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Based on data analysis and theories, claims have been previously made that financial risks, as measured by large price movements R on time scales of less than a week, are described by power laws of the form $P(R > r) \sim r^{-a}$, where $a \approx 3$ [2{5]. It is claimed that a is a universal number, i.e. it is the same for all stocks in all markets. If true, such a hypothesis would be very useful for quantifying and forecasting financial risks.

Using detailed data sets from the London and New York Stock Exchanges, Farmer's group has begun investigating this hypothesis. Preliminary results suggest that the situation for extreme risk is more complicated than previously conjectured. If we aggregate the data from many stocks together we find power law behavior of roughly the form, though with somewhat different numerical values of a than conjectured. However, when we examine individual stocks separately we find highly divergent behavior, which does not appear to satisfy the power law hypothesis. As a is the tail exponent, Ms. Huang will compute tail exponents for many different stocks and will study how they change as conditions about the stocks vary, such as their trading volume. She will then perform statistical tests to determine whether the variations observed are statistically significant.