A Portfolio Perspective on *Fortune* Magazine's "World's Most Admired" Companies

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We examine Fortune Magazine's "World's Most Admired Companies" for information content among the highest-ranked 50 companies from 2006 through 2018. We use one-year out-of-sample tests across the top three, top five, top ten, top 25, and all 50 stocks in the search for information content. We also examine an application of Modern Portfolio Theory (MPT). With the exception of the MPT application, we are unable to find convincing statistical evidence of information content, especially when considering taxes, brokerage fees, and asset-under-management charges, results that stand in contrast to those in the literature.

Keywords: Most Admired Companies, Rates of Return, Risks, Sharpe Ratios, Wilcoxon Signed-Rank Test

INTRODUCTION

Across financial market research, investment textbooks, investment advisory newsletters, print media, and televised media, the search for an effective stock selection strategy – one that systematically produces superior return-to-risk performance – is ongoing. Efficient markets advocates, with good reason given a large body of evidence supporting the difficulty of outperforming a broad-based passive strategy, assert that such searches are, on average, futile. Fama (1970), in a seminal and well-known paper, set the stage for what has led to an enormous body of literature on the subject, with the weight of the evidence supporting market efficiency. In another widely-cited piece, Fama (1998) takes issue with research on studies that reveal short-term market inefficiencies, stating that the gains either disappear quickly or are tainted by modeling issues. Supporting Fama's position, Malkiel (1995), in a study on mutual funds, corrects for survivorship bias and provides evidence supporting market efficiency. Malkiel (2003) also gives an overview of market efficient arguments, acknowledging market imperfections, but asserting that markets are more efficient than the critics claim. This is certainly the theme in his well-read *A Random Walk Down Wall Street* (Malkiel, 2015).

In line with semi-strong market efficiency, there is a large sample of empirical studies suggesting the difficulty of systematically outperforming a passive buy-and-hold strategy. Metrick (1999), for example, searches for information content in a large sample of investment advisory newsletters, but he is unable to find evidence of it. Jaffe and Mahoney (1999) draw the same conclusion regarding the *Hulbert Investment Digest*, long known as a source for ranking the efficacy of investment newsletters. Desai and Jain (1995) have significant difficulty uncovering evidence of it in a time series study of *Barron's* Annual Roundtable recommendations of "superstar" managers. The same holds for the study by Bauman et al. (2002). They question the profitability of following *Business Week's* small stock recommendations, uncovering even negative returns once the list is published. As well, Barber et al. (2001) conclude that active investors should not put much weight on the recommendations of analysts as part of a market-beating strategy. Weigand, Belden, and Zwirlein (2004) find that selecting the top holdings from Morningstar's highly-rated large-cap mutual funds is unlikely to produce market-beating performance.

Regarding televised media, Engelberg et al. (2012) show that CNBC's "Mad Money" announcements lead to large overnight returns that reverse themselves in the coming months, which is consistent with the general observations of Fama (1998). Keasler and McNeil (2010), in an event study, find no significant, long-term, market-beating impact from watching "Mad Money," especially during the "Lightening Round." This finding aligns with that of a study by Pari (1987) about stock recommendations announced on the (late) Louis Rukeyser's "Wall $treet Week." He finds a very small profitable window around the airing of the show and concludes that the show should be viewed only for educational purposes.

In print media, although Choi (2000) discovers a potentially profitable effect from *Value Line*'s recommendations, he concludes that transaction costs significantly reduce that effect. Regarding books, both Clayman (1987) and Ghosh et al. (1989) effectively challenge the "excellence" criteria of Peters and Waterman (1982) in their widely-read book on management consulting.

