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Adrian D Banner, Robert Fernholz, Ioannis Karatzas, Vasileios Papathanakos and Phillip D Whitman* (pwhitman@intechjanus.com), 1 Palmer Square Ste 441, Princeton, NJ 08542. *Rank-Based Portfolios, the Size Effect, and an Identity for the Exponential Distribution*. Preliminary report.

In an equity market with a stable capital distribution, a capitalization-weighted index of small stocks tends to outperform a capitalization-weighted index of large stocks. This observation is one formulation of the widely noted phenomenon known as the “size effect.” We will discuss work that explains this as a portfolio-level effect, beginning with Fernholz (2001). In fact, one can show in a class of models that in fact this outperformance is a necessary consequence of stability properties of the market. Such proofs rely on an understanding of the behavior of collision local times, which are related to the rebalancing of such portfolios. In this talk, we focus on a class of models for which we can show these stability properties are satisfied. Namely, the “Atlas” model, for which one can show the existence of a stable capital distribution, and then obtain a formula for the long-term outperformance for such small stock portfolio with respect to large stock portfolios. As a corollary, we show a novel identity for n independent exponential distributions. (*Joint work with Adrian Banner, Robert Fernholz, Ioannis Karatzas, and Vasileios Papathanakos.*) (Received September 16, 2014)