

The Empirical and Theoretical Rationale for Using Customer Satisfaction Rankings in an Alpha-Seeking Strategy

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Investors understand the importance of companies satisfying the needs of their customers, but do not have access to universal, empirically valid measures of customer satisfaction. The authors explore using changes in companies' American Customer Satisfaction Index scores as primary inputs into a diversified core-style investment index and find the investment index outperforms several popular stock market benchmarks over the 3, 5, 10 year and cumulative periods, as of 12/31/2017.

INTRODUCTION

Investors want to maximize returns by buying stock at prices lower than their intrinsic value. Companies want to increase profits by selling as many goods as they can at the highest prices possible. According to expected utility theory, individuals base their consumption decisions on how much utility they expect to receive from their purchases (*von Neumann, et al., 1944*). Those expectations are based on both their own familiarity with the good and any additional information they gather from other sources.

The more popular conceptualization of utility is customer satisfaction, which we abbreviate as CSAT. It is obvious that CSAT contributes heavily towards a firm's profitability, but because CSAT is an intangible asset, equity investors frequently omit customer satisfaction from their investment decision-making process. Due to the challenges involved with constructing and applying a cost-effective and universal metric of customer satisfaction, CSAT is one of the few opportunities left for generating alpha in the domestic large cap space. This paper will:

- discuss the common methods investors use to forecast demand along with their challenges;
- describe how CSAT can be measured and compared across different time periods, companies and industries;
- examine how CSAT impacts firms' financial statements and considers whether customer relationships are properly valued within the US GAAP (generally accepted accounting principles) framework;
- examine whether a stock selection strategy using an established measure of CSAT outperforms the Standard & Poor's 500 Index on a risk-adjusted basis for 1, 3, 5, and 10-year periods;
- survey existing literature for the theoretical justification behind the relationship between changes in customer satisfaction and stock performance; and
- explore opportunities for further research

The current state of forecasting

Security analysts use a wide variety of inputs to forecast sales. They may use macroeconomic indicators, industry statistics, conversations with management, interviews with current and prospective customers and even their own perception of the desirability of a firm's product(s). Beyond whichever personal impressions and other anecdotal evidence an analyst might include, broadly speaking, forecasting techniques come in two forms: 1) extrapolating trends and deriving ratios from historical data; and 2) analyzing contemporaneous data that has previously demonstrated a significant relationship with the dependent variable(s) of interest. We will discuss advantages and disadvantages of each method, focusing specifically on how the investment industry might be asking too much from regression-based forecasting techniques.

Extrapolating trends from historical data

For better or worse, the most popular statistical method used by security analysts is time series analysis, simply because it is inexpensive, easy to understand, and at least appears as if it would provide useful forecasts. A trend-focused analyst examines historical data to first determine if any reliable trends exist and then, once those trends are identified, extrapolates them into the future as base cases that can be adjusted upward or downward as the analyst sees fit. Time series analysis can prove useful if the market for the product is stable and the time horizon is relatively short (i.e. the next quarter).

Appealing as it might be to extrapolate from historical trends, long-term forecasts are less reliable than short term, because of the complexity of the financial markets, error in the models themselves, along with some reliable cognitive errors humans tend to make. As heatedly as the investment industry may argue markets are rational, research suggests market participants have cognitive biases that introduce predictable errors into their decisions. Two of the most relevant cognitive errors for investors are their tendencies to overreact to new information (*Andreassen, 1990*) and their overconfidence in their own predictive abilities (*Daniels, et al., 1998*). Those two cognitive errors may help explain why active managers find it difficult to match or beat the performance of a passive index such as the Standard & Poor's 500 Index (*S&P Dow Jones Indices, 2017*).

Surveys

Rather than identify and fit (or overfit) regressions between variables, companies can go directly to informed stakeholders such as customers, product managers, and their own sales forces to gather expectations for the product or service in question. Surveys have two advantages over trend analysis: 1) surveys do not implicitly assume the future will resemble the past and, 2) they directly access perceptions about the good(s) in question.

Surveys are popular with economic forecasters. Of the ten components in [The Conference Board Leading Economic Index](#), over half of them include survey data and some, most notably the Average Consumer Expectations for Business and Economic Conditions, include surveys of expectations. Buried within the Leading Credit Index is the AAI Investor Sentiment Survey, which simply asks individual investors whether they are bullish, bearish, or neutral on the stock market over the short term.

Given the popularity of surveys with economists, analysts might consider including more surveys into their analyses, but only after first applying these five tests to assess their validity:

- Is there a theoretical justification for the hypothesized relationship(s)?

- Do the samples adequately reflect the population?
- Are the questions relevant to what is being measured?
- Was the data adequately cleaned?
- Have past results accurately predicted what the survey was intended to measure?

