Financial Analysts Journal | A Publication of CFA Institute
https://doi.org/10.1080/0015198X.2023.2188870

Research

Long-Term Shareholder Returns: Evidence from 64,000 Global Stocks

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We study long-run shareholder outcomes for more than 64,000 global common stocks during the January 1990 to December 2020 period. The majority, 55.2% of U.S. stocks and 57.4% of non-U.S. stocks, underperform one-month U.S. Treasury bills in terms of compound returns over the full sample. Focusing on aggregate shareholder outcomes, we find that the top-performing 2.4% of firms account for all of the $US 75.7 trillion in net global stock market wealth creation from 1990 to December 2020. Outside the United States, 1.41% of firms account for the $US 30.7 trillion in net wealth creation.

Keywords: compound returns; long-term returns; return skewness; stock investing and shareholder wealth

Disclosure: No potential conflict of interest was reported by the author(s).

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Introduction

The literature includes hundreds of empirical studies that report on rates of return to equity investors. These studies typically focus on returns measured over relatively short horizons, such as monthly or quarterly, and often describe long-term outcomes based on arithmetic means of shorter-term returns.[1] In this study, we aim to provide broader insights into the nature of the returns realized by shareholders in the long run. To do so, we consider a broad global sample consisting of more than 64,000 individual common stocks and measure long-term shareholder outcomes in terms of both compound returns and enhancements to shareholders' wealth.

Many of the empirical outcomes documented here are attributable to the fact that the distribution of compound returns is positively skewed. Such skewness arises even if the distribution of short-horizon returns is symmetric, as first pointed out by Arditti and Levy (1975) and explored further by Bessembinder (2018) and Farago and Hjalmarsson (2023). Indeed, the assumption often employed for modeling purposes that stock returns conform to the log-normal distribution implies positive skewness at any horizon except instantaneous, with greater skewness at longer horizons. The results we present illustrate the practical implications of such positive skewness. To the extent that the findings here are surprising, the cause may be that the empirical literature tends to focus on parameter estimates that describe the short-horizon return distribution, where the effects of skewness are modest.

We document that the majority of compound (buy-and-hold) long-term returns measured for our January 1990 to December 2020

The authors thank William Goetzmann (executive editor), Daniel Giamouridis (co-editor), and two anonymous referees for constructive and insightful comments and suggestions that have significantly improved the article. Bessembinder acknowledges financial support from Baillie Gifford & Company. Wei acknowledges financial support from the Research Grants Council of the Hong Kong SAR, China (GRF15505518).

sample, including 55.2% of U.S. stocks and 57.4% of non-U.S. stocks, fall short of returns to one-month U.S. Treasury bills over matched time horizons.[2] This finding does not contradict the evidence (see, for example, Dimson, Marsh, and Staunton, 2002) that returns to broad stock *markets* handily outperform the returns earned on Treasury instruments in the long run. Indeed, the mean buy-and-hold return across stocks in our sample greatly exceeds the U.S. Treasury bill return at each horizon we study. Rather, the distinction between the positive return premium for the broad stock markets and the negative premium for most individual stock returns is a manifestation of the strong positive skewness in the distribution of returns to individual stocks, particularly at longer horizons.[3] This skewness in turn implies that the positive mean excess long-run returns observed for stock portfolios are driven by very large returns to a relative few stocks.

We measure for each sample firm the dollar amount by which the wealth of shareholders in aggregate was enhanced by their decision to take on the risk of stock investing rather than low-risk U.S. Treasury bills. Summing across the 63,785 firms that issued common stock contained in the January 1990 to December 2020 sample, we calculate net global stock market wealth creation of $US 75.7 trillion, measured as of December 2020. Wealth creation is highly concentrated. The five firms (0.008% of the total) with the largest wealth creation during the January 1990 to December 2020 period (Apple, Microsoft, Amazon, Alphabet, and Tencent) accounted for 10.3% of global net wealth creation. The best-performing 159 firms (0.25% of total) accounted for half of global net wealth creation. The best-performing 1,526 firms (2.39% of total) can account for all net global wealth creation.

Bessembinder (2018) previously studied long-term shareholder outcomes for U.S. stocks.[4] Here, we show that the practical implications of skewness in compound returns are even stronger outside the United States. The present sample includes 46,723 non-U.S. stocks. Of these, 42.6% generated buy-and-hold returns measured in U.S. dollars that exceed one-month U.S. Treasury bill returns over matched horizons. By comparison, 44.8% of the 17,776 U.S. stocks in the present sample outperformed Treasury bills.

The positive skewness in distribution of compound returns is of substantial practical importance. While, as noted, most empirical analyses of stock markets focus on arithmetic means and other parameters of returns measured over short (e.g., monthly) horizons, the investment and decision horizons of individuals or fund managers can stretch to decades and can differ across investors. The strong positive skewness in the distribution of long-horizon stock returns implies a cautionary lesson that is particularly relevant for financial planning. The assessment of whether pension funds are adequately capitalized, for example, is often based on assumptions regarding mean returns and the mean of the distribution of possible future outcomes. Distinct from the ongoing debate as to whether the assumed means are appropriate, the (potentially large) majority of individual future outcomes in a positively skewed distribution can be less than the mean. Our results highlight that it is important for financial planners to explicitly consider the skewed distribution of compound long-horizon returns.

