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Timing the stock market: Does it really make no sense?☆

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ABSTRACT

Many private and institutional investors attempt to time the market and generate abnormal returns by periodically switching their portfolio allocations between the stock market and the cash market based on their return predictions. However, most academic studies emphasize that a successful market timing strategy requires a prediction accuracy that is usually not observable in reality. While prior studies evaluate the outcomes based on traditional return and risk measures, we adopt both expected and non-expected utility models to compare market timing with common benchmarks. Our analyses are based on a "simulated market timer" that does not require a specific forecast model. Bootstrap-based simulations show that even with low hit ratios, investors with non-expected utility preferences can consider market timing as highly desirable. The attractiveness of market timing is also partly attributable to short-termism in performance evaluation.

1. Introduction

Many private and institutional investors attempt to time the market and generate abnormal returns by periodically switching their portfolio allocations between the stock market and the cash market based on their return predictions. According to Phillips and Lee (1989) and Kester (1990), market timing is defined as a 100% shift between stocks and cash, thus an investor is fully invested in either the stock market or the cash market. While market timing enjoys an unbroken popularity among practitioners, prior academic studies emphasize that successful market timing strategies require a forecast accuracy that is incompatible with market efficiency in the sense of Fama (1970, 1991), and thus is beyond the reach of active investors (Sharpe, 1975; Jeffrey, 1984; Chua et al., 1987; Droms, 1989; Neuhierl and Schlusche, 2011). Most studies on mutual fund performance find no (or, at best, very little) evidence of market timing skills (Treynor and Mazuy, 1966; Merton and Henriksson, 1981; Henriksson, 1984; Lehman and Modest, 1987; Grinblatt and Titman, 1989; Daniel et al., 1997; Kryzanowski et al., 1998; Goetzmann et al., 2000; Bessler et al., 2009).[1] Furthermore, Avramov and Chordia (2006) find that predictable time variation in individual-stock "alphas" can be profitably exploited by a mean–variance investor when incorporating business cycle predictors, whereas the gains from market timing are

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[1] However, a few studies show evidence to the contrary. For example, Ferson and Schadt (1996) find some evidence of timing skill when macroeconomic conditions are accounted for. Graham and Harvey (1996) report evidence of timing skill using certain benchmarks. Brown et al. (1998) find evidence that the Dow Theory worked as a timing strategy.

much smaller and only comparable to those from unconditionally efficient trading strategies.

In our study, we revisit the question whether market timing strategies really make no sense or whether they can be desirable at least for some investors. While (to the best of our knowledge) all prior market timing studies analyze the impact of market timing on the usual return and risk measures (such as the Sharpe ratio), we use normative and descriptive decision theoretic concepts (such as Quiggin's (1982) anticipated utility concept or Tversky and Kahneman's (1992) cumulative prospect theory, CPT) to evaluate a market timing strategy. Although we also examine the standard return and risk measures, we are ultimately agnostic about whether market timing is profitable or not. We also cannot offer a final judgment on whether the theory of behavioral finance indeed lends support to the application of market timing. Rather, we argue that the popularity of market timing may be explained by investors with continuous and transitive preferences that do not satisfy the independence axiom (i.e., investors with non-expected utility preferences). It is conceivable that market timing may not be profitable and cannot be reconciled with risk averse expected utility preferences, but nevertheless may be desirable for investors with non-expected utility preferences as given by the anticipated utility theory or the CPT. For example, the effect of the probability weighting scheme under the CPT is that small probabilities of extreme returns are overweighted, resulting in a preference for lottery-like or jackpot payoffs. This argument is consistent with the view of many academics who are skeptical towards market timing: market timing is consistent with investors deviating from the expected value criterion.

