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*Evaluating Morningstar Wide Moat Stocks through the Business Cycle*

Zachary Bishkin; Mentor Joshua Spizman

*Abstract:*

The evaluation of stock selections by portfolio managers is a topic commonly addressed by academics in finance. In particular, there is great interest to find portfolio managers that consistently outperform the market. In this article, we evaluate the market returns of Morningstar's "StockInvestor" Wide Moat portfolios: The Tortoise and the Hare. The Wide Moat portfolio stocks are companies that Morningstar analysts identify as having a sustainable advantage estimated to last at least 20 years. Comprised of these Wide Moat Stocks, the Tortoise portfolio is comprised of slow and steady growth stocks while the Hare portfolio is comprised of stocks with faster, but less steady growth. While portfolio returns are typically compared to the overall market index, this basic comparison ignores statistical factors in stocks that have been shown to produce above-average returns. This study evaluates Morningstar's portfolios to determine if Morningstar's portfolio managers select stocks that outperform through the business cycle, or if the returns are explained by the Fama-French 3-factor model. In this study, we analyze both portfolios from 2007 to 2012. In addition to looking at the entire period performance, this study also isolates the recessionary period from 2007 to 2009 to see if the Wide Moat portfolios outperform in a recession. Furthermore, in order to investigate what other factors may be underlying the identification and selection of wide moat stocks, an analysis is conducted to determine how industry competitiveness and concentration is reflected in the stock selection of Morningstar's portfolio managers.

### ***Background***

The goal of a successful portfolio manager is to create a portfolio that provides higher returns than a market index net of management fees. There are many schools of thought for how one should pick stocks, and an even greater number of portfolio managers. Famed economist Burton Malkiel (1999) argues that it is best to forgo portfolio managers altogether and instead invest in market indices. Malkiel's (2003) favoring of market index investing comes from his random walk hypothesis, which says that, because of market efficiency, stock movement cannot be predicted reliably. Because of the random walk hypothesis, it would follow that portfolio managers who beat the market are either capitalizing on luck or taking on risky investments (Malkiel, 2003). Despite Malkiel's random walk hypothesis, there are still a few investing strategies and portfolio managers whose gains have beaten the market on a regular basis. One such investment strategy is that of Morningstar's wide moat stock portfolios, found in their "StockInvestor" publication. While the S&P 500 index has had annual returns that average 6% over the past 10 Years, Morningstar's Wide Moat portfolios, The Tortoise and the Hare, have averaged 9.4% annual returns collectively (Cofina). Even when one takes into account the management fees that Morningstar assesses their clients of 0.55% to 1.55%, depending on level of service, it would appear on the surface that the Tortoise and the Hare might have something to offer.

Found inside the Morningstar StockInvestor publication, the two portfolios, the Tortoise and the Hare utilize slightly different strategies within the wide moat framework. While the Tortoise portfolio looks mainly at companies that are lower risk and more value focused, the Hare takes on positions that have higher growth potentials, but accepts higher risk to achieve that. Despite the slight difference in trading strategies, there is only a 0.1% difference between

the two portfolios in the annualized returns over the past ten years, and both have outperformed the S&P 500 index by 3% annually according to Morningstar (Cofina). Considering the wealth of academic research questioning portfolio managers' ability to consistently pick winning stocks, one wonders if Wide Moat Stocks possess special characteristics, or if their returns can be explained by other statistical factors that their portfolios possess.

This question has actually been answered in part by Kenny (2013), finding that the portfolios did not generate excess returns for the time period examined; however, they only examined whether Morningstar had been able to generate excess returns from May 2006 to April 2013. They did not break this time period up into smaller time frames to see if they had excess returns intermittently. This becomes an interesting question when one considers that the United states experienced a recession from December 2007 to June 2009 according to NBER (2010). Given that Wide Moat stocks are chosen based on Analysts' perceptions that they have competitive advantages that will sustain their business for at least 20 years, it would seem that these companies might fare well during a recession. Hence, one question this paper will seek to answer is if the Tortoise or the Hare generates excess returns during the recessionary period from December 2007 to June 2009.

