

Using The ACSI As An Investment Guide

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Abstract

This research uses the level and changes in the American Consumer Satisfaction Index (ACSI) to inform investment decisions. Firms with increases in ACSI scores of ≥ 3 points are found to provide significantly better investment performance than firms with decreases of ≤ -3 points. Industries most positively affected by improvements in the ACSI score are found in the department and discount store industries. The industry most hurt by declining ACSI values is found to be the electric service industry. It is also found that firms with scores less than 75 out of 100 that achieved an increase in the index of ≥ 3 points had significantly better investment performance than those with scores greater than 75 that made the same ACSI index improvement.

I. Introduction

What happens to the value of a firm when they earn a respectable profit but treat their customers rudely, make products that break down, and generally behave on the theory that there's a sucker born every day? Claes Fornell, the Donald C. Cook professor of business administration at the University of Michigan, wondered about this as he applied for and obtained a grant from the Swedish post office in the late 80s to construct a "satisfaction barometer" for major corporations in Sweden. Who came out on top in the first annual satisfaction ratings in Sweden? Toyota! There is a rumor that the top management over at Volvo was not pleased with the results. Since this early use of the model, Prof. Fornell has continued to develop and refine the model.

In 1994 the University of Michigan's National Quality Research Center sponsored the creation of the American Customer Satisfaction Index (ACSI) which was created by Fornell and others to see how household customers felt about the products and services that they were using in the United States. What differentiates this effort from traditional opinion polls is that only actual customers of the various companies were asked about their products and services. The survey currently tracks over 200 providers of goods and services in 43 industries annually and converts customer satisfaction to a numerical value between 1 and 100 with 100 being the greatest satisfaction possible (i.e., they were truly delighted!). Perhaps not surprisingly, the highest ACSI scorers over the years are also household names in customer satisfaction -- Ralston Purina in pet foods; Quaker Oats in cereals; Amazon.com in e-commerce; Hilton in hospitality; Coca-Cola in beverages; and Unilever in personal care products. (Fornell, 2001)

The ACSI has been around for over 10 years now. It is currently reported in the national media on a regular basis. Each quarter, ACSI scores are presented in the Wall Street Journal (WSJ) and on the ACSI website (www.theacsi.org) along with commentaries. The relationship between ACSI and stock price is not yet well known among the public or among investors. Our interest in the ACSI is centered around the question of whether the index could be used to aid investors in making decisions about additions to their investment portfolios. Although there

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have been a number of studies in the marketing literature about the effects of consumer satisfaction upon various aspects of the firm including its cash flows, the finance literature has not extensively addressed the issue. We feel that investors could potentially benefit from a more rigorous analysis of the effects of customer satisfaction announcements on shareholders' market value.

II. Literature Review

A study by Anderson et al. (2004) developed a theoretical framework that specified how customer satisfaction (as measured by the ACSI) affects future customer behavior and in turn, the level, timing and risk of future cash flows. They used Tobin's q which they felt was a forward-looking, capital market-based measure of the value of a firm. A firm's q value is the ratio of its market value to the current replacement cost of its assets (Tobin 1969). Empirically, they found a positive association between customer satisfaction and shareholder value. As expected, they also found significant variation in the association across the various industries and firms.

Most of the measured economy in the United States deals with production, prices and supply. Nearly all measures quantify the economic output and very few refer to the quality of the output. The ACSI index attempts to enable the voice of the customer to be heard in economic measurement. Fornell (2003) asserts that it is not quality per se that brings about economic returns, it is the improved consumption experience of the buyer that leads to repeat business and increased demand. In other words, unless investment and efforts to improve quality shift the demand curve upward or reduces costs, the investments in improving quality will not pay off.

In a later study, Fornell et al. found that customer satisfaction does lead to excess returns (Fornell et al, 2006). They also found that ACSI scores were significantly related to the market value of equity but that score announcements do not seem to move share prices. Their conclusion was that it is possible to beat the market consistently by investing in firms that do well on the ACSI.

