



Quantitative Analysis

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For many years, those who had access to vital information regarding a particular company and therefore the company's stock dominated the investment process. Over time, obtaining research became more elaborate and complex as the number of stocks proliferated. Today, with computers and the Internet, an avalanche of information now faces the typical portfolio manager. One Wall Street analyst describes the number one most common complaint from portfolio managers as "how they should allocate their time and attention in order to grapple with the immense complexity of the investment process." Creativity and technology have combined to solve this dilemma in the form of quantitative analysis.

For hundreds of years, stock prices have been the result of investors' future expectations, which are based on the analysis of a variety of information. The most commonly analyzed information has been actual companies' line of businesses and financial statements. Although public companies have been required to provide financial statements since the 1930's, this information has been used by the financially savvy to ascertain the values of such companies for much longer. The use of financial information, combined with extensive information on industries, demand trends, and managements, form the basis of fundamental analysis.

Similarly, technical analysis is an investment approach with a very long history. Charts and records of traded commodity and stock prices go back a thousand years. Merchants along the silk routes kept detailed records of traded goods in order to examine the behavior of prices in hopes of benefiting from their observations. Today, this practice continues on a more advanced level as technicians study a variety of market data, seeking patterns of behavior that may give clues about future stock performance.

Quantitative analysis is very new. For practical purposes, it is only about twenty years old, and is still not fully accepted, understood or widely used. First, what is quantitative analysis in the context of the investment world? It is the scientific study of how certain variables statistically correlate to stock price behavior. The key word here is "statistical" for it implies large sample sizes enabling an analyst to virtually "prove" certain tendencies or behaviors in the stock market. The first work attempted along these lines was done in the seventies and maybe the sixties by academics on mainframe computers. The only historical data they had were stock prices and volume. Some early work in price momentum modeling was also done at this time. It was slow, expensive and virtually confined to automating simple technical analysis.

By the early eighties, services were born that collected broader data that had more value to the analytical community. Spreadsheets were invented on personal computers that enabled individuals to model companies' financial performance. The spreadsheet, however, did not lend itself to mass production over thousands of companies. Quantitative Analysis needed the convergence of three major developments before it could blossom and become commonplace.

The first development was the collection of the actual financial data. Firms such as Zacks Investment Research and IBES (Institutional Brokers' Estimate System) started collecting earnings estimates at regular intervals so analysts could see the changes over time. Compustat Data was busy collecting financial data on thousands of companies and making it publicly available. Jeff Parker created First Call Corporation, a brilliant idea that electronically collected earnings estimates and other research from major brokerage firms in almost real time into his server, and then downloaded research into his client's computers. Databases became more complex and more accurate. The most important advance was that there was now historical data on more than just stock prices.

The second event was that this data needed to be easily manipulated so that one could model, backtest and create new variables from the data without having to be an experienced programmer. Writing code to do regression analysis was not necessary. Statistical analytics became part of the software. Zacks pioneered this area and has created complex software, especially with respect to backtesting. FactSet Research also has powerful software, and today there are many others cropping up with analytical packages. This has accelerated the creativity process. Models were quickly and easily tested, making the analysis more valuable.

The third event was the development of the personal computer. The desktop enabled people to work independently without tying up the major resources of the firm's mainframe. In the 1980's, quantitative software was commonly run on a computer with a 486 chip, which was a very slow process even with small databases. As the power of the personal computer grew, however, it became quite adequate for the needs of the quantitative analyst.

By the late eighties, seminars cropped up where people would discuss techniques, their models and "what works." These quickly died over a few years as people realized that "what works" is a very valuable secret. Successful quantitative analysts have gone underground. Most of them work for money management firms or the "buy-side" of brokerage firms. I have witnessed many of them disappear, never to be heard from again, as if they were kidnapped.

If their approach is so different from fundamental and technical analysts, what is it that these quantitative analysts do with all these statistics? What is their insight into the investment process? The answer is twofold and the first lies in an age-old investment problem. When an investor is faced with a variety of alternatives, how does one go about choosing? How can one compare a large quality growth stock with rapid growth and a high P/E to a low priced value stock? How do you choose between a financial stock and

a commodity company like a mining stock? How do you handicap a strong versus a weak balance sheet? With the assistance of evolved technology, the quantitative analyst has found an approach to handle these dilemmas. Quantitative analysts can now compare different valuation methods and attributes and optimize their trade-off through statistical backtesting. Second, the process can be automated so that the investor can look at thousands of companies simultaneously and compare relative attractiveness in real time before all the prices change again. This capability is very valuable to portfolio managers because it becomes the framework of the research process. It provides a discipline and focuses the fundamental and technical research effort on the stocks most likely to outperform.

The fact that this is new and not pervasive means that the market inefficiencies in the quantitative world compared to the other more mature disciplines are huge. Combining these heterogeneous elements into a creative screening model is not easy. Like chefs, the same data ingredients are at everyone's disposal, but with the proper software and manipulation, there can be a vast difference in the "cooking" produced by each analyst. Currently, there simply are not many quantitative analysts, leaving the pioneers a great opportunity to create big excess returns.