As is true with other investigative methods, surveys are vulnerable to poor design, sampling bias (i.e. sampling error), and noisy data (i.e. measurement error). Examples of noisy data might include respondents either failing to or only casually answering items. Fortunately, investigators can apply judgment in cleaning the data of responses that either were completed unusually quickly (e.g. straight-lining) or have some other indication of a less than attentive response (perhaps due to “interviewee fatigue”). Ideally, the researcher will consistently apply a data-cleaning process appropriate to the study.

The massive accumulation of customer data and relatively inexpensive computing power has led to the popularity of data mining in the marketing profession. Given enough variables, relationships between some will inevitably be statistically significant, even if there aren’t satisfactory explanations for the relationships other than chance or, more formally, spurious correlations.

The survey should be from a sample that adequately represents the population. If, for example, an automotive manufacturer desires feedback on one of its designs, it would make more sense to survey a broad group of potential car buyers than it would to only survey bicyclists. Some surveys reduce the risk of using an inappropriate sample by using stratified sampling, emphasizing large samples, or, optimally, using both.

One of the difficult tasks involved with creating a valid assessment is being sure to ask the right questions. Casually-worded or “loaded” questions can lead to biased results and unwarranted conclusions. For example, asking consumers whether they prefer high quality items to low quality items would lead to an unsurprising result. But when customers are asked whether they feel as if they received fair value for what they paid, their answers will provide valuable and actionable feedback.

Whether the forecasting method uses a questionnaire or extrapolates from a trend, analysts should be most concerned with whether the method predicts the variable it was intended to measure. All too often, investigators casually choose and act on measures that superficially appear applicable to the subject at hand but don’t have an established significant relationship with the dependent variables. Such is frequently the case with IQ. The first IQ test, designed by Alfred Binet in France, was originally designed to measure children’s mental ages in order to determine appropriate school placement. IQ scores continue to be useful in placing children in the correct classroom, but it remains hotly debated whether IQ accurately measures general intellectual ability.

Why do investors ignore customer satisfaction?

In spite of the intuitive and obvious link between customer satisfaction and firm financial performance, analysts and portfolio managers do not directly incorporate CSAT into their forecast models. It’s challenging to define customer satisfaction, let alone establish a relationship between CSAT and stock performance.

CSAT might best be described as an internal affective state or maybe as a set of related behaviors (such as repeated buying or singing the firm’s praises on social media). Companies

view--or should view--CSAT as an intangible asset that is just as vital to future success as research-in-progress or customer lists.

Security analysts usually prefer ratios over hypothesized emotional states of distant customers. Analysts find it reassuring to know that every dollar received, spent, or distributed by a firm is accounted for; sales minus costs always equals profit, and assets minus liabilities always equals owner equity. But it's not that clear cut. Financial statements may include murky managerial assumptions. The definition of a precisely-measured firm contains elements of physical reality and elements of constructs.

That's not a condemnation; accounting regulators have to walk a fine line between only including measurable value and truly describing economic reality. If GAAP wasn't useful, it would have been discarded long ago. But accrual accounting has been available to US taxpayers since 1916, and accounting methods evolve to address new changes and better reflect statement users' needs.

Unlike the hard numbers of balances on financial statements, customer satisfaction is a theoretical (or hypothetical) construct. Constructs are groups of related "[mental] entities, processes, or events" that can't be directly measured but might be inferred (*MacCorquodale, et al., 1948*). A construct intervenes between the environment to manage or alter the response to that stimulus. A construct can be inferred indirectly through behaviors or other evidence, provided the observer accepts the hypothesized relationship between the affective state, the construct, and subsequent behavior or affective state. Intelligence and motivation are common examples of constructs.

Because constructs aren't directly verifiable, they might seem easy to criticize or even dismiss outright. Actually, the usefulness of constructs in general and any isolated construct is perfectly clear. If a construct aids in predicting the future or explaining past events, it's useful.

The author(s) observe(s) that, possibly due to the difficulty many investors face in measuring customer satisfaction, the customer asset is not shown the same respect by accountants as are tangible assets, even though customer lists are frequently more valuable than plant, property and equipment.

Out of fairness to the accountancy field, accountants prefer that assets be reported at either cost or net present value, whichever is lower, and that the asset be precisely measurable. Unfortunately, that bias hasn't kept up with the growing impact of intellectual property on companies' profitability and value. In 1975, 83 percent of the market value of the S&P 500 came from tangible assets. Forty years later, as the US has shifted primarily to a service economy, the situation had reversed: in 2015, 87 percent of the S&P's value was estimated to come from intangible assets (*Ocean Tomo, 2015*). If accounting regulators and financial statement users could agree on how the value of customer relationships could be measured, there would be a line item for customer relationships.

