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Understanding and Assessing Financial Risk Tolerance: A Biological Perspective

At some level, all asset allocation techniques require a consideration of variables involving both capital market expectations and an individual's tolerance for risk. Although the latter information is as important as the former, an evaluation of investor-specific risk aversion is typically done in an ad hoc *fashion. Our understanding of financial risk tolerance can be extended by investigating the role of certain biological and psychological traits in the formation of economic preferences.*

Specifically, a series of economic, psychological and biochemical tests were designed to establish individual-specific profiles. Risk-aversion estimates were obtained experimentally from observations of bidding behavior in computerized auctions using newly developed theoretical models. These measures were then compared with a psychometric assessment of "sensation-seeking" personality traits and with measures of neurochemical activity that have previously been found to be significantly related to human behavior. Individuals with neurochemical activity characterized by lower levels of the enzyme monoamine oxidase and with a higher degree of sensation-seeking are more willing to accept economic risk.

These results offer a theoretical link between risk tolerance and behavioral traits that is consistent with intuitions regarding economic preferences. They also provide quantitative support for some of the assessment practices currently in use. More importantly, a behavioral foundation for an individual's tolerance for financial risk offers hope that future risk-assessment procedures can be extended in a way that broadens the set of tools available to the portfolio manager.

THE MOST PRUDENT approach to allocating financial assets requires that a money manager be able to assess and integrate two distinct sets of economic data. First, the manager must evaluate a collection of capital market variables across the available set of securities so that expectations about future performance can be formed. Second, once the array of feasible portfolio choices has been assembled, the manager can make an optimal selection only after assessing the investor's attitudes toward risk. Although few would argue that this latter task is in any way the less important of the two, the evaluation of risk tolerance has received far less attention from practitioners and academics alike. The primary reason for this deficiency appears to be a general lack of understanding of the determinants of risk aversion in the investing public.

This is not to say that investment managers don't make an attempt to assess risk tolerance. What it does imply is that there is currently little theoretical basis for preferring one approach over another. In practice, we see an array of techniques, ranging from *ad hoc* questionnaires seeking information on specific personality characteristics to quantitative inferences based on actual asset holdings. The diversity of approaches highlights the uniquely personal nature of risk aversion and suggests that its assess-

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