What Practitioners need to know about Factor Methods
by Mark Kritzman, Financial Analysts Journal, January-February 1993

It is useful to understand the common sources of risk that contribute to changes in security prices. These common sources are called factors. This article explains two approaches to identifying factors: factor analysis and cross-sectional regression analysis.

In factor analysis, we isolate factors by observing common variations in the returns of different securities. In cross sectional regression analysis, we define a set of security attributes that measure exposure to an underlying factor and determine whether the differences across security returns correspond to the differences in security attributes.

Whereas factor analysis reveals variation in returns and the challenge is to identify the sources of this variation, cross sectional regression analysis requires us to specify the sources of return variation and the task is to confirm that these sources indeed correspond to the differences in returns.

In factor analysis, we can isolate independent sources of common variation in returns that explain nearly all of a portfolio's risk. But it may not always be possible to attach meaning to these sources of risk. They may be accidental and represent a temporary combination of various factors. It is difficult to make out whether they are stable or just applicable to the chosen measurement period or sample.

In cross sectional regression analysis, we know the identity of the attributes. But we may be able to explain only part of the variation. The attributes are typically co-dependent. So, it is difficult to understand the true relationship between each attribute and return.

The choice of approach would depend on what is more important to us: the identity of the factors or the amount of return variation we hope to explain with the independent factors.

There are two reasons for trying to address risk with a limited number of factors rather than work with the entre Markowitz covariance matrix. A security's sensitivity to the common sources of risk may be more stable than its sensitivity to the returns of all the securities in the portfolio. Risk control also becomes easier and more manageable when we have to work with fewer factors.