III. Data and Methodology

The sample chosen for this research was selected from the more than 200 providers of goods and services followed by the ACSI. To prevent extraneous events from biasing the results of the analysis, observations were eliminated when certain firm-related announcements were made within 3 days of the annual ACSI score announcements. The *Wall Street Journal* was scanned for evidence of merger announcements, spin-offs, stock splits, CEO or CFO changes, layoffs, restructurings, earnings announcements, and lawsuits. In cases where any of the preceding announcements were found, the observations were eliminated from the analysis.

The final sample consists of 761 announcements of ACSI scores from the 145 companies for the periods from 1995 to 2005 whose common stock returns are available in the Center for Research in Securities Prices (CRSP) Daily Return File. Table I shows the number of firms and samples selected from each industry and the pattern of quarterly announcements followed by the ACSI each year. For each quarter, the announcement date is clustered on the same date, which may cause the cross-sectional correlation among the stock returns. Our test statistics are corrected for the cross-sectional correlations.

The behavior of stock returns around the ACSI announcement date was studied using the standard event-study procedures suggested by Brown and Warner (1980, 1985). Abnormal returns for sample j on day t in the event period was calculated as the prediction error from both the market model and the Fama-French three factor model (1993):

$$AR_{jt} = R_{jt} - [\hat{\alpha}_j - \hat{\beta}_j R_{mt}]$$

Where:

R_{jt} = return on day t to firm security j

R_{mt} = return on day t to market return

$\hat{\alpha}, \hat{\beta}$ = estimated regression coefficients from the market model.

$$AR_{jt} = R_{jt} - \hat{\alpha}_j - \hat{\beta}_j R_{mt} - \hat{s}_j SMB_t - \hat{h}_j HML_t$$

Where:

SMB= the difference between the average returns on the small stock portfolios and those on the big stock portfolios

HML= the difference between the average returns on high (Book Equity)/(Market Equity) portfolios and those on low BE/ME portfolios

$\hat{\alpha}, \hat{\beta}, \hat{s}, \hat{h}$ = estimated regression coefficients from the Fama-French three factor model.

The daily stock returns are obtained from the Center for Research in Security Prices (CRSP) at the University of Chicago. The factor returns for the Fama-French three factor model are obtained from Kenneth French's data library which is available on the internet. The announcement date was defined as the first published date of ACSI scores in the *Wall Street Journal*. One of the unique features in the sample is that the announcement day for each quarter is the same, which entails cross-correlation among the returns. We calculated the standard deviation corrected for the cross-correlation as suggested by Brown and Warner (1980, 1985) for determining the statistical significance of the average abnormal returns during the event period.¹ The estimation period for both model parameters runs from day -250 through day -6 with the announcement day defined as day 0. The CRSP value weight index return was used for the market return in the market model estimation.

IV. Empirical Findings

The behavior of common stock returns around the ACSI announcement date is studied using the standard event-study procedures. Table II shows the average daily market model and Fama-French three factor model adjusted returns surrounding the various ACSI announcement dates from 1995 to 2005. Table II shows the average abnormal returns for both instances where

¹ We employed the "Crude Adjustment" procedure suggested by Brown and Warner (1980, 1985).

the ACSI scores had increased or decreased by 3 or more points on a year-to-year basis.² On the announcement date of score increases, the average abnormal return for the sample was a +0.53 percent for the market model and +0.43 percent for the Fama-French three factor model benchmark. Both results are found to be statistically significant at the 5 percent level. It appears that on average, investors regarded the ACSI score increases as positive news regarding the firms in question. When we look at the instances where the ACSI scores had decreased by 3 or more points, the average result was a + 0.23 percent for the market model and +0.15 for the Fama-French benchmark. These results are found to not be statistically significant. It appears that the announcement of the ACSI score decreases does not have a significant impact on the stock prices.

