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ARTICLE REVIEW

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Monkey and Upside-Down Strategies’

BY ROBERT D. ARNOTT, JASON HSU, VITALI KALESNIK, AND PHIL TINDALL

Summarized by Philip Lawton, CFA®



INVESTMENTS & WEALTH INSTITUTE®
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‘The Surprising Alpha from Malkiel’s Monkey and Upside-Down Strategies’

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Robert D. Arnett, Jason Hsu, Vitali Kalesnik, and Phil Tindall provide empirical evidence to reach the surprising conclusion that, contrary to popular wisdom, the investment beliefs on which many well-established strategies are based play little or no role in their outperformance vis-à-vis capitalization-weighted benchmarks. Arnett et al. (2013) reach this striking result by inverting the popular strategies’ weighting algorithms and find these inverted strategies produce equal or better outperformance. Interestingly, so does any random stock selection strategy—even a monkey throwing darts at the *Wall Street Journal* to select stocks.

The implication of these findings is that many of the plausible investment beliefs held by investment professionals are nothing more than good stories. The key insight is that many active portfolio returns are driven largely by value and small-cap exposures, which are naturally occurring characteristics unless the portfolio, like the cap-weighted benchmark, is explicitly designed to have a positive relationship between security prices and weights. These results have an important practical implication: Investors should make investment decisions based on strategy factor exposure as well as implementation characteristics rather than on the stories told about the strategies.

The authors’ research design is straightforward. Restricting the U.S. universe to the 1,000 largest stocks by market capitalization, they construct three sets of portfolios. The first set simulates high-risk/high-reward strategies, including volatility-weighted, market beta-weighted, and downside semi-deviation-weighted portfolios. The second set contains optimization-based strategies, including minimum-variance, maximum-diversification, risk-efficient, and equal-weighted risk cluster portfolios. The third set includes strategies that weight holdings on the basis of accounting measures, including book value, five-year average earnings, earnings growth, and the classic fundamental indexation method described in Arnett et al. (2005). In addition, the authors construct two reference portfolios, one cap-weighted, representing the market, and the

other equal-weighted. Using the merged CRSP/CompuStat database, the authors backtest the hypothetical U.S. portfolios with annual rebalancing over the period 1964–2012.

Arnett et al. (2013) invert the portfolios’ weighting algorithms in two ways: They construct inverse ratio portfolios by normalizing the inverse weights ($1/w$) and inverse complement portfolios by normalizing the original portfolios’ complementary weight $\max(w)-w$.

In his classic 1973 book, *A Random Walk Down Wall Street* (now in its 12th edition), Burton Malkiel states that “a blindfolded monkey throwing darts at a newspaper’s financial pages could select a portfolio that would do just as well as one carefully selected by experts.” To test this claim, the authors ape Malkiel’s monkeys by annually picking 100 random, equal-weighted 30-stock portfolios.

In summary:

- The equal-weight reference portfolio’s annualized rate of return over the forty-nine-year measurement period outpaced the cap-weighted benchmark return by 1.80 percent.
- The high-risk/high-reward portfolios’ return exceeded the cap-weighted benchmark returns by 2.23 percent to 2.49 percent, and the corresponding inverse portfolio returns surpassed the benchmark returns by 2.78 percent to 3.81 percent.
- The optimization-based portfolios beat the cap-weighted benchmark by 1.51 percent to 2.83 percent; their inverses, by 2.67 percent to 3.57 percent.
- The fundamentals-based portfolios’ returns outperformed the cap-weighted benchmark by 1.52 percent to 2.76 percent; their inverses, by 0.59 percent to 4.39 percent.
- The 100 random portfolios (the simulated simian portfolios) earned, on average, a value-added return of 1.60 percent over the cap-weighted benchmark return.

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are consistent with the degree of concentration in wealth creation ... reassessment of standard methods of evaluating investment performance such as the Sharpe ratio and Jensen's alpha ... [a]ssessing the reasons that long horizon returns display less skewness than would be anticipated if multi-period returns were generated from a normal distribution with constant parameters," and consideration of skewness in the construction of "optimal individual stock portfolios over a variety of possible investment horizons." ●

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Paradoxically, the upside-down strategies generally performed better than the sensible right-side-up strategies, achieving higher returns as well as higher Sharpe ratios, information ratios, and capital asset pricing model alphas.

To explain these results, Arnott et al. (2013) conduct performance attribution analyses of the original and inverted portfolios using the Fama-French four-factor model (FF4). The factors are market beta, size, value, and momentum. In all but one of the portfolio sets, the analysis reveals meaningful value and/or small-cap tilts with no statistically significant net FF4 alpha. The exception was that a few of the inverted fundamentals-based strategies delivered statistically significant alpha, net of the factor effects. The significant alphas in these cases may be outliers, or they could reflect a risk factor that is missing from the FF4 model.

Using the Worldscope and Datastream databases, the authors extend their research to global developed markets for the period 1991-2012. With only one exception (market beta-

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weighted), all the original strategies added value; and again, with just one exception (inverse-ratio earnings growth-weighted), the upside-down strategies also added value. Of the twenty-two inverted portfolios, eighteen outperformed the underlying originals.

In view of the compelling U.S. and global evidence that both sensible and nonsensical strategies outperform for the same reasons (value and small-cap biases), the authors conclude that potential investors would do well to base strategy selections largely on a comparison of explicit and implicit implementation costs due to portfolio turnover. ●

Now retired, Philip Lawton, CFA®, was formerly vice president, marketing, at Research Affiliates, LLC.

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