The traditional mean–variance framework assumes that returns are normally distributed or that investor preferences are described or well approximated by the first two moments of returns. However, dynamic trading strategies can radically alter the shape of return distributions away from IID normality or log normality. Pfeifer (1985) shows that the usual mean–variance characterization of a risky return is not appropriate to evaluate the attractiveness of the returns from market timing. He concludes that the attractiveness of market timing is a function of risk attitude and the ability to forecast. Our approach not only accounts for these effects but also encompasses the beliefs of proponents of behavioral finance and the expanding literature thereof that investor preferences are more complex than depicted by quadratic (or maybe even power) utility functions. Perhaps most important, the main driver in the Barberis and Huang (2008) model is that investors overweight both extreme gain and loss outcomes. The reason why they overweight gains is not clear. Barberis and Huang (2008) suggest that one can think of this overweighting as "simply a modeling device that captures the common preference for a lottery-like, or positively skewed wealth distribution".[2] Using CPT, they generate a model equilibrium in which investors demand a positive risk premium to hold the market portfolio, and, at the same time, accept a negative premium for a positively skewed lottery. Barberis (2013) also shows that prospect theory implies a strong preference for skewed payoffs. Mitton and Vorkink (2007) document that underdiversified investors choose stocks with higher skewness. Kumar (2009) finds that socioeconomic factors can explain the demand for lottery-like payoffs, and stocks with these characteristics underperform. Conrad et al. (2014) show that stocks with high predicted probabilities for jackpot returns earn abnormally low average returns, which is consistent with an investor preference for skewed, lottery-like payoffs.[3] Most recently, Eraker and Ready (2015) show that the negative return premium for OTC stocks (which exhibit similar characteristics as lottery-stocks) can be rationalized by investors' preferences for positively skewed payoffs.[4]

Moreover, as Blackburn and Ukhov (2013) demonstrate, vast differences can occur between individual and market preferences due to aggregation, which helps in understanding the connection (and initial imprecision of a contradiction) between the behavioral finance and asset-pricing literature. In one of their illustrations, they show that an economy consisting entirely of individual risk seekers can lead to an aggregate economy that is risk-averse.

Our simulation setup is based on a "simulated market timer" that is independent from a specific return forecast model, implying that our results are highly generalizable. The forecasting accuracy of our simulated market timer is measured by the hit ratio (or hit rate), the percentage of correct forecasts of the market direction (i.e., the stock market return is higher or lower than the cash market return). The simulated market timer is embedded in a bootstrap-based simulation environment, enabling us to exploit the historical data as efficiently as possible. It is applicable for any performance and utility measures due to its independence from distributional assumptions, and also helps to avoid data-snooping problems (Sullivan et al., 2001).[5] In contrast to most prior market timing studies, we test our findings for statistical significance.

Our highly generalizable results from bootstrap-based simulations show that market timing is desirable even for some investors with moderate or low prediction skills, particularly when the outcomes are evaluated based on non-expected utility models. An explanation for our findings is that market timing shapes the return distribution in a way that is desirable for investors with decision theoretic preferences. Most importantly, market timing generates fatter tails and less negative skewness, and it dominates a constant mix benchmark in both the

[2] See Barberis and Huang (2008, p. 2066).

[3] There is a growing strand of literature showing evidence for skewness preferences in financial decision situations, e.g., ranging from CEO's project choices (Schneider and Spalt, 2016) to the underpricing of initial public offerings (Green and Hwang, 2012).

[4] Boyer et al. (2011) and Conrad et al. (2013) report that stocks sorted on ex ante expected skewness exhibit large differences in average returns. However, Aretz and Arisoy (2014) argue that these results on a negative ex-ante stock skewness-stock return relationship may be premature, and there is no evidence that the stock market prices skewness (as opposed to coskewness with the market; Kraus and Litzenberger, 1976).

[5] Our test methodology also avoids the need to address the observation that most theoretical explanations and tests thereof deal with a static analysis of dynamic market timing. Exceptions include Cvitanic et al. (2006) and Detemple and Rindisbacher (2013).