Combined, the cited studies strongly support market efficiency. However, not only is the search for profitable investment strategies alive and well, but there is also substantive evidence of inefficiency. With respect to weak-form inefficiency, Aronson and Masters (2006) examine the worthiness of the "sell in May and go away" strategy; that is, switching from holding stocks from November 1 to April 30 to holding U.S. Treasury bills for the next six months, as first published in *The Stock Trader's Almanac* (Hirsch, 1986; 2016), a book on technical trading methods. They conclude that the switching strategy promises market-beating returns. They find that the high-return months yield an annual return of 16.3% versus 3.9% for the low-return months. Along this line, Bauman and Jacobsen (2002), Andrade (2013), and Borowski (2015) each find strong international evidence of the "sell in May" strategy. Additionally, Poterba and Summers (1988) find compelling evidence regarding the mean reversion of stock prices, which implies that stocks can sometimes get on predictable "one-way streets" before reverting to their averages, as Malkiel (2015) also acknowledges. Beyond security price patterns, Grinblatt and Moskowitz (2004) provide evidence of a profitable trading rule even after controlling for market microstructure effects, risk premia variations, and data-snooping biases.

As evidence that the semi-strong form of the hypothesis may be overstated, Brown et al. (2013) demonstrate the efficacy of following newsletters, in contrast to previous findings. Dougal et al. (2012) show that print media by well-respected journalists can move stock prices. Jones and Wermers (2011) find that while superior-performing portfolio managers, by definition, are a minority, investors can use public information to identify and profit from their holdings. Anderson and Smith (2006) and Smith (2016) uncover significant evidence of information content embedded in *Fortune Magazine's* "America's Most Admired" companies. With respect to selection strategies, Prather et al. (2009) demonstrate that accounting changes in stock options trigger price reactions that do not align with cash flows, leading to mispricing opportunities. Prentis (2011) demonstrates a profitable three-step trading method that removes idiosyncratic risks.

Earlier studies also suggest the possibility of realizing market-beating returns. Ahmed and Nanda (2001) demonstrate that "growth at a reasonable price," or stocks with a low P/E ratio and strong EPS growth, are capable of producing superior gains. With respect to televised media, Ferriera and Smith (2003) show that "Wall $treet Week" had information content for up to eight quarters following the

televised interviews. Regarding print media, Adranji, Chatrath, and Shank (2002) discover that the risk-adjusted performances of the *Wall Street Journal* "Dartboard" portfolios of stocks chosen by the analysis consistently outperformed those of the randomly selected stocks, the Dow Jones Industrial Average, and the S&P 500. Porras and Griswold (2000), using multifactor modeling, assert that information content is contained in the stocks that *Value Line* forecasts will underperform, and Mulugetta, Movossaghi, and Zaman (2002) show that changes in Standard & Poor's stock ratings can lead to abnormal returns.

Naturally, for the hypotheses to hold, investors must have fully rational attributes, which the literature on behavioral finance questions, as suggested by mispricing and the slowness of arbitrageurs to close them, as expressed by Schleifer and Vishny (1997). And the awarding of the Nobel Prize in Economics to behavioral economist Richard Thaler is testimony to the strength of this observation. Without fully rational behavior, markets will not always meet the efficient markets paradigm, creating opportunities for abnormal returns. For example, and at a broad level, if markets priced securities perfectly, which implies that investors are fully rational, publications such as *The Wall Street Journal*, Value Line's *Investment Survey*, Morningstar, Zack's Investment Research, and S&P's Capital IQ STARS should wither (and such may be occurring with "destructive technology" and the shrinking of print media).

These opposing groups, motivate the current paper. It is about *Fortune*'s "World's Most Admired" companies, an annual list of public companies that are selected based on their reputation, as judged by analysts and company executives. *Fortune* works with consulting firm the Korn Ferry Hay Group. The selection begins with companies that register at least $10 billion in revenues.

