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## The Quantamental Approach

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***Excerpted from the Alternative Investment Analyst Review, Volume 7, Issue 1***

*The Alternative Investment Analyst Review is the official publication of the CAIA Association. Access to the most current issue is an exclusive benefit of CAIA Membership while archived issues are available to the public in the Perspectives section at CAIA.org.*

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### Central Issue of the Paper

Fundamental (discretionary) portfolio managers typically build their portfolios from the bottom up. That is, they identify stocks they expect to beat the market and combine them to create a portfolio. However, fundamental managers can leverage quantitative tools to help identify and lessen potential issues in their portfolio, while still maintaining their investment views and goals. In the paper, "Adding Alpha by Subtracting Beta: A Case Study on How Quantitative Tools Can Improve a Portfolio's Return" by Chris Martin, they introduce various quantitative tools and use a "real world" portfolio to illustrate how they could improve a portfolio's realized returns.

### Approach Employed by Paper

#### The Tools

##### *Factor Risk Models*

Factor risk models are tools to help finance professionals understand the sources of predicted (ex-ante) risk and realized (ex-post) risk and return in a portfolio. The factors that comprise factor risk models are characteristics of individual stocks that tend to lead to cross-sectional differences in returns. For example, smaller stocks tend to perform differently from their larger-cap counterparts, and highly levered stocks may outpace unlevered stocks under certain economic conditions. At their most basic, factor risk models provide a predicted standard deviation of active returns given a portfolio and a benchmark and decompose the sources of those risks across both systematic (i.e., factor) components and an idiosyncratic (i.e., specific) component. Typically, a fundamental manager's value proposition is in identifying those idiosyncratic returns. In other words, they believe they select a stock that is likely to perform better than other stocks in the same industry, size category, valuation level, etc.

##### *Optimizers*

At a high level, optimizers are tools to help make better decisions – which can apply to almost any facet of life, not just finance. At the core of any optimization is a goal one is trying to

achieve (such as minimizing undesired risks), while obeying certain rules that cannot be violated (such as the size of sector overweight's). Optimizers are best known in the finance world from Markowitz's Mean-Variance optimization framework, where the goal is to maximize expected return less variance. In this case, the "variance" is quantified by either a factor risk model or a covariance matrix that quantifies asset-asset interactions. The user of an optimizer does not need to understand all the mathematics and mechanics behind the optimizer, just that it can evaluate thousands or millions of combinations of assets and tell the user which combination best meets their objectives.

## Case Study

The paper documented a case study in which some basic assumptions were made about a simple real-world portfolio without knowing anything about the fundamental managers other than the fact that they are bottom-up stock-pickers. In this quantitative approach, they increased realized returns and decreased realized risks which leads to higher IRs. The higher IR means higher rewards on a risk-adjusted basis from the optimized portfolio, as compared with the fundamentally constructed portfolio. Moreover, the case study highlights that fundamental managers can add even more value by adding additional proprietary information into the optimization to help keep their portfolios even more in line with their investment processes. As an example, they can force the optimizer to buy a minimum number of all assets on the "buy list," incorporate conviction ratings to make sure the optimizer does not downweight their high-conviction assets, and/or make sure they use the turnover/transaction cost budget as efficiently as possible.

## Findings of the Paper

Risk models can help managers better understand the ex-ante risks that are embedded in their portfolios, confirm that the risks being taken are in line with their mandate, and avoid taking risks where they have no expectation of return. An ex-post factor-based performance attribution report can help managers quantify the risks that led to realized returns to help prove to their clients, prospects, consultants, and internal research teams the value they added during the investment process. When the portfolio risks don't match up with the manager's investment mandate, an optimizer can be used in conjunction with a factor risk model to make slight changes to the fundamentally constructed portfolio to help simultaneously maintain the manager's high conviction in the portfolio, while also minimizing undesired risks.

Overall, using quantitative tools to incorporate this relatively simple analysis can help a manager focus on generating alpha and help clients better understand the source of portfolio's return.

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