Another way of interpreting the Wide Moat could be to see it as an indicator of a company's ability to compete in its industry. Morningstar might be choosing companies that are in competitive industries, but because of their "moat", have an increased ability to compete in those industries. Conversely, they might just be choosing companies in less competitive industries, meaning that the barriers to entry for the industry are high and that every company already in that industry enjoys some level of competitive advantage. This paper seeks to answer

if Morningstar's portfolio managers are just focusing on highly concentrated industries, or if they are selecting companies that are able to perform despite large competition.

### *Literature Review*

#### **Wide Moat Strategy:**

To understand if wide moat stocks possess special characteristics, it is important to understand how Morningstar defines wide moat stocks. The selection strategy behind Morningstar's Wide Moat portfolios is two pronged: Filtering then evaluating. First, the stocks are filtered from the overall market based off of their possession of an *economic moat*, which is as a firm's ability to earn consistent positive returns because of a competitive advantage that it possesses (Morningstar Investing Glossary). Morningstar lists five categories that satisfy this definition: 1) Network Effect: When the company's quality of service increases in value when more people use the product; 2) Intangible Assets: Legal assets that prevent competitors such as patents etc; 3) Cost Advantage: Firms that can earn a market rate margin while having prices below market; 4) Switching Costs: The cost of switching from this firm to another is more expensive than the product; 5) Efficient Scale: When a small market can be served by a small number of firms (Morningstar Investing Glossary). In addition to being in one of these five categories, Morningstar analysts must believe that that this moat will be sustainable for at least 20 years.

From these qualifications, Morningstar has identified about 140 stocks that meet these standards, adding and subtracting from the list on a regular basis. From this list, the stocks are evaluated based off of their degree of economic moat (wide or narrow) as well as how much of a

discount they are trading at relative to fair value, which Morningstar analysts have evaluated using discounted cash flows. Then Morningstar's portfolio managers purchase stocks that are sufficiently discounted and only sells those positions when a better buying opportunity arises (Cofina, "Welcome Letter").

### **Previous Analysis of Wide Moat Returns:**

A literature already exists investigating the returns of Morningstar's Wide Moat portfolios. Kenny (2013) looked at the Tortoise and Hare portfolios using a variety of measures to account for risk. They determined that, while the wide moat portfolios generated excess returns under the Treynor, Sortino and Sharpe ratios, the portfolios did not show excess returns using either the CAPM or the Fama-French factors. Considering that the CAPM and Fama-French factors are more comprehensive models to apply, it would appear that this investing strategy does not merit any special reverence. They were, however, able to create a portfolio that generated excess returns when the Tortoise and Hare were put evenly into a combined portfolio with 50-50 weighting in each portfolio.

There are also other factors to consider when looking at the Tortoise and the Hare portfolios. Ferreira and Smith (2012) found that the market responds after Morningstar releases their Tortoise and Hare trades. This is important to consider because it might explain some of their returns if excess returns were found.

### **Background of Fama-French Analysis:**

Additionally, it is useful to understand the background of the models used in this paper. This paper uses the Fama-French 3-factor model to evaluate stock selections. Although the traditional way to evaluate stock performance in the investment world has long been through comparison to market indices, there are several more advanced models that academics have

introduced to attempt to explain and evaluate the difference between market returns and portfolio returns. One of the most regarded models for this type of stock selection evaluation is the Fama-French 3 Factor Model. This model evaluates stock selections on the basis of  $\beta$  (Beta), Book to Market (BE/ME) and Size (ME). Fama and French (1992) detail their evaluation of these three factors, finding that there is an explanatory power when these factors are used in conjunction to explain average returns. They also find that  $\beta$  has no explanatory effect when it isn't coupled with size. Fama and French (1993, 1996) built on this research to establish their three factor model as a regression model. They then tested this model on various ranges of portfolios to confirm the validity of their model.

One important aspect to note is the general trends that have been found with these three factors. Fama and French (1995) find that stocks with low book to market (BE/ME) values have stronger returns on average. They also find that stocks with smaller market equities (ME) tend to provide higher returns than stocks with larger market equities.