Investors and accountants aren't the only ones who could benefit from precise CSAT metrics, of course. Companies' existences depend on satisfying their customers, but all too often executives use the wrong tools to measure the drivers of CSAT within their particular company and potentially leave shareholder value on the table.

METHOD

The studied strategy ranked stocks by customer satisfaction and applies rules to construct an investment index that can be scaled for institutional investors and have similar risk characteristics to other diversified indices. The strategy relies on scores from the American Customer Satisfaction Index to rank stocks by customer satisfaction and applies stock screens to construct the American Customer Satisfaction Investable Index.

Since 1994, the American Customer Satisfaction Index (ACSI) has measured customer satisfaction for over 300 companies in 45 industries (and selected government agencies and services) and 10 ACSI-defined sectors by asking over 180,000 customers about their direct experiences with products and services. The ACSI conceptualizes CSAT as a post-purchase evaluation by the customer and parses it into three antecedents: perceived quality, perceived value, and customer expectations, and operationalizes it into customer interview questions. The ACSI uses customer interviews as input to a multi-equation econometric model developed at the University of Michigan's Ross School of Business.

The customer satisfaction (ACSI) score is calculated as a weighted average of three different facets of satisfaction with a particular product or service. ACSI researchers utilize proprietary software to estimate the weighting for each question.

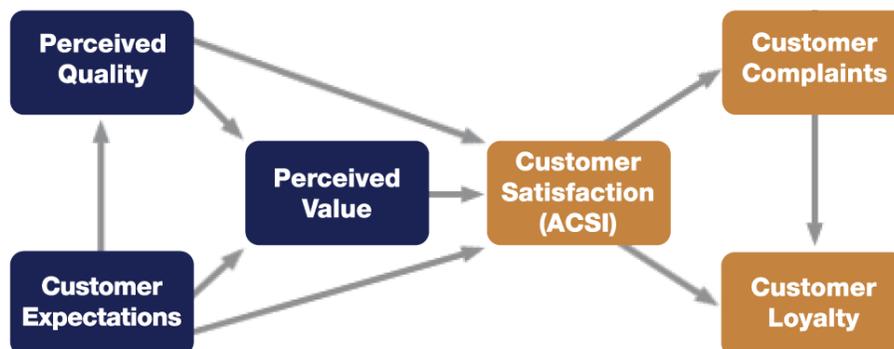
Perceived quality is a measure of the customer's evaluation via recent consumption experience of the quality of a company's products or services. Quality is measured in terms of both customization, which is the degree to which a product or service meets the customer's individual needs, and reliability, which is the frequency with which things go wrong with the product or service.

Perceived value is a measure of quality relative to price paid. Although price (value for money) is often very important to the customer's first purchase, it usually has a somewhat smaller impact on satisfaction for repeat purchases.

Customer expectations is a measure of the customer's anticipation of the quality of a company's products or services. Expectations represent both prior consumption experience, which includes some nonexperiential information like advertising and word-of-mouth, and a forecast of the company's ability to deliver quality in the future.

CSAT is conceived of as a cause-and-effect model with indices for drivers of satisfaction on the left side (customer expectations, perceived quality, and perceived value), satisfaction (ACSI) in the center, and outcomes of satisfaction on the right side (customer complaints and customer loyalty, including customer retention and price tolerance).

Exhibit 1



The ACSI uses customer interviews via consumer surveys as input into a multi-equation econometric model developed at the University of Michigan's Ross School of Business. Over two decades of research on the ACSI reveals several key findings relevant to both the competitive stance of individual firms and the health of the U.S. economy overall. They include:

- Changes in customer satisfaction affect the general willingness of households to buy. As such, price-adjusted aggregate ACSI changes can be a leading indicator of consumer spending growth and has accounted for more of the variation in future spending growth than any other single factor.
- According to a 2007 study by the St. Louis Fed - consumer spending accounts for 70% of U.S. gross domestic product (GDP). Therefore, changes in customer satisfaction as measured by the ACSI also correlate with changes in GDP growth. As GDP is a measure of the quantity of economic output and ACSI a measure of its quality, economic growth is dependent on producing not only more, but also better, products and services.
- Manufactured goods tend to score higher for customer satisfaction than do services. For example, food items and household appliances show better ACSI scores than banks, airlines, or subscription TV service. Typically, the more service required, the lower the customer satisfaction.
- Quality plays a more important role in satisfying customers than price in almost all ACSI-measured industries. Price promotions can be an effective short-term approach to improving satisfaction, but price cutting is almost never sustainable in the long term. Companies that focus on quality improvements tend to fare better over time with regard to customer satisfaction (ACSI) than companies that focus on price.
- Mergers and acquisitions have a generally negative effect on customer satisfaction, particularly among service industries. ACSI-measured service companies that have engaged in frequent, large acquisitions typically experience significantly lower ACSI scores in the period following a merger when the 'customer as asset' often takes a backseat to reorganization and consolidation via cost cutting

The American Customer Satisfaction Investable Index (ACSII or ACSIIITR) is a satisfaction-weighted index of stocks constructed by Exponential ETFs based on information received as part of their exclusive license to utilize American Customer Satisfaction Index data for investment purposes.