We also investigated the possibility of our results being driven by firm size. From the CRSP database, we found that 95 out of 121 observations where the scores changed by +3 points or more were from the largest companies in the decile portfolio 10. For the samples of negative score changes, 108 out of 126 observations are from the largest decile portfolios.³ Many of these large companies offer a wide range of products and services to consumers and the ACSI scores may reflect a small proportion of their overall product portfolios. Also, these really large companies have a great deal of other information being made public on a regular basis. The ACSI announcement may simply be lost in the deluge of information that occurs on a daily basis for these large firms. It may not be possible to consistently predict stock market reactions about customer satisfaction for individual companies. What we have learned from our data is that whether the ACSI has had a positive or negative move from year-to-year of 3 or more points, the adjusted returns are not always statistically related to the index changes.

We further test the announcement effect by the industry. Table III reports the average daily market model adjusted returns surrounding ACSI announcement dates by industry over the sample period. When the ACSI score increased by 3 or more points over the previous year, only the Department & Discount Stores industry had a statistically significant positive impact on the stock price. When the ACSI score changed negatively by 3 or more points, the Electric Service industry had a statistically significant negative effect. The result that is harder to explain is the statistically significant +1.43 percent change in the Gas & Electric Service industry. Perhaps these larger companies had variety of business lines that together offset information from the negative ACSI announcements as mentioned above.

The final issue that we investigated is whether there might be an "optimal" ACSI score. It is possible that up to that optimal ACSI score, a firm would be positively rewarded for improvements in their score. An improvement in consumer satisfaction may have more impact on the stock price when their score is low than when their score is high enough. This would mean that the stock price impact would be less when companies improve the consumer satisfaction scores above the optimal level. If a company already has a high ACSI score, they may be viewed as wastefully spending even more of the company's resources in an effort to

² We also tried many different score changes and found that score changes more than or equal to 3 are most significant.

³ We also checked the overlaps of the same companies. We have one company whose scores have increased 3 or more three different times during the ten years. For the score decreases, there was one company whose events have three frequencies.

delight customers who are already quite happy with the products and services that the company provides.

Table IV shows the average daily market model and Fama-French three factor model adjusted returns for the samples whose ACSI scores increased by 3 or more points and had index scores more or less than 75. We found that when ACSI scores are less than 75, there is a statistically significant return of +1.0% on the announcement date. However, when the ACSI score is higher than 75, the stock returns were only a positive 0.20 and not statistically significant. We also looked at the results for samples where the ACSI scores decreased by 3 or more points. We found that there was no statistically significant stock price reaction on the announcement date for both the high or low ACSI score companies.

V. Conclusion

The results of this research suggest that the announcement affect of the ACSI is mixed. When ACSI scores change positively, the stock price reaction is positive. These statistically significant positive stock price reactions are concentrated when the companies have ACSI scores less than 75. When the score changes negatively, the impact is not statistically significant. These stock price adjustments are not universal across all of the industries as just one industry in each case is responsible for the majority of the observed price reaction.

The main conclusion of this research is that the announcement effect of ACSI score changes may provide only limited information to the market. ACSI score improvements of 3 or more points by companies with low ACSI scores may identify companies that merit further consideration as potential investment opportunities. Certainly further research is warranted as additional data on perhaps more companies becomes available in the future.

Table I. Industry and number of ACSI sample firms per each quarter.

First quarter Observations	Number of firms	
Utilities		
Electric service	8	55
Gas & electric service	16	77
Transportation & warehousing		
Airlines	7	57
Fixed line telephone service	5	36
Cable & satellite TV	4	9
Hotels	4	15
Limited-service restaurants	5	33
Second quarter		
Manufacturing/Durable goods		
Personal computers	5	32
Major appliances	3	9
Automobiles & light vehicles	16	41
E-business		
News & information	3	6
Portals	3	10
Third quarter		
Manufacturing/Durable goods		
Food manufacturing	12	96
Pet food	4	25
Soft drinks	3	18
Apparel	5	34
Personal care & cleaning products	5	36
Fourth quarter		
Retail trade		
Supermarkets	6	45
Department & discount stores	9	57
Specialty retail stores	6	15
Finance & insurance		
Banks	4	24
Life insurance	3	7
Property & casualty insurance	3	9
E-commerce		
Retail	3	9
Travel	3	6
TOTAL	145	761

Table II. Average daily market model and Fama French 3-factor model adjusted returns surrounding ACSI announcement dates over the period 1995-2005. T-statistic is calculated after adjusting for the cross-sectional correlation.

