

# FINANCIAL NEWS

## In praise of quants: the scientific way to invest

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**Quantitative investment techniques utilize science when building an investment strategy. They employ computerized algorithms to trade, attempting by rational means to create financial models that have predictive power and can manage risk.**



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Of late, quants have come in for criticism because of the performance of funds that use these strategies and investment models.

Investment returns are coming back, and have surged on the back of sustained moves in the world's currency and bond markets in the past few weeks. But the criticism of the funds' investment model is deeper; more philosophical. The argument is that quants deal in natural laws derived from mathematics, engineering and physics, among other disciplines. But critics say finance is, allegedly, different. It – again, allegedly – does not prescribe to natural law. It has its own elusive rhythms and peculiarities.

This argument misses the point. Science does deal with elusive laws. In what is known as non-equilibrium statistical physics, we can predict the macro variables even in volatile, complex environments. This gives rise to observable facts and analogies that can be used, in slightly different forms, in a financial realm, which is both variable and complex.

The Nobel prize-winning US physicist, Richard Feynman, while discussing fluid turbulence in 1964, noted many people, out of “fear of physics”, argued that it was not possible to write an equation for life.

“Well, perhaps we can,” he said. “As a matter of fact, we very possibly already have the equation to a sufficient approximation when we write the equation of quantum mechanics...”

A non-quant commodities trader may seek to work out the future price of wheat by examining the number of grain ships going between Chicago and Marseilles, taking account of the cost of transport and insurance and the laws of supply and demand. But managers of quant funds build strategies based on knowledge of science and statistics.

Having studied the statistics of previous price changes, they can, potentially, statistically forecast the price direction over the short-term. This is the rational scientific method, which enables a manager to test a hypothesis from a steady stream of price change and other information.

The evolution of human knowledge confirms the validity of this scientific approach. It has enjoyed tremendous success. The value of these methods – of experimenting and testing from a hypothesis – is beyond doubt.

It makes our lives convenient in a variety of ways. It facilitates precise airplane travel, weather forecasts and earthquake predictions. These and many others testify to the success of scientific methods and rationality.

Quants seek to bring this rationality into the financial arena and strengthen a world long dominated by instinct, guesswork and fallacy. None of this means quants are infallible, as some recent performance numbers illustrate. The scientific method may be applicable to finance, but it is not as robust in the financial sphere as it is in nature.

There are only 10 to 20 years of recorded high-frequency data available for study in most financial futures markets, for example, as compared to reference points in the natural world stretching back centuries.

However, scientific method and statistics remains a valid field of enquiry because there is no other rational way to approach the markets. They are the best way to forecast the behavior of financial systems. They also distance the investor from the emotions that undermine investing, which invariably lead to mistakes and losses.

Most importantly, the reactions of humans do not appear to become more rational over time. Those of computer-driven quantitative methods are becoming increasingly so.