Universe filtering

There are over 300 brands measured by the ACSI across multiple industries, both public and private. Those brands are screened for liquidity and their ACSI ranks within their respective sectors to create an investable ACSI universe of about 180 stocks. That ACSI universe is further screened to eliminate companies that are:

- non-publicly traded;
- non-US listed and/or American Depository Receipts;
- duplicated due to ACSI industry classification;
- statistically insignificant because of limited data; and
- Possesses a customer satisfaction score below its industry average.

Sector Weighting

The remaining stocks are sorted by their respective sectors and weighted via a top-down approach. Sectors are initially weighted according to their underlying security representation within the total ACSII Universe. Industries that are under- or overweighted due to skewed sample sizes are rationalized to a 10% tolerance band of the benchmark S&P 500 sector allocation. For example, if the benchmark allocation for Consumer Discretionary is 20% and the ACSII un-constrained weighting is 40%, the index will adjust sector allocation downward to 30% to the tolerance band. Conversely, a 5% unconstrained ACSII sector weighting would be adjusted upward to 10% to the tolerance band. The portion reallocated away from sectors that breach the upper tolerance band is first allocated to sectors that fall below the lower tolerance band. Any remaining allocation is distributed equally to those remaining sectors which do not breach the upper tolerance band.

Security weighting

Individual securities are adjusted and sorted within each sector from highest to lowest based on their customer satisfaction score. A score that is numerically higher suggests higher satisfaction, and thus, a higher allocation within the sector. Final security weighting is calculated as the relative sector weight within the portfolio multiplied by the security's weighting within the sector itself.

Firms appear to gain an additional benefit from leading their respective sectors in CSAT. Accordingly, an additional allocation of 0.50% is granted to individual securities who are the highest scoring (or tied for highest scoring) in their respective ACSI industries. The excess allocation will be taken equally from all lower rated individual securities in the sector.

No individual security will be initiated at less than a 0.02% position. If the "leadership draw" detailed above would reduce a security below 0.02%, a floor will be instituted. Any undrawn amount (due to the floor) will come from all other eligible individual securities within that respective sector.

Sectors in which there are a limited number of tradable securities will utilize exchange-traded funds (ETFs) to reduce overweight security positions based on formulaic thresholds. Each sector will be exposed to a minimum of three stocks. Allocation to ETFs within each sector, based on the number of stocks within that sector, will follow these rules:

- if there are no stocks that have survived the screening process invested in the sector, the sector will be entirely invested in exchange-traded funds;
- if there is only one stock in a given sector, then 66.7% of the sector's allocation will be invested in exchange-traded funds;
- if two stocks are suitable for inclusion in the index, then 50% of the sector will be invested in ETFs, and
- once there are three or more stocks in the sector, ETFs will not be used.

The ACSII exclusively used SPDR® Select exchange-traded funds when required by the above criteria. At the close of 2017, the Index included two ETFs that accounted for 2.05% of the Index's value; the Materials Select Sector SPDR Fund had a 1.02% allocation while the Energy Select SPDR Fund had a 1.03% allocation.

Additional concentration constraints are systematically implemented to reduce exposure to any individual security or those that may have artificially high weightings due to the number of securities available in that sector. On rebalance dates, security constraints are as follows:

- any stock allocation over 5% will be reduced downward to 5%;
- any stock allocation over 3% with an ACSI score in the second quartile of the sector will be reduced to 3%; and
- any stock allocation over 1% with an ACSI score in the 1st (bottom) quartile of the sector will be reduced to 1%

Any proportions reallocated away from securities that breach constraints are reallocated to the remaining securities within the sector.

Index maintenance

The index is rebalanced on a quarterly basis after market close on the 10th trading day of the month immediately after quarter-end. Index reconstitution occurs during the scheduled rebalance to incorporate any new quarterly data received from the Model.

