, we maintain a strong belief in the post-pandemic growth rate potential in the companies and countries within the emerging markets and view the asset class as a critical component of overall equity allocations. We believe, that long-term opportunities are plentiful within a broad emerging markets investment universe and that Mackenzie's Global Quantitative Equity team's disciplined, risk-controlled investment process is well-suited to capture these opportunities going forward.

Global Quantative Equity team approach

Mackenzie's Global Quantitative Equity team believes in a "core" style of investing that employs a disciplined, risk-aware investment approach in seeking to generate alpha within the emerging markets, while keeping a strict focus on capacity management. The team, led by 27-year quantitative industry veteran, Arup Datta, uses several of the same elements that a fundamental manager uses, however his team utilizes a systematic process to analyze more factors and stocks than a traditional fundamental manager. The team defines their edge as a steadfast belief in the adherence to a core focus designed to produce a more consistent alpha profile through and across multiple market environments. In addition, they believe that their daily stock analysis and proprietary transaction cost estimation, along with their focus on capacity management, sets them apart from their competitors. A quantitative lens, aided by computing power, sophisticated algorithms and adaptive models, provides the team with a measurable process to value securities across the broad investment universe.