### *Methods*

#### **Portfolio creation:**

First, the portfolios for Morningstar's Tortoise and Hare portfolios were created for both the time period from January 2006 to December 2012, as well as for a smaller time frame from December 2007 to June 2009 to isolate the recession. Thus, 4 portfolio models were created in total. Historical portfolio value and holding data was gathered from each *Stockinvestor* publication for the time period examined, as Morningstar does not have the holding data available for download. Although the Tortoise and the Hare have been in existence since 2001, they only provide access to their historical publications for 2006 to 2012 and then the most recent 12 months of publications.

For the portfolio value, the total value, including the cash holdings, is recorded for the monthly portfolio value. This is necessary in order to be comparable from period to period depending on portfolio additions and sales. The tickers for all holdings for each month are also recorded. Additionally, the Fama-French industry and SIC code data was pulled for all of these positions so that Herfindahl figures could be generated for each of the holdings at the time when they were added or sold. Subsequently, monthly return data was calculated at the portfolio level so that it could be used in the models used to evaluate the stock selections.

### **Fama-French 3-factor model analysis:**

Once the portfolio models were created, the data was uploaded to Portfolio Visualizer, which is an online tool that can run a variety of portfolio based regressions, including the Fama-French multi-factor models (Portfolio Visualizer). This service pulls factor data directly from Dr. French's website and pulls stock data directly from Morningstar's website. The actual returns for the portfolios were then compared to expected returns based on the factors. Portfolio visualizer uses the following formula to regress alpha and also determines loadings for each of the factors regarding their explanatory value for the returns.

The following formula is the Fama-French 3-factor model used by portfolio visualizer

$$R_{it} - R_{ft} = \alpha_i + \beta_{iM}(R_{Mt} - R_{ft}) + \beta_{iS}SMB_t + \beta_{iH}HML_t + \varepsilon_i$$

$R_{it} - R_{ft}$  Stands for the difference between portfolio returns and market returns.  $\alpha_i$  is the unexplained difference between expected return and actual.  $R_{Mt} - R_{ft}$  is the difference between the risk free rate of return and the actual rate of return. SMB refers to the size of the company and HML refers to the "book to market" value. The various  $\beta$  refer to the factor sensitivities of each of the three factors listed.

It is worthwhile noting that alpha can be interpreted in several ways. It can be seen as the

portfolio manager's stock selection ability or as the level of error in the model, meaning that the model doesn't have the capability to fully explain the returns. For the purposes of this paper, alpha is taken as the former rather than the latter.

This model was applied to all 4 of the portfolios and the results for loadings, significance, and alpha were all recorded.

### **Industry Competition:**

In order to determine the level of competition in the industry of each portfolio holding, Herfindahl-Hirschman Index(HHI) measures were derived for each holding both at the date of purchase and also the date of sale. The Herfindahl-Hirschman Index determines market concentration by taking all of the market competitors in a given industry and showing how much market share the largest market players hold. The equation for determining the figure is given below. "N" is the number of market competitors being examined in an industry, and "s" is each of those competitors' market shares. The sum is then expressed as a decimal from 0 to 1, 1 being the most concentrated and thus least competitive, as it means that one firm holds 100% of market share.

$$H = \sum_{i=1}^N s_i^2$$

Using this model, industry HHI figures were created for each of the portfolio holdings. Industry classification was assessed using two different classification systems, 1) the Standard Industrial Classification (SIC) system, which classifies companies by a 4 digit code as determined by the Federal Government, and 2) the Fama-French (FF) industry classifications, which identifies 48 different industries for companies based off of their SIC code. Compared to the Fama French Classifications, the SIC system has much smaller and specific industry classifications. In this study, 459 different SIC codes were in use during the time periods that are

analyzed.

An average was created for the overall market by determining the HHI figure for every company on the market in the CRSP and Compustat databases from 2001 to 2012, which was then aggregated to create an annual average for each year calendar year to determine a figure for overall market concentration. Two Annual averages were created for each year using the Fama-French industries for one and the SIC classifications for the other.