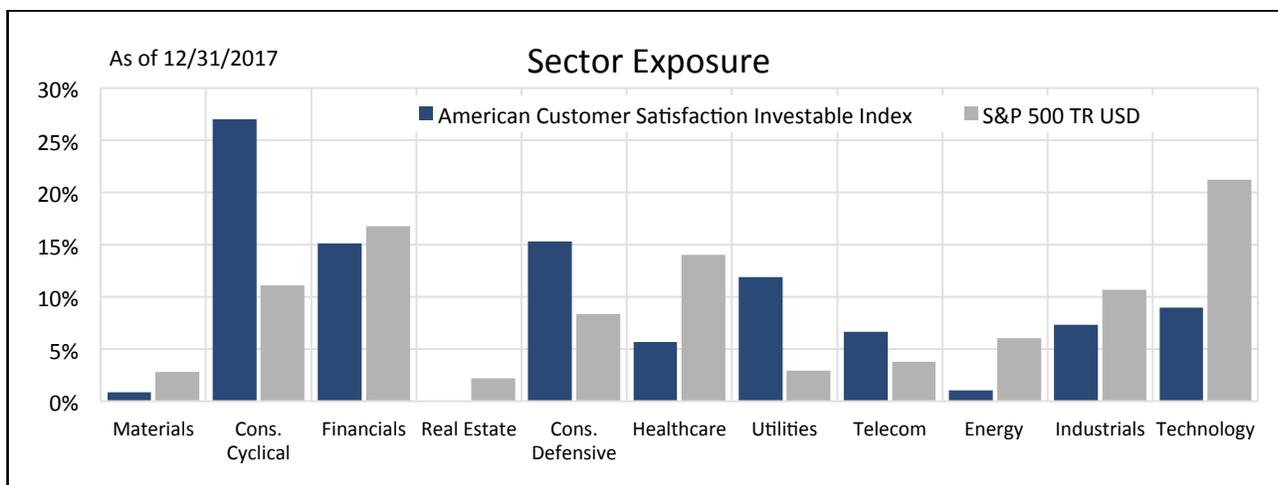
In special circumstances, the index will be rebalanced before or after its regular schedule, as follows:

- When a company experiences a model score decline in excess of ten points during the most recently reported model period, a special rebalance will occur, following the rules applicable to a regularly scheduled rebalance, after market close on the tenth trading day of the month following the reported period end for the score.
- When Model data is unexpectedly delayed and unavailable for a regularly scheduled rebalance, a special rebalance will occur after market close on the fifth trading day after the Model data becomes available.

Comparison of ACSII to S&P 500 Index

As shown in the graphic below, the ACSII overweighted the Consumer Cyclical, Consumer Defensive and Utilities sectors, had no exposure to Real Estate, and underweighted Healthcare, Energy, and Technology.

Exhibit 2



ACSII portfolio statistics vs. S&P 500 Index

Looking specifically at the close of 2017, the ACSII had similar price-to-book ratio as the S&P 500 but differed in other popular stock metrics. The ACSII had a lower average price-to-earnings, price-to-sales, price-to-cash flow, price-to-EBITDA, but a much higher price-to-free cash flow. The weighted average market cap was lower than the S&P 500 at \$124 billion vs. \$197 billion, respectively.