Utility-maximizing investors may also rationally prefer to seek out or to avoid the strong positive skewness that is present in long-horizon returns. This can be accomplished by selecting portfolios with greater or less short-horizon return volatility, which Farago and Hjalmarsson (2023) show is a main determinant of long horizons skewness. A useful benchmark is provided by Samuelson (1969), who shows that long-horizon investors will optimally select portfolio weights based on the parameters of the short-horizon return distribution and then rebalance each period to the same constant weights. For the investors on which he focuses, the skewness induced by compounding is not relevant. Samuelson obtains these implications while assuming that successive returns are independently and identically distributed (iid) and that investors maximize the expectation of a power utility function. Investors with skewness preference that differs as compared to that implied by power utility will generally not be indifferent to the skewness induced by compounding.[5] It is also important to note that Samuelson's prescription cannot apply all to investors. If some investors sell (buy) stocks that have appreciated (depreciated) in relative terms in order to return to constant portfolio weights, then other investors necessarily trade in the opposite direction. These investors, as well as the market as a whole, will be subject to more return skewness over multiple periods as compared to the rebalancing investors they focus on and hence will indeed be concerned with the skewness implicit in the multi-period investing.

The results obtained here are also relevant to the debate regarding the selection of relatively narrow portfolios vs. the passive holding of broadly

diversified portfolios. The results here confirm in a global sample that the wealth created by stock market investing is largely attributable to extreme positive outcomes of a relatively few stocks. We report that the modal long-horizon return to individual stocks involves a complete or near-complete loss of capital. However, the prospect of some −100% returns may not be as daunting in light of the documented frequency with which longer-term returns to individual stocks exceed benchmarks such as 1,000%.[6] That is, the results here highlight the magnitude of the potential gains to a long-horizon investor with a comparative advantage in identifying *ex ante* those stocks that will generate large long-run returns, even while they also illustrate how the odds of underperformance loom large for an investor who selects a narrow portfolio in the absence of such a comparative advantage. Of course, our study does not clarify which, if any, investors possess the requisite comparative advantage.

While the results reported here verify that positive skewness characterizes the distribution of compound global stock returns, we also compare the observed outcomes to a simple benchmark. In particular, we use simulation methods to estimate the degree of skewness (and related statistics) implied by the widely used lognormal distribution, when assuming iid monthly returns that are calibrated to the observed mean and variance of actual monthly returns as well as to observed distribution of stock lives. The simulation actually implies *more* skewness and *lower* rates of outperformance relative to benchmarks as compared to outcomes observed in the actual data. An intriguing question for future research is to assess what features of the actual data lead to less skewness in the empirical distribution of compound long-run returns as compared to that implied by this simple benchmark.

Sample and Measures Employed

Data Sources and Sample Overview. We identify securities as common stocks using methods described in detail in the Internet Data Appendix. The data required to compute monthly returns, market capitalization, and trading volume for U.S. stocks are obtained from CRSP and for non-U.S. stocks from the Compustat Global and Compustat North America databases.[7] Our study includes 42 markets. These are the markets with the largest average GDP during the sample interval, except that we exclude Iran (because return data are available for only 10 years) and include Singapore and New Zealand due to their relative economic prominence. Many common stocks are listed and traded in more than one market. To avoid double counting, we assign each common stock to a single market, as described more fully in the Internet Data Appendix.

Our sample includes 26 developed and 16 developing economies. In addition, we compute outcomes for 239 firms that are traded in the United States as American Depository Receipts (ADRs), but are not listed on any other exchange during the sample period.[8] We categorize these "homeless" ADRs as a separate market and hence refer to outcomes across 43 markets. The markets included in the sample represent approximately 88% of global stock market capitalization as of the end of 2020.

We begin our study as of January 1990 (as Compustat coverage is thin prior to this date) or at the first date when monthly return data for each stock are available and end the study as of December 2020. The CRSP and Compustat data pertain to publicly listed stocks. Our study should therefore be viewed as summarizing return outcomes and wealth creation in the publicly accessible stock markets. We do not capture the pre-IPO experience of private (e.g., venture capital, private equity, and founder) investors or returns from the IPO price to the first end-of-month price contained in the databases. We exclude stocks listed on minor stock exchanges, where an exchange is deemed to be minor if its share of own-market trading volume (measured in U.S. dollars) during the sample period is less than 2%.

In our view, a meaningful comparison of investment outcomes across stocks that are traded in multiple markets requires that all results be measured in a common currency. The alternative of comparing local currency returns across currencies could be misleading, particularly if inflation rates differ across markets. Further, the reliance on local currency returns necessitates comparisons to benchmark interest rates denominated in the same currency, which can vary substantively across markets in terms of default risk. To ensure a common yardstick for firms traded in multiple currencies, returns, market capitalizations, and trading volumes for non-U.S. stocks are all converted to U.S. dollars. In untabulated results, we verify that our conclusions are uniformly unaltered when outcomes are measured in British pounds instead.

Stocks are tracked through time based on the CRSP PERMNO variable (for U.S. stocks) and the Compustat GVKEY and IID variables (for non-U.S.