1020-60-7   **Vladimir Vinogradov*** (`vlavin@math.ohiou.edu`), Department of Mathematics, 321 Morton Hall, Ohio University, Athens, OH. *On Stochastic Models for Stock Price Movements which Employ the Power-Variance Family.*

Consider two families of geometric Lévy processes as models for movements of equities. The first one is constructed starting from the power-variance family and generalizes GBM. We determine a RNM, use it for pricing European options and derive Black-Scholes formula as an approximation. We find distributions of first passage times for the underlying Lévy processes in a special case generalizing the results by Schrödinger and Smoluchowsky. This could be used for pricing American options. We find critical points in the formation of rare events. The other model describes a self-financing portfolio comprised of one bond and k equities. Suppose that the logarithmic returns on all equities belong to a specific class of Lévy processes related to the power-variance family. We demonstrate that for a particular choice of constant portfolio weights, the combined movement of all equities is governed by a process from the same class. This is related to our Pythagorean theorem for Sharpe ratio and we present a converse of our result. Our selection of portfolio weights coincides with those of fund managers. Although simpler, in the discontinuous case this method is less profitable, than portfolio weight selection using an approach that maximizes the expected logarithmic utility. (Received May 22, 2006)