



Contents lists available at ScienceDirect

Intern. J. of Research in Marketing

journal homepage: www.elsevier.com/locate/ijresmar

Empirical evidence of the stock market's (mis)pricing of customer satisfaction

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ARTICLE INFO

Article history:

First received in 20 December 2007 and was under review for 5 months

Area Editor: Russell Winer

Keywords:

Customer satisfaction

Firm value

Mis-pricing

Risk

ABSTRACT

Recent portfolio studies provide conflicting evidence on whether the stock market (mis)prices the value of customer satisfaction, as measured by the American Customer Satisfaction Index (ACSI), and whether ACSI-based trading strategies provide market-beating returns. The current research aims to shed new light on these issues. We reexamine two ACSI-based trading strategies considered in prior research. Applying a methodology that deals with three interlinking issues, risk adjustment, abnormal returns estimation and portfolio aggregation, we find that the trading strategies do not provide compelling evidence that the market mis-prices the value of customer satisfaction. Our study contributes to the current debate on the (mis)pricing of customer satisfaction by demonstrating the application of a framework within which the robustness of observed anomalies can be more fully assessed.

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The positive relationship between marketing assets and firm value is widely accepted and extensively studied (e.g., Anderson, Fornell, & Mazvancheryl, 2004; Colucci, Montaguti, & Lago, 2008; Erickson, Jacobson, & Johansson, 1992; Gupta, Lehmann, & Stuart, 2004; Srivastava, Shervani, & Fahey, 1998). There is, however, less certainty as to whether the stock market provides a timely and accurate response to changes in the value of marketing assets (Fornell, Mithas, Morgeson, & Krishnan, 2006; