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Ahmet Duran* (durana@umich.edu), Ann Arbor, MI 48109, and **Gunduz Caginalp**. *A Multi-start Approach for Parameter Optimization of Asset Flow Differential Equations.*

Asset flow differential equations (AFDE) have been developed by Caginalp and his collaborators since 1989. In this paper we study an inverse problem involving parameter optimization of the AFDE to describe an investor population. A quasi-Newton weak line search with a proposed dynamic initial parameter pool is used in conjunction with daily market prices and net asset values to determine the parameters for which the AFDE yield the best fit for the previous n days in the optimization procedure. It is a feasible dynamic multi-start approach for our semi-unconstrained optimization problem from financial application with arbitrary stream data. These optimal parameters are useful to make a forecast for market prices for the following days. The results are statistically closer to the real market prices than the default prediction of random walk for a number of closed-end funds. (Received February 11, 2008)