The HHI for the FF industry and SIC industry for each portfolio addition or sale was then compared to the average HHI for the corresponding year to determine if the portfolio managers were choosing companies in more or less competitive industries than what was available on the market for them to choose from in the rest of the market.

### *Results*

#### **Fama French 3-Factor Results:**

	Full (1/06-11/12)		Recession (11/07-6/09)	
	Tortoise	Hare	Tortoise	Hare
Average Number of Holdings	24	23	25	23
Average Monthly Return	0.55%	0.86%	-1.28%	-1.37%
Average Monthly Standard Deviation	4.56%	6.21%	6.96%	8.95%
Average Holding period Length (months)	68	46	54	40
Positions Added	19	34	6	6
Positions Sold	18	26	7	4
Beta (using S&P 500)	0.75	0.96	0.87	1.02

**Table 1: Portfolio Statistics:** This table shows summary statistics relating to each of the portfolios recreated for this research.

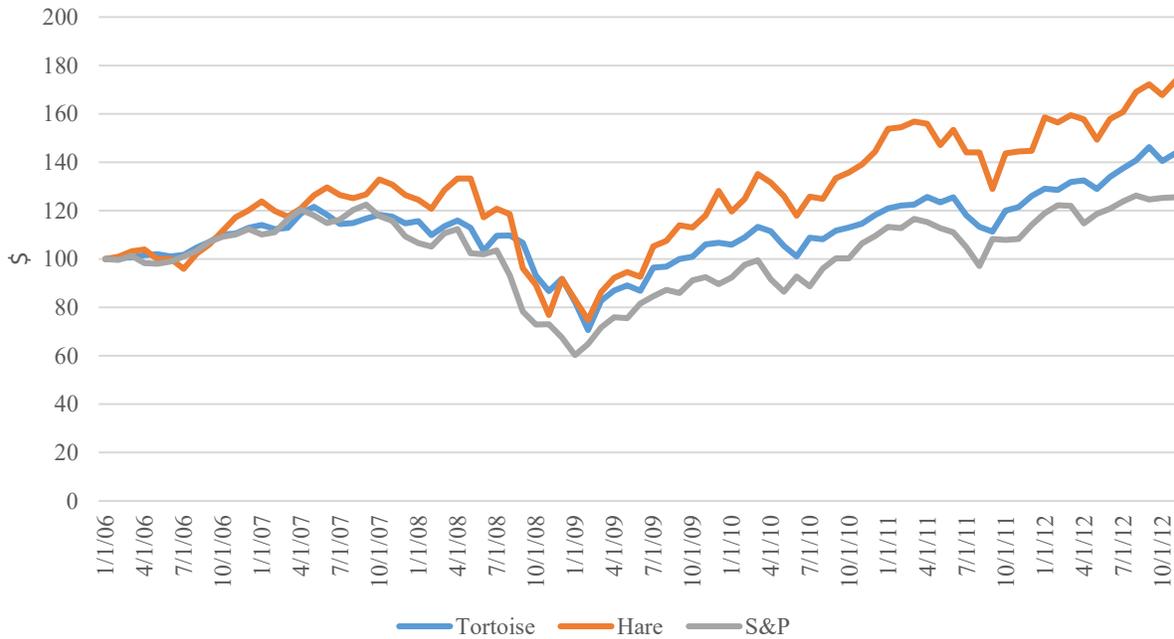
After recreating the portfolios so that they could be used in Portfolio Visualizer, we see that the two portfolios are not particularly different regarding their holding habits, holding approximately the same number of holdings across the time period. It seems consistent that the number of holdings would not change drastically during the recessionary period because the

Morningstar portfolio managers don't aim to hold excess cash in the portfolio. Furthermore, they tend to only exit one position in order to enter another, thus the number of holdings tend to stay relatively constant across time. Looking at the purchase and selling habits of the two portfolios, we see that Tortoise has less turnover than the Hare across all time periods. Given that the Hare focuses on faster growing companies, it makes sense that the holding period would be shorter.