The list with additional selection criteria, are chosen as follows:

> *We then winnowed the assortment to the highest-revenue companies in each industry, a total of 680 in 28 countries. The top-rated companies were picked from that pool of 680; the executives who voted work at the companies in that group. To determine the best-regarded companies in 51 industries, Korn Ferry Hay Group asked executives, directors, and analysts to rate enterprises in their own industry on nine criteria, from investment value and quality of management and products to social responsibility and ability to attract talent. A company's score must rank in the top half of its industry survey to be listed. Because of the weak distribution of responses, only the aggregate industry scores and ranks are published in Cable and Satellite Providers; Construction and Farm Machinery; and Wholesalers: Diversified. Results were not published in the following categories due to insufficient response rates: Computers, U.S. Energy, Mining/Crude Oil Production, Petroleum Refining, and Pipelines.*
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> *To select our 50 All-Stars, Korn Ferry Hay Group asked 3,800 executives, directors, and securities analysts who had responded to the industry surveys to select the 10 companies they admired most. They chose from a list made up of the companies that ranked in the top 25% in last year's surveys, plus those that finished in the top 20% of their industry. Anyone could vote for any company in any industry. The difference in the voting rolls explains why some results can seem at odds with each other. For example, Samsung Electronics fell off the All-Star list as its combustible phone batteries singed its sales and stature, but Samsung moved up one notch within the electronics category when votes from only those in that industry were counted.*

Of particular interest in this study is the set of compelling results that Anderson and Smith (2006) and Smith (2016) uncover. Each shows that the magazine's top ten "Most Admired" companies have consistently shown superior returns, concluding that the results of using this public information are counter to semi-strong form efficiency, findings at odds with the conclusions of Fama (1998).

In this study – the first of its kind to our knowledge – we use a one-year buy-and-hold strategy to determine if information content, or market-beating information, exists in the top 50 ranked stocks and four sub-groups of them. As part of our effort, we cite studies by Barber and Odean (2000) Barber and

Odean (2004) in light of taxes, brokerage fees, and asset-under- management (AUM) charges. They show that short-term trading profits are unlikely to be market-beating, especially because investors tend to take their profits too early, forgoing an opportunity to avail themselves of the preferential tax treatment in the United States given to realized capital gains. Accordingly, we test the following hypothesis:

> *Stock selections from Fortune's "World's Most Admired Companies" do not contain information content that will lead to market-beating performance.*

To test the hypothesis, we follow Smith (2016) in examining turn-of-the century data from 2006 through 2018, the period in which the top 50 "Most Admired" companies are listed continuously, with 2006 being the first year it began. Although the sample is small, it aligns with that of Smith (2016), who uses data from 2005 to 2015. Nonetheless, we must be cautious when making generalizations. Unlike Smith (2016), who restricts his study to the top ten companies, we search for information content across five categories of the top 50 firms that *Fortune* highlights: the top three-ranked firms, the top five-ranked firms, the top ten-ranked firms, the top 25-ranked firms, and all 50 firms. We also investigate an application of Modern Portfolio Theory to all 50 stocks.

We test the hypothesis in two ways: one prior to taxes, brokerage fees, and asset-under-management (AUM) charges and one net of these expenses. Although these expenses are insignificant for investors who employ discount brokerage service firms and who manage their own portfolios, many investors choose financial and investment advisors to manage their portfolios, which can be a relatively expensive undertaking. As Neal (2015) shows, combined costs can reportedly exceed 2%, with Merrill Lynch, Ameriprise, Wells Fargo, Morgan Stanley, for example, charging the highest fees. Moreover, Riley and Schild (2018) point out that the demand for full-service investment advisory services is robust, and will continue to be so as generations search for investment and financial planning advice. This signals that many individual investors are subject to significant brokerage and management fees, especially at full service broker-dealers.

DATA AND METHOD

The data come from CRSP. The only area in which missing data occurs is with private firms, such as USAA and St. Jude Medical. This is not a major problem, however, because these firms make up less than 1% of all the firms under study. Because the "Most Admired" companies, in all cases, are mature with large capitalizations, we do not encounter data problems with mergers and acquisitions, providing a stable set of companies, a number of which make the list in consecutive years, such as Apple, Amazon, Microsoft, Berkshire Hathaway, and Home Depot.