Event day	Score increase ≥ 3			Score decreases ≥ -3				
	Average market model adjusted return (%)	t-statistic	Fama French 3-factor model adjusted returns (%)	t-statistic	Average market model Adjusted return (%)	t-statistic	Fama French 3-factor model adjusted returns (%)	t-statistic
-5	0.11	0.43	0.10	0.41	0.33	1.25	0.31	1.22
-4	-0.37*	-1.43	-0.38	-1.53	-0.32*	-1.24	-0.27	-1.06
-3	0.27	1.04	0.13	0.53	0.33	1.27	0.26	1.01
-2	-0.01	-0.06	0.09	0.38	-0.23	-0.87	-0.14	-0.56
-1	-0.06	-0.24	-0.11	-0.44	0.07	0.25	0.04	0.16
0	0.53*	2.03	0.43*	1.76	0.23	0.88	0.15	0.59
1	0.18	0.68	0.19	0.78	-0.00	-0.01	0.01	0.05
2	0.13	0.50	0.05	0.20	0.18	0.75	0.10	0.39
3	0.04	0.16	0.06	0.26	-0.05	-0.20	-0.00	-0.00
4	0.05	0.18	0.08	0.33	-0.00	-0.00	0.01	0.03
5	0.18	0.68	0.08	0.32	0.22	0.84	0.10	0.38

* Significant at the 5% level.

Table III. Average daily market model adjusted returns surrounding ACSI announcement dates by industry over the period 1995-2005, N>5. T-statistic is calculated after adjusting for the cross-sectional correlation

	Number in Sample	Score increases ≥ 3 Average market model Adjusted return (%)	number in sample	Score decreases ≤ -3 Average market model Adjusted return (%)
First quarter				
Utilities				
Electric service	11	-0.65	11	-1.14*
Gas & electric service	18	0.92	16	1.43*
Transportation & warehousing				
Airlines	11	0.88	13	-0.05
Fixed line telephone service	N/A		12	-1.18
Second quarter				
Manufacturing/Durable goods				
Personal computers	8	0.90	6	0.17
Third quarter				
Manufacturing/Durable goods				
Food manufacturing	11	0.44	10	0.32
Fourth quarter				
Retail trade				
Supermarkets	6	0.90	7	0.89
Department & discount stores	9	2.13*	10	0.19

* Significant at the 5% level.

** Significant at the 1 level.

Table IV. Average daily market model and Fama French 3-factor model adjusted returns depending upon the scores of 75 surrounding ACSI announcement dates over the period 1995-2005. T-statistic is calculated after adjusting for the cross-sectional correlation.

Event day	Score<75 and Score changes≥3				Score≥75 and Score changes≥3				
	Average market model adjusted return (%)	t-statistic	Fama French 3-factor model adjusted returns (%)	t-statistic	Average market model Adjusted return (%)	t-statistic	Fama French 3-factor model adjusted returns (%)	t-statistic	
-5	-0.23	-0.58	-0.16	-0.43	0.35	1.08	0.28	0.90	
-4	-0.65*	-1.63	-0.68*	-1.79	-0.18	-0.56	-0.17	-0.55	
-3	0.30	0.74	0.17	0.45	0.25	0.78	0.10	0.32	
-2	-0.06	-0.16	0.24	0.64	0.02	0.06	-0.01	-0.12	
-1	0.10	-0.24	0.10	0.26	-0.17	-0.54	-0.25	-0.80	
0	1.00**	2.50	0.87*	2.29	0.20	0.64	0.14	0.43	
1	0.27	0.67	0.32	0.84	0.12	0.36	0.11	0.34	
2	0.29	0.73	0.29	0.77	0.02	0.06	-0.12	-0.38	
3	-0.34	-0.84	-0.35	-0.93	0.30	0.93	0.35	1.11	
4	0.49	1.21	0.49	1.28	-0.25	-0.78	-0.20	-0.63	
5	0.07	0.17	0.04	0.10	0.25	0.77	0.11	0.35	

* Significant at the 5% level.

** Significant at the 1% level.

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