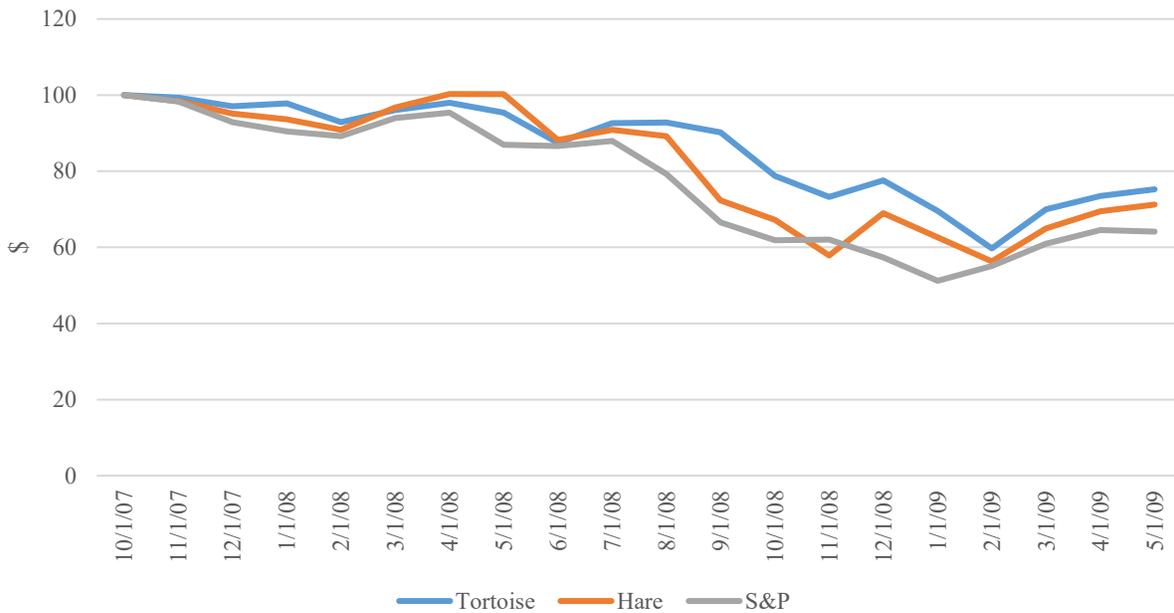
Despite that the Hare engaged in more transactions in general during the full period analyzed, the Tortoise actually had more transactions during the recession. This is partly attributable to the fact that the Tortoise held more positions in the financial services industry before the recession, an industry that was particularly impacted by the recession. Furthermore, the way that the portfolio managers picked companies changed in April 2008 (Morningstar Stockinvestor, 2008).

Effectively, they started to rate their fair value estimates based off of the level of uncertainty in the valuation. In order to be considered, stocks with more uncertainty had to trade at a greater discount in order to be considered for the portfolio. Thus, the Tortoise, which targets more steady stocks than the Hare, might have been able to choose from more companies during a recessionary time than the Hare due to less uncertainty in their available stock selections.

Additionally, the Tortoise held Washington Mutual (WM), which ceased operations during the recession, so to say that their active decision making in the sale of WM to JP Morgan Chase is not necessarily reflective of the portfolio manager's decisions.



**Chart 1: Portfolio Growth of \$100 Invested (1/6 to 11/12):** This chart compares the return data for the two Morningstar portfolios against the S&P 500



**Chart 2: Portfolio Growth of \$100 Invested in Recession (12/7 to 5/09):** This chart compares the return data for the two Morningstar portfolios against the S&P 500 for the recessionary period

Regarding the returns of the two portfolios compared to the S&P 500, we see that, for the full time period, the Tortoise and the Hare both came out ahead of the market. Of course, this

does not necessarily consider the known risk factors associated with these investments. For the recessionary period, both portfolios also have better nominal performance than the S&P. While **Chart 1** and **Chart 2** may seem to portray a positive image of the Tortoise and the Hare, it is only reflective of the time periods considered, as different period selections could yield different results. It is much more relevant to consider how these portfolios fared when analyzed using the Fama-French factors.