It would be insightful to see if information content is contained in the first three and the first five stocks, in addition to the top ten, as Smith (2016) finds. Moreover, as pointed out by Campbell et. al (2001) and Domian et. {Citation}al (2007), while ten stocks might be the start of a portfolio, they are insufficient for full diversification, which is an additional motivation to search for information content in the top 25 and top 50 stocks. The period incorporates the bear market of 2007-09 and the long-running bull market, which began late in the first quarter of 2009, permitting insight into the performance of the "Most Admired" companies in periods of significant cyclicality for stocks.

We use one-year, out-of-sample tests in the analysis; that is, the results are out-of-sample for that year. The publishing time of the "Most Admired" companies is late-February, early-March. Thus, the testing period for 2018, for example, is from March 2018 through February 2019. Smith (2016) shows that reaction to the publication of the list is not rapid. He finds that the results still hold even if investors wait for up to two weeks after the publication date before investing.

THE MODEL

To generate performance metrics across we use conventional mean-variance analysis, which includes the estimation of returns and risks, where risk will be measured by standard deviation and beta. Regarding beta, for example, we use the Fama-French three-factor model to address the issue at hand, as follows:

$$(R_{i,t} - R_f) = \alpha_i + \beta_{i,1}(R_{m,t} - R_f) + \beta_{i,2}SMB_i + \beta_{i,3}HML_i + e_{i,t} \quad (1)$$

where: $(R_{i,t} - R_f)$ = the return on security i in excess of the risk-free rate R_f;
$(R_{m,t} - R_f)$ = the return on the market in excess of the risk-free rate R_f;
SMB_i = "Small capitalization minus big capitalization;"
HML_i = "High book-market ratio minus low" book-market ratio;
$\beta_{i,1,2,3}$ = index of risk per each variable
α_i = security i's excess return that is independent of each of the three variables;
$e_{i,t}$ = an idiosyncratic term

TAX CONSIDERATIONS and INVESTMENT MANAGEMENT EXPENSES

Investors are naturally circumspect of the impact of taxes on their returns, as amply demonstrated by Barber and Odean (2004), who use detailed brokerage data to gain insight into the sensitivity of investor behavior with respect to taxes. They find, however, that investor trading activities undercut their after-tax returns, leading to sub-par after-tax performance. By realizing gains faster than losses, it seems investors fail to capitalize fully on tax avoidance strategies in their quest to earn high returns, often failing to defer the realization of capital gains. This finding further motivates our study. We assess after-tax rates of return as well as after-expense rates of return, whether short-term or long-term, given the tax structure used in the United States during the period of study.

For example, if realized and positive returns are not in a tax-sheltered account, then the returns drop by a significant amount, perhaps as much as 40% depending on an investor's tax bracket. And when considering the increasingly skewed income distribution toward wealthy individuals – those most able and likely to invest in equities – tax rates in the range of 35%-45% are quite realistic, especially when considering state and local taxes.

In addition to the effect of taxes, we incorporate the effect of brokerage fees and assets-under-management (AUM) charges on the returns across the subgroups. We first assume that the capital gains are long-term, and therefore impose a (conservative) marginal tax rate of 15% at the federal level and 5% at the state-and-local level, tax rates that apply during our period of study. To this we add a portfolio management and brokerage expenses totaling 1.5%. Thus, the tax-expense impacts are 21.5%. If the capital gains are short-term, the impact is 34.5%, or 28% plus 5% plus 1.5%. For ease of assessment, we ignore the taxation of dividends, since they are not a significant component of the returns for most of the companies. Because a Medicare surtax of 3.8% was levied as part of the Patient Protection and Affordable Care Act of 2010 when Modified Adjusted Gross Income is over $200,000 for single filers and $250,000 for married couples filing jointly, we incorporate this additional effect into the after-tax, after-expense return. This raises the long-term capital gains rate estimate from 21.5% to 25.3% and the short-term rate estimate from 34.5% to 38.3%, beginning in 2013.