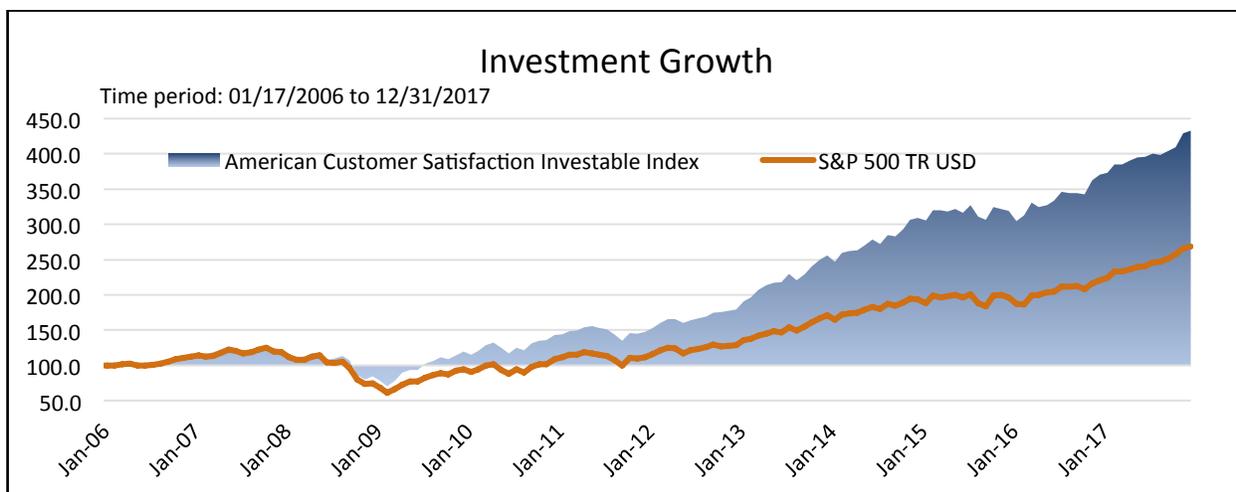
Exhibit 3

Portfolio Statistics	As of 12/31/2017		
	ACSII	S&P 500 TR	+/- Bmk
Price-to-Book	5.46	5.50	-0.04
Price-to-Cash Flow	14.20	17.19	-2.98
Price-to-Earnings	21.75	25.41	-3.67
Price-to-EBITDA	13.24	19.20	-5.96
Price-to-Free Cash Flow	48.78	30.14	18.64
Price-to-Sales	2.53	4.23	-1.70
Wtd Avg Market Cap (in Mil)	124,205.71	197,051.85	-72,846.13
Active Share	68.97	-	-

RESULTS

The ACSII demonstrated superior performance with lower volatility than the Standard & Poor's 500 Index Total Return Index over the three, five, and ten-year periods ended December 31, 2017. It has also outperformed the S&P 500 since its time series inception. The ACSII has attractive risk characteristics when compared to the S&P 500. As seen in the mountain chart, since inception, it outperformed the benchmark 35 out of 47 quarters and had only one negative return of -33.52% in 2008, which was better than the S&P 500 negative return of -37%.

Exhibit 4



Trailing ten-year performance ended December 31, 2017 was 261.80% versus 126.03% from the Standard & Poor's 500 Index on a cumulative basis. Annualized return over the entire period was 13.20% versus 8.66% in the S&P 500, with similar standard deviations of 14.29 and 14.15 percent, respectively.

Exhibit 5

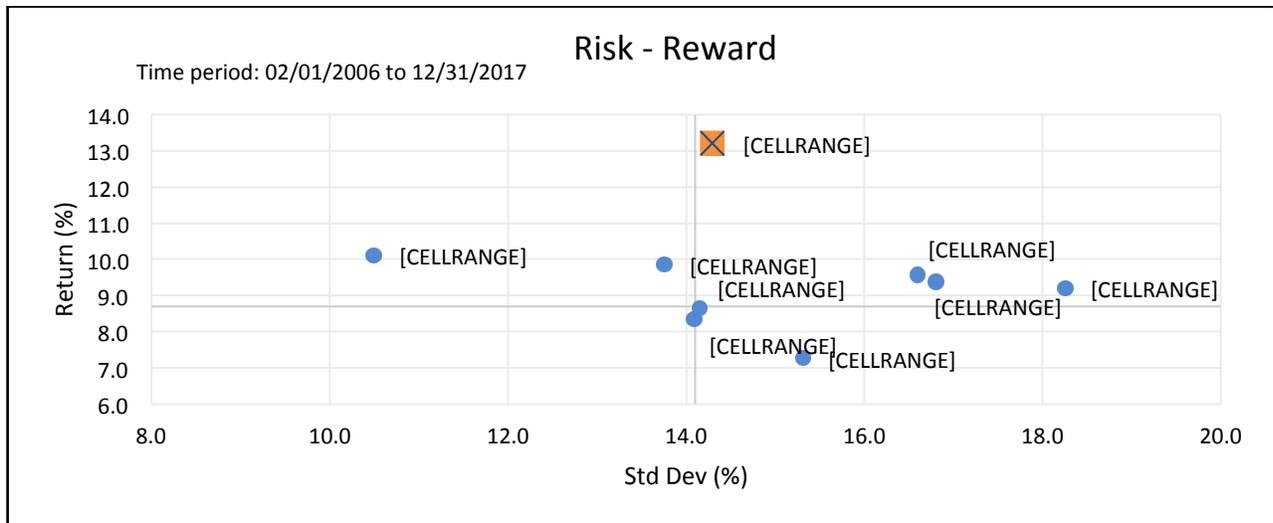
Trailing Performance					As of 12/31/2017
	1 Year	3 Years	5 Years	10 Years	Since Inception
ACSII	16.6%	11.8%	19.3%	13.7%	13.2%
S&P 500	21.8%	11.4%	15.8%	8.5%	8.7%

The ACSII has favorable risk-reward characteristics compared to several popular Standard & Poor's indexes, including small cap and mid cap, as seen on both the table and the risk-reward plot below.