		Full (1/06-11/12)		Recession (11/07-6/09)	
		Hare	Tortoise	Hare	Tortoise
Rm-RF	Loading	0.920	0.710	0.960	0.740
	P Value	0.000***	0.000***	0.004***	0.000***
SMB	Loading	0.290	-0.310	0.410	-0.490
	P Value	0.190	0.026***	0.608	0.245
HML	Loading	0.000	0.410	-0.020	0.700
	P Value	0.998	0.000***	0.966	0.005***
Alpha	Loading	0.42%	0.28%	0.62%	0.86%
	P value	0.340	0.297	0.726	0.351

**Table 2: Significance data from Fama French 3-Factor Analysis:**

\*\*\*Indicates 95% significance level

The Fama-French 3-factor analysis showed that none of the periods generated alpha, analyzing the full time period or just the recession, thus there are no excess returns from using this investment strategy. This is consistent with the results that Kenny (2013) found, despite that they used a different time period for their analysis. The factor with the most explanatory value for the returns was the market factor (Rm-Rf). Because the portfolios are sufficiently diversified, it makes sense that this factor would have the most significant explanatory value. Particularly during a recession, many of the established companies that comprise the wide moat portfolios will still be impacted by the general broad market movements. We see during the recession that the only other factor with explanatory value for the portfolios is HML, but only for the Tortoise. Given the strategy of the Tortoise, which is to hold more value stocks, it seems consistent that HML would explain the returns. In particular, the strategy for the Tortoise would lend itself to companies with higher book to market ratios because there is less growth priced into those holdings. It is also of note for the Tortoise that SMB is not explanatory for the recession despite that it was explanatory for the full time period. One possible explanation for this is that, because the stocks in the Tortoise were all Large Market Cap stocks before the recession, the recession

might have caused some of the holdings to drop down in size closer to Mid-Cap. Thus, the portfolio might not have moved as consistently with a single size factor as it did previously.

### Industry Competition Analysis:

Year	Total Market FF HHI	Tortoise Portfolio Average FF HHI	Hare Average FF HHI	Total Market SIC HHI	Tortoise Portfolio Average SIC HHI	Hare Portfolio Average SIC
2006	0.059	0.0647	0.0541	0.204	0.2758	0.2424
2007	0.061	0.0627	0.0572	0.213	0.2725	0.2660
2008	0.061	0.0646	0.0535	0.214	0.2931	0.3152
2009	0.062	0.0652	0.0544	0.212	0.3278	0.3003
2010	0.061	0.0728	0.0584	0.210	0.3419	0.3064
2011	0.061	0.0693	0.0619	0.215	0.3208	0.2799
2012	0.061	0.0704	0.0567	0.206	0.3197	0.2833
Averages	0.061	0.067	0.057	0.211	0.307	0.285

**Table 3: Portfolio Average HHI compared to Market Average HHI, separated by Fama-French Industry (FF) and SIC Code Classification**

Because there are various ways of classifying the industry of a company, it was deemed important to consider more than one way of classifying by industry. The above table shows the total market concentration under both the Fama-French Industries (FF) and also using SIC codes. We see that SIC codes result in a much higher HHI figure. This is consistent because the fewer number of competitors in an industry, the higher the market share for each competitor and thus a higher HHI figure. While the Tortoise picks stocks that are in less competitive industries than that market average regardless of industry classification system, the Hare does not show the same results for each system. Using the Fama-French Classifications, the Hare portfolio is in more competitive positions than the market average. However, when using the SIC system, the Hare is significantly above the market average, meaning less competitive. An explanation for this difference between the Tortoise and the Hare's competitiveness level across different industry classification systems relates to their strategy difference. The Tortoise portfolio picks large established companies that would have a massive market share at even the sector level. In

contrast, the Hare picks stocks that are growth focused, thus they may be competitive within a more narrow market, but are not nearly as dominant when considering a broader competitive environment. For instance, consider the St. Joe Co.(JOE), which is a Hare Holding in the real Estate Industry. They are the second largest private landowner in Florida, behind a company that uses land primarily for timber production, indicating they aren't a full-on competitor for St. Joe. Thus, St. Joe has an ability to dominate their industry. At an industry level, the Fama-French Industry for Real Estate has an HHI index of 0.0301, which would be considered a very competitive industry. By comparison, the SIC HHI for St. Joe is 0.999, which means they are effectively the only competitor in their SIC code (NAICS). In contrast to the small yet concentrated industries that the Hare might invest in, the Tortoise portfolio holds companies in more broadly concentrated industries like Coca-Cola in the beverage industry. In addition to being dominant in its specific SIC with a HHI of .507, Coca-Cola also dominant across the entire retail FF beverage industry at an HHI of .165. Because of these differences between the Tortoise and the Hare, it is not a surprise that the Tortoise would be less impacted by the choice of industry classification system used.