RESULTS

Table 1 provides the summary statistics across the respective geometric mean returns, maximums, minimums, standard deviations, betas, and Sharpe (1966) ratios prior to the imposition of the taxes and brokerage fees. The results point to the top five and top ten holdings as having potentially the best value, given the respective geometric mean returns of 11.71% and 10.38%, the respective standard deviations of 16.90% and 13.49%, which measure the portfolio risks, and the respective betas of 0.88 and 0.89. For

comparison, following Jones and Lundstrum (2009), we use the Vanguard 500 Index (VFINX) as the benchmark, because individual investors can purchase it. They point out that the S&P 500, for example, is not practical for individual investors to replicate and hold in its pure form.

The VFINX registers a mean return of 8.60% and a standard deviation of 12.76%, suggesting the possibility of information content in the top five and top ten stocks, which aligns with the findings of Smith (2016). It may also be the case that the top five stocks are the primary drivers in the performance of the top ten stocks, as they display the highest mean return at 11.71%. The standard deviation of 16.90%, however, tempers this observation.

The size of the betas across the groups is less than 1. The top five, top ten, top 25, and top 50 groups register betas between 0.80 and 0.90, signaling a defensiveness within each of the portfolio groups. At 0.96, the top three stocks register the highest beta.

The emphasis on the top ten stocks follows the approach of Smith (2016). He examines the returns for the top ten stocks from 2005 through 2015, a period within the one covering this study. He concludes there is evidence of information content, as the mean-standard deviation results here suggest. That said, the average of the Sharpe ratios across the 13 years is telling, with the VFINX having the highest at 1.06, compared to 0.92 for the top five stocks and the 0.90 for the top ten portfolio. Thus, additional testing is in order before drawing firm conclusions.

TABLE 1
SUMMARY STATISTICS ACROSS ALL YEARS AND ALL PORTFOLIOS (2006-2018)

	Top 3	**Top 5**	**Top 10**	**Top 25**	**All 50**	**VFINX**
Mean	7.64%	11.71%	10.38%	7.79%	7.39%	8.61%
Maximum	38.90	32.77	53.58	58.55	71.47	53.65
Minimum	-47.99	-43.00	-39.34	-40.63	-56.02	-43.33
Std. Dev.	20.15	16.9	13.49	12.21	13.04	12.76
Beta	0.96	0.88	0.89	0.88	0.85	1.00
Sharpe	0.49	0.92	0.90	0.78	0.86	1.06

Table 2 presents the annual rates of return for each of the groups, including those for the VFINX. Expectedly, 2008 displays large double-digit negative returns, the lowest over the 13 years, results owing to the financial crisis of 2007-09, and 2013 shows the highest returns, a reflection of the bull market from 2009 through 2018. In terms of ranges, the top 50 stocks show the greatest, 71.47% compared to -56.02%, or 127.49 percentage points. The top ten stocks, as also shown in Table 1, register a high of 53.58% and a low of -39.34%. By comparison, the VFINX records a high of nearly 53.65% and a low of -43.33%. Moreover, in terms of returns, the top ten portfolios outperforms the VFINX in only six of the 13 years, signaling that information content may not hold as strongly as the results in Table 1 suggest. By comparison, the top five stocks outperform the VFINX in ten of the 13 years. This is additional evidence that they are largely responsible for the performance of the top ten portfolios.

TABLE 2
PORTFOLIO RATES OF RETURN PER YEAR (2006-2018)

Year	Top 3	Top 5	Top 10	Top 25	Top 50	VFINX
2006	13.22%	10.77%	10.12%	9.39%	11.71%	11.81%
2007	-6.07	6.78	3.18	1.91	0.33	-3.68
2008	-47.99	-43.00	-39.34	-40.63	-56.02	-43.33
2009	15.63	25.77	53.58	58.55	71.47	53.65
2010	33.98	30.15	19.94	18.51	21.41	22.40
2011	15.31	5.57	9.95	8.75	7.45	4.95
2012	19.21	4.32	13.06	11.76	13.64	13.29
2013	38.9	28.63	30.84	21.85	22.67	25.16
2014	4.06	16.89	11.81	11.85	8.40	15.34
2015	-8.37	26.04	0.29	-7.04	0.11	-6.33
2016	14.52	32.77	23.34	8.00	7.17	24.83
2017	35.47	23.51	14.48	19.01	31.63	16.93
2018	7.04	7.67	6.01	0.59	-0.39	4.51