Exhibit 6

Risk-Reward Characteristics					As of 12/31/2017
	Sharpe Ratio	Treynor Ratio	Sortino Ratio	Batting Average	Max Drawdown
ACSII	0.88	13.90	1.33	60.83	-41.15
S&P 500	0.54	8.13	0.78	100.00	-48.45
Russell 1000 Growth	0.62	9.64	0.92	55.83	-45.81
Russell 1000 Value	0.42	6.50	0.60	44.17	-51.58
Wilshire 5000	0.53	8.08	0.77	52.50	-48.36

Exhibit 7



Additionally, using 15 years of data from 2000 to 2014, a portfolio strategy based on relative changes in customer satisfaction across industries recorded a 518% cumulative return vs a 31% return in the Standard & Poor's 500 Index in the same period (Fornell, et al., 2016).

DISCUSSION

The semi-strong form of the Efficient Market Hypothesis asserts that it is impossible to outperform the broad market over the long term on a risk-adjusted basis, unless the investor has access to material nonpublic information. Yet, the ACSII has better risk-reward metrics along with similar volatility and a high correlation with the S&P 500 Index. The strong performance of the ACSII and the proprietary nature of some of the ACSI's methodology makes our findings yet more anecdotal evidence against the semi-strong EMH and implies the ACSII is an attractive addition or alternative to other broad large cap indexes.

Why is there a strong relationship between CSAT and stock performance?

High customer satisfaction has been shown to drive repeat sales and reduces firms' marketing expenses from high customer churn and positive word of mouth marketing for the firm within their satisfied customer's social networks. Low customer satisfaction tends to deliver the reverse outcomes. Amazon and Netflix are two dynamic companies that offer dramatic lessons on how customer satisfaction can impact stock prices. Amazon has been famously successful in determining what makes and keeps its customers happy. It relentlessly focuses on providing customers ever-expanding choices along with a quick and reliable online shopping experience which reliably positions it closest to the top of companies ranked by the ACSI. Its stock has cumulatively returned 634 times its original initial public offering price of \$18 per share after twenty years.

Now let's consider the cautionary tale of Netflix's stumbling introduction of a price increase and new name for a popular service. Netflix's CEO Reed Hasting justified splitting Netflix into a video streaming business and the legacy DVD-by-mail, renamed Kwikster, as being proactive towards inevitable technological change. But Netflix's customers were confused about two companies billing them for what used to be one service and, adding insult to injury, at a higher total price.

Netflix customers abandoned the service in droves. The stock was viciously punished after metrics were released during its 3Q earnings call, opening 37 percent lower the following morning. Fortunately, Netflix recognized its dire emergency, apologized publicly and profusely for alienating its customers, killed off the separate brand within weeks and was able to regain traction.

As seen in exhibit 8 below, over a eleven-and-a-half-year period ended June 30, 2017, companies with comparatively high CSAT numbers beat Wall Street projections with higher-than-expected revenue and earnings as compared to the S&P 500 at large (*Blechman, 2018*).

Exhibit 8

Year	Top ACSII % Beat		S&P 500 % Beat		ACSII vs S&P 500	
	REV	EPS	REV	EPS	REV	EPS
2006	68.6%	63.9%	50.3%	54.0%	18.3%	9.9%
2007	67.7%	69.6%	53.9%	55.8%	13.9%	13.8%
2008	73.4%	66.0%	61.5%	57.2%	11.9%	8.8%
2009	45.3%	64.4%	40.7%	55.6%	4.7%	8.8%
2010	55.8%	77.5%	57.5%	66.7%	-1.7%	10.8%
2011	64.8%	68.4%	63.4%	64.8%	1.4%	3.6%
2012	57.8%	73.4%	53.9%	63.0%	4.0%	10.4%
2013	50.0%	65.8%	50.3%	62.7%	-0.2%	3.1%
2014	58.6%	68.4%	56.6%	65.8%	2.0%	2.6%
2015	56.9%	71.7%	53.1%	68.5%	3.8%	3.2%
2016	51.1%	83.3%	50.5%	69.4%	0.7%	13.9%
2017	61.7%	75.0%	55.4%	70.0%	6.3%	5.0%
Total	59.3%	70.1%	53.8%	62.3%	5.5%	7.8%

*All data as of 6/30/2017

**"Top ACSII" refers to ACSII constituents that are given an above average allocation

*All Surprise data pulled from Facset (surprise beat defined as actual > Facset consensus estimate)

*% figure indicates (# of companies in sample who had positive surprise/total# of companies in sample)

Over this period, the strongest satisfaction companies (as defined by companies that have an above average allocation in the ACSII) had positive revenue surprises 5.5% more often than the S&P 500 (59.3% vs 53.8%), while posting positive EPS surprises 7.8% more often than the benchmark (70.1% vs 62.3%). The disparity, as shown in the above table, has been consistent

over time with the top satisfaction firms posting a higher percentage of positive earnings surprises in every year and reporting a higher percentage of revenue surprises in 10 of the 12 years - 2010 and 2013 being the exceptions. This effect lends credence to the idea that CSAT is a measure of valuable information which isn't available in traditional backward-looking fundamental data. Current ACSI data is also not readily available to the investment community. The company responsible for the ACSII, Exponential ETFs, has an exclusive license to use American Customer Satisfaction Index data for investment selection purposes, and the publicly-disseminated data on the ACSI website, www.theacsi.org, is limited in scope compared to the licensed data.