	Fama French Industries		SIC Codes	
	Tortoise	Hare	Tortoise	Hare
<b>Count of Purchases More competitive than Market</b>	24	30	14	18
<b>Count of Purchases Less Competitive than Market</b>	11	11	21	23
<b>Total Holdings</b>	35	41	35	41

**Table 4 Comparison of Results Using Fama French Industries vs SIC Codes:** This table was created by comparing the HHI figure of each portfolio addition with the market HHI average at the time of purchase

We can also see at the individual holding level that the choice of industry classification system impacts the degree of competitiveness shown in each holding's industry. As shown in **Table 4**, both portfolios' holdings returned less competitive index figures when using SIC. Upon consideration of the specificity with which SIC codes are assigned compared with how broad Fama-French classifications are, it was determined that SIC was the more effective classification system for this research.

	<b>The Tortoise portfolio addition industries are less competitive than the market average 2006-2012</b>	<b>The Hare portfolio addition industries are less competitive than the market average 2006-2012</b>
<b>FF Industry</b>	0.422	0.969
<b>SIC Code Industry</b>	0.031	0.001

**Table 5 Z-Scores for Wide Moat Portfolios by Industry Classification System:** Z scores were calculated for whether the portfolio additions were in less competitive industries. The market average for the population was calculated using all data from 2006 to 2012 since the portfolio additions also occurred across that same period of time

Based off of the Z scores calculated for whether portfolio additions are in less competitive industries than the average of all companies on the market, we see that both portfolios are investing in less competitive industries when evaluated using SIC codes; however, it is less clear when evaluating using the FF industries. Because we believe the SIC code classification to be more valid, the data shows that Morningstar's wide moat stock selections are typically in concentrated industries, suggesting that a key aspect of the wide moat might be a lack of industry competition or an inability for newcomers to enter the industry.

### ***Conclusion***

Despite the effort that Morningstar goes to in order to prove the validity of their stock selection and investment strategy, this research shows that the Wide Moat strategy does not generate excess returns throughout the business cycle and also does not generate any excess

returns in a recessionary period. The results are the same for both the Tortoise and the Hare Portfolios. Ultimately, attempting to find an ideal trading strategy to fare a recession is a relatively fruitless task because if an investor felt certain that a recession was approaching, their best investment would be to just short the market. Particularly when one considers the management fees that Morningstar assesses to clients who want to have their portfolios mimic the Tortoise and the Hare, the investment prospect in this strategy becomes even less appealing. If one is concerned with earning the best risk-adjusted returns, they would be better off simply investing in an S&P 500 tracking fund than investing in an actively managed fund, even if the trading strategy and investment selection sounds like it might be superior.

Upon closer analysis of Morningstar's wide moat strategy, it also became clear that a company's possession of a "wide moat" seems to be correlated with the level of competition in its industry. If one wanted to mimic this aspect of the Wide Moat Portfolios, they could just as easily invest in an ETF that focuses on large market cap corporations that hold large market share because of their size as a corporation.

Further research into the Tortoise and Hare portfolios could assess the various measures that Morningstar uses to gauge their own investments. These measures include classifying moats as "wide" or "narrow" and also expressing uncertainty in their fair value ratings. New portfolios could be created based on these measures to see if excess returns are able to be generated if an investor only uses certain types of suggestions from Morningstar's *StockInvestor* service. Based on existing research into the wide moat portfolios, it seems that much of this further research would be unsuccessful in finding excess returns; however, it would be an interesting way to distill unstated underlying elements in their trading strategy.

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