In table 3 we test for the significance of the results, given the small sample size, using the Wilcoxon Signed-Rank Test, a distribution-free, non-parametric statistic that produces powerful results when comparing two samples (Higgins and Peterson, 1998; Anderson and Loviscek, 2005; and Derrick and White, 2017). In particular, it is well equipped to deal with outliers, such as the results from the financial crisis of 2007-09. At the 5% level of significance, we have the following Z scores and p-values:

TABLE 3
Z-SCORES AND P-VALUES

	Top 3	Top 5	Top 10	Top 25	Top 50
Z-score	-0.45	-1.43	-0.94	-0.45	-0.04
P-value	0.65	0.15	0.35	0.65	0.98

On the basis of these results, none of the portfolios, in terms of returns, outperforms the VFINX at the 5% level. The closest is the top five stocks, registering a Z-value of -1.43. In particular, the portfolio of the top ten stocks has a Z-value of -0.94, which is significant at the level of 0.35, indicating a lack of information content. Based on the means of the Sharpe ratios in Table 1, it appears that the annual fluctuations in the returns on each of the portfolios undermine the performances.

To set up the Sharpe portfolio performance metric, Table 4 provides the annualized standard deviations of each of the five portfolios and the VFINX for each of the years. Due to the financial crisis and the recovery from it, 2008 and 2009 show the largest standard deviations, or measures of portfolio risks. The three years 2015-2017 register the lowest risks, a period in which markets were remarkably stable, registering a VIX in September 2017, for example, of 9.51, well below the average of 19.21 for the period 2006-2018.

TABLE 4
ANNUALIZED PORTFOLIO STANDARD DEVIATIONS
AS MEASURES OF PORTFOLIO RISK (2006-2018)

Year	Top 3	Top 5	Top 10	Top 25	All 50	VFINX
2006	11.43%	8.69%	8.60%	7.03%	6.68%	6.47%
2007	8.12	14.51	11.87	9.21	9.35	11.62
2008	26.67	21.00	19.62	20.74	25.3	22.29
2009	47.19	33.64	24.65	19.30	19.46	14.18
2010	18.09	19.36	15.80	16.04	17.05	18.56
2011	19.54	15.27	11.01	12.71	14.13	17.46
2012	18.25	15.74	9.76	8.89	10.02	10.17
2013	18.16	14.81	13.45	11.31	10.11	10.20
2014	24.95	16.89	11.81	11.85	8.40	8.55
2015	12.05	16.37	12.18	12.37	1.20	13.51
2016	17.37	9.76	9.66	8.49	11.03	7.89
2017	15.23	9.90	7.55	7.01	12.11	8.17
2018	24.85	17.22	19.45	13.84	13.95	16.84

Table 5 displays the Sharpe portfolio performance metrics, using as the risk-free return the annual three-month U.S. Treasury Bill return. As per Table 2, the fluctuations are significant across all groups. The best years for the "Most Admired" companies versus the VFINX are in 2007 and 2017, in which four of the five groups register superior performance, and in 2011, in which all five groups outperform the VFINX. The worst years relative to the VFINX are 2006, 2014, and 2016, in which only one portfolio group outperforms it.

