
PRACTITIONER'S DIGEST

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LIVE PRICES AND STALE QUANTITIES: $T + 1$ ACCOUNTING AND MUTUAL FUND MISPRICING

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Peter Tufano

Virtually all open-end mutual fund net asset values (NAVs) are set using today’s prices and *yesterday’s* portfolio quantities. This pricing practice, called “Trade Day Plus One” or “ $T + 1$ ” accounting, has largely avoided public notice, even though it regularly leads to small discrepancies in pricing. Securities bought or sold are not incorporated into the fund’s share price or NAV on the day that the transactions occur; rather, the calculations are done *as if* no portfolio trading took place during the day, i.e., with live prices and stale quantities. This set of accounting rules drives a wedge between the reported “accounting” NAVs used to calculate the prices at which funds are bought and sold and the “economic” NAVs representing the true value of the funds’ portfolios.

We use daily trading data from a mutual fund family to measure deviations between accounting and economic NAVs and to assess the frequency and magnitude with which such deviations occur. For about 8.5% of fund-day observations (approximately twice per month), economic NAVs differed by a penny or more from reported accounting NAVs. For approximately 14.5% of fund-day observations, daily returns differed by a basis point or more. For the average fund in our sample, the economic NAV was different from the published NAV by at least 2 cents approximately twice per year, by at least 3 cents once per year, and the daily return was different by at least 10 basis points approximately once every two months. For 11 of the 26 funds, the economic NAV was different from the published NAV approximately once every two weeks. Anecdotally we find that NAV discrepancies were more severe during the turbulent markets of late 2008.

We conclude that the $T + 1$ pricing scheme produces noisy prices that routinely benefit some parties and harm others. Given that virtually every trade in a fund involves an unwitting party—the buy and hold investor—these value transfers are difficult to justify. While one could leave the status quo pricing rules in place, there are two alternatives: mandate same-day accounting or increase disclosure. While in the

near term technological constraints might limit an industry-wide change to same-day accounting, we believe at minimum value transfers among shareholders should be acknowledged through appropriate *ex post* disclosure.

LIFECYCLE CONSUMPTION-INVESTMENT POLICIES AND PENSION PLANS: A DYNAMIC ANALYSIS

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Zvi Bodie, Jérôme Detemple and Marcel Rindisbacher

How should individuals save and invest over the course of life? How should they invest for retirement? What is the optimal design of target-date funds recently advocated as default options in 401k and other defined-contribution retirement plans. This paper sheds new light on these issues.

The paper begins with a thorough discussion of optimal consumption, labor and asset allocation decisions for individuals seeking to maximize welfare during the accumulation and decumulation phases of the lifecycle. Then, it derives optimal saving and investment strategies and examines their “glide paths.” It identifies conditions under which the fraction of wealth invested in equities ought to increase or decrease during the accumulation phase of the lifecycle. Comparisons between the optimal pension fund and a generic target date fund are carried out. Finally, it studies the robustness of certain properties to variations in parameters, such as risk aversion and mortality risk. The insights provided deepen our understanding of optimal structures and pension plan designs. They can help to shape the production of optimal financial services and to provide guidelines for regulatory reforms.

TIMING THE VALUE STYLE INDEX IN A MARKOV REGIME-SWITCHING MODEL

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Hany Guirguis, Ted Theodore and Michael Suen

In this study, we set out to search for empirical evidence to support the conventional wisdom concerning the timing of value-style investments. As with many other investment rules of thumb, the conventional wisdom offers more justification than actual implementation detail. One of the contributions of our work is the development of a quantitative signal, based on conventional wisdom, that an investor can actually use. We also conducted in-depth statistical tests to analyze the information content of the proposed signal.

A critical feature of our analysis is the application of a Markov regime-switching model. If our signal is tested under a no regime-switching assumption, there is no empirical evidence to support the conventional wisdom. Using a regime-switching model, we are able to find significant empirical evidence that the signal is able to time the value-style investment during the low-variance regime. One of the implications of our study is that the regime-switching property is not necessary unique to this particular signal. Other investment signals may also have similar regime-switching properties in the sense that a signal's behavior is conditional to various regimes.

CALIBRATING NEUTRALITY: THE EVOLVING GLOBAL OPPORTUNITY SET**PAGE 65***Sharon Hill and Chris Gowlland*

A wide range of indices have been developed for both the equity markets and for the fixed income markets, but there is a paucity of indices covering multiple asset classes. This is unfortunate, as portfolio theory generally holds that investors should seek to hold multiple asset classes in order to increase the diversification of their portfolios, which may affect their risk-adjusted return.

There is no generally accepted method for constructing a portfolio of risky assets reflecting the entire market. After collecting data on global equities and global fixed-income securities since 1990 from publicly available sources, we find that the relative weights of different asset classes have not been constant over time. The market-neutral portfolio in equities and fixed-income securities has evolved: there have been substantial increases in the importance of emerging market equities within the global opportunity set, as well as major changes in the relative proportions of different types of fixed-income instruments.

Constructing multi-asset portfolios should begin with a clear understanding of the available opportunity set. The results presented here will allow investors and asset managers to appreciate how the global opportunity set has changed over the past two decades, as well as providing them with a snapshot of the current landscape. The information about the global opportunity set can be a wake-up call, helping practitioners and asset owners better appreciate the potential cost of excessive home bias.

COMMENT ON THE THEORETICAL AND EMPIRICAL EVIDENCE OF FUNDAMENTAL INDEXING**PAGE 90***Jeffrey Graham*

In a recent article in this journal, Arnott and Hsu [CAPM and the size and value effects. *Journal of Investment Management*, Vol. 6, No. 1, 1–11, 2008]. proposed an equity pricing model in which a security's current market price can help predict its future return. Their main finding was that securities with a higher price will tend to have below normal returns, thus a cap-weighted index that places more weight on high-priced securities will also tend to have below normal returns. This model was used to help explain why alternatively weighted indexes (e.g. Fundamental Indexes) have outperformed traditional cap-weighted indexes. In the first half of this note, I show that in deriving this result Arnott and Hsu have made a very strong implicit assumption regarding what investors know about a stock at any given time. Moreover, I show that if one relaxes this assumption it does not necessarily follow that cap-weighted indexes will underperform.

However, the empirical fact still remains—Fundamental Indexes have historically outperformed cap-weighted indexes. Critics have observed that Fundamental Indexes are bias towards “value Stocks” and thus their superior performance is driven by the well-known fact that value stocks have historically

outperformed the broader market (Asness, C., October 19 2006. The value of fundamental indexing. Institutional Investor, 67.71). In the second half of this note, I investigate this issue from a unique perspective. I compare the historical returns of cap-weighted indexes to purely random-weighted indexes and show that there is no statistically significant difference between the two over the last 50 years. This implies that cap-weighted indexes do not systematically underperform and the overperformance of Fundamental Indexes is in fact driven by their value tilt. The ultimate message is that Fundamental Indexes do not possess some sort of “mathematical edge” over cap-weighted indexes. Investors using these indexes must realize that they will experience superior returns only if value stocks continue to outperform.