Even though we have shown here that CSAT is related to stock price, it is by no means the only driver of stock price. Some industries have captive customers or customers who make decisions primarily on price or accessibility. Most customers choose airlines based on their destinations, the routes to get there, and the best available fare. Other than electing not to fly or complaining, customers have little opportunity to strike back at airlines with poor service (*Fornell, 2007 p. 102*).

Absent a specific line on the balance sheet with a value assigned to the strength of customer relationships, let's examine how customer satisfaction might impact return on equity (ROE), using the five-component DuPont formula:

$$ROE = \left(\frac{EBIT}{Sales} \times \frac{Sales}{Total Assets} - \frac{Interest exp.}{Total Assets} \right) \times \frac{Total Assets}{Book Equity} \times (1 - tax)$$

High levels of CSAT operate like a beneficial form of leverage, in this case, higher Total Assets over Book Equity. The more customers feel satisfied, the more likely they will buy more of the firm's products. An equation for forecasted sales might look like this:

$$\text{Quantity demanded} = [\text{number of customers}] \times [\text{number of purchases per period}] \times c$$

where c is a multiplier that reflects the effect of CSAT on quantity demanded. If customer satisfaction is unchanged, then c would be 1. A c multiplier of >1 will lead to more demand, while a c multiplier of <1 will lead to less demand. Satisfied customers are less prone to price shop, which would, at a minimum, protect profit margins. Better yet, high CSAT enhances the firm's ability to raise prices, which would lead to higher EBIT, all else equal.

CSAT's benefits aren't just limited to revenue. Satisfied customers are sticky customers. Though estimates of the cost to replace departing customers vary widely, it is clear that it costs more to find new customers than to engage with repeat buyers. High CSAT scoring companies won't need to spend as much on marketing, because their satisfied customers will do it for them and may even evangelize the firm on social media. In contrast, dissatisfied customers are very quick to complain about their experiences, and those impressions are costly or impossible for companies to refute.

This doesn't imply firms should spend irresponsibly on satisfying customers. Higher CSAT doesn't automatically lead to higher profitability because there can be costs involved with increasing satisfaction. If the firm spends more than it gains in revenue to achieve higher customer satisfaction, the firm will be less profitable. The key to higher profitability, at least in the context of satisfying customers is to invest resources into high-impact, low-cost projects.

CONCLUSION

There are quite a few strategies that outperform benchmark averages, at least for short periods. Long term data from the S&P Index Versus Active scorecard (*S&P Dow Jones Indices, 2017*) demonstrates just how difficult active managers find it to reliably outperform benchmarks. The American Customer Satisfaction Investable Index outperformed the Standard & Poor's 500 Total Return Index for the three, five, ten-year periods, and since inception on both a nominal and risk-adjusted basis. Additionally, the persistence in the outperformance of a rules-based strategy centered around customer satisfaction provides empirical support for the notion that customers possess information about their future buying behavior well in advance of the companies themselves. Therefore, accurately quantifying levels of customer satisfaction for a company, relative to both its own prior scores and those of its peers, may provide a unique, untapped and forward-looking source of alpha in equity markets.

Disclosures

The **American Customer Satisfaction Investable Index (ACSII)** utilizes proprietary customer satisfaction scores to weight stocks within each sector by their relative customer satisfaction scores. The index utilizes customer satisfaction metrics for over 350 brands, representing over 150 large capitalization securities for inclusion in the index. Sector constraints are applied at the time of index rebalance with the intention of providing a diversified portfolio across all US sectors. The Index has an inception date of August 8, 2016, with a backtested time-series inception date of January 17, 2006.

It is not possible to invest directly in and index.

All information for an index prior to its Launch Date is back-tested, based on the methodology that was in effect on the Launch Date. Back-tested performance, which is hypothetical and not actual performance, is subject to inherent limitations because it reflects application of an Index methodology and selection of index constituents in hindsight. No theoretical approach can take into account all of the factors in the markets in general and the impact of decisions that might have been made during the actual operation of an index. Actual returns may differ from, and be lower than, back-tested returns.

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