TABLE 5
SHARPE PORTFOLIO PERFORMANCE METRICS (2006-2018)

Year	Top 3	Top 5	Top 10	Top 25	Top 50	VFINX
2006	0.75	0.70	0.63	0.67	1.05	1.10
2007	-1.32	0.15	-0.12	-0.30	-0.46	-0.72
2008	-1.86	-2.12	-2.09	-2.04	-2.28	-2.02
2009	0.33	0.76	2.17	3.03	3.67	3.77
2010	1.87	1.55	1.25	1.15	1.25	1.20
2011	0.78	0.36	0.90	0.69	0.53	0.28
2012	1.05	0.27	1.33	1.32	1.36	1.30
2013	2.14	1.93	2.29	1.93	2.24	2.46
2014	0.16	1.00	1.00	1.00	0.99	1.79
2015	-0.71	1.58	0.01	-0.59	-0.01	-0.48
2016	0.81	3.31	2.36	0.88	0.60	3.08
2017	2.24	2.23	1.73	2.51	2.50	1.90
2018	0.19	0.31	0.19	-0.13	-0.20	0.13

TABLE 6
Z-SCORES and P-VALUES

	Top 3	Top 5	Top 10	Top 25	Top 50
Z-score	**-1.08**	**-0.32**	**-0.88**	**-1.19**	**-0.45**
P-values	**0.29**	**0.76**	**0.38**	**0.23**	**0.65**

As is the case with the comparative statistics on the rates of return, we find that none of the Z values is statistically significant at the 5% level. Although the sample size is small, it raises doubts about the efficacy of using the "Most Admired" companies as a source for market-beating performance.

As an additional test, Table 7 presents the results from Jensen's Alpha (Jensen, 1968), another measure of portfolio performance.

TABLE 7
JENSEN'S ALPHA

	Top 3	Top 5	Top 10	Top 25	Top 50
Jensen	11.41	7.35	4.69	2.58	0.76

Although none of the results is statistically significant at the 5% level, the top three, the top five, and the top ten portfolios register significant results at the 10% level. When combined with the results from the other tables, especially in Table 1, there may be some information content within these three groups, but it is not apparent enough to warrant rejection of the hypothesis under test; namely, that the stock selections from *Fortune*'s "World's Most Admired" companies do not contain significant information content.

AN APPLICATION of MODERN PORTFOLIO THEORY

As one more attempt to uncover information content, we turn to an application of Modern Portfolio Theory, following in the spirit of Fabozzi, Gupta and Markowitz (2002), who show the range of applications for MPT. As such, we use the method illustrated in Elton, Gruber and Padberg (1976). Applications of this method are also found in Burgess and Bey (1988), Nawrocki (1996), and Loviscek (2015). The method consists of three steps. First, equation (1) is used to obtain each stock's beta and idiosyncratic risk. Second, there is the application of a cut-off formula based on the ranking of the "excess return to beta" for each stock from the highest to the lowest, where "excess" means the average of each stock's monthly returns minus the respective three-month Treasury bill returns. The cut-off values determine which stocks comprise the portfolio. Third, the weight for each stock is determined, taking into consideration both market and idiosyncratic risks.

The condensed results for the MPT portfolios are shown in Table 8, along with comparative results for the Vanguard 500 Index, as taken from Table 1.

TABLE 8
APPLYING MODERN PORTFOLIO THEORY WITH A ONE-YEAR HOLDING PERIOD RESULTS (2006 – 2018)

	Mean	Max	Min	Standard Deviation	Beta	Sharpe
MPT	17.28%	65.73%	-36.09%	12.92%	0.76	1.72
VFINX	8.61	53.55	-43.33	12.76	1	1.06

The MPT mean is more than double that of VFINX, and with only a slight increase in the standard deviation, 12.92% versus 12.76%. The average portfolio beta is 0.76, much lower than the 1.00 for the VFINX, and the average Sharpe performance metric is 1.72 versus 1.06. At this level of analysis, these results point to the possibility of information content. As a test by using the Wilcoxson Signed-Rank Test, we show the following:

TABLE 9
Z-SCORE AND P-VALUE

	MPT
Z-score	-1.92
P-value	0.02

The result is statistically significant at the 5% level, signaling the existence of information content. The difference is economically significant, as well, with $10,000 invested in the MPT approach yielding $80,301 from 2006 through 2013 compared to $29,262 in the case of the VFINX.

TAXES, BROKERAGE CHARGES, and AUM FEES

The impacts of taxes, brokerage fees, and AUM charges on the performance of the portfolios can only reduce rates of returns. This makes the task of outperforming the VFINX, and other broad market indices, almost impossible without a tax-sheltered account, when viewed in light of the application of the combined long-term capital gains rate of 15%, the tax rate of 5% at the state-and-local level, and the 1.5% brokerage-AUM expenses. "After-tax-fee 1" refers to the 15% capital gains tax rate with additional taxes and fees totaling 21.5%. "After-tax-fee 2" refers to the short-term capital gains rate of 28% with additional taxes and fees totaling 34.5%. "After-tax-fee 3" adds the Medicare surcharge of 3.8%. Evidence of these combined impacts, as well as the effects of short-term capital gains, brokerage fees, and the AUM charges, are in Table 10.

TABLE 10
IMPACT OF TAXES AND EXPENSES ON RATES OF RETURN (2006 – 2018)

	Top 3	Top 5	Top 10	Top 25	Top 50	MPT	VFINX
Mean	7.64%	11.71%	10.38%	7.79%	7.39%	17.28%	8.61%
After-tax-fee 1	6.00	9.19	8.15	6.12	5.8	13.56	8.61
After-tax-fee 2	5.00	7.67	6.8	5.1	4.84	11.32	8.61
After-tax-fee 3	4.71	7.23	6.4	4.81	4.56	10.66	8.61

Only the MPT portfolios outperform the VFINX on a return basis in all three scenarios. The top five stocks outperform in the "After-tax-fee 1" case but not in the other two. This is the only instance of any of the five combinations of the ranked stocks displaying returns exceeding those of the VFINX. The top 10 stocks, which have been the focus in previous research, underperform by 46 basis points. These comparisons are based on the VFINX being held without the realization of capital gains, a defensible position. If individual investors use discount brokerage services, the expenses are minimal, but the taxes are not. The only tax-reduction effect would come from the "Most Admired" companies that are listed in consecutive years, because they could be held until they are removed from the "Most Admired" list.

Moreover, many investors continue to use full-service financial and investment advisors at major brokerage houses, and when these expenses are combined with the tax rates on realized capital gains, any market-beating performance at the gross level is very likely reduced to underperformance at the net level relative to a passive buy-and-hold approach that relies on a broad market index. A move to short-term gains and therefore higher tax brackets, as shown in the next two categories, further reduces the returns. As a result, and expectedly, none of the Wilcoxson signed-rank *Z* scores for the ranked stocks is statistically significant at the 5% level under any of these scenarios. There is statistical significance at the 10% level for the MPT portfolios for the "After-tax-fee 1" scenario but not for the other two. All told, the evidence and observations in this study suggest that the presence of market-beating performance in *Fortune*'s "Most Admired" companies is not significant enough to outperform a broad market index on a

net basis in the absence of a tax-sheltered account. Thus, the results in this study align with the literature supporting semi-strong form efficiency.

CONCLUSION

This study tests for the existence of information content in *Fortune*'s "World's Most Admired" companies. We use the top 50 ranked "Most Admired" companies and test four sub-groups in addition to the top 50: the top three, the top five, the top ten, and the top 25. Using a series of out-of-sample tests from 2006 through 2018, we are unable to find convincing significant and statistical evidence of such performance with respect to a buy-and-hold strategy based on the passively-managed Vanguard 500 Index. As a result, in contrast to previous research, we are unable to reject the null hypothesis of insignificant information content in *Fortune* Magazine's "Most Admired" companies. MPT Portfolios of the 50 firms display evidence of information content on a gross basis; that is, prior to the imposition of taxes, brokerage fees, and asset-under-management charges, but much less so on a net basis.

For investors who do not apply MPT, the top five stocks and the top ten stocks appear to be the best place to begin based on their rates of return relative to those on the Vanguard 500 Index. This is consistent with the existing literature. That said, on the basis of the findings in this study, these investors need to be especially circumspect of tax considerations, brokerage fees, and asset management charges if they hope to outperform systematically a broad market index by using *Fortune* Magazine's "World's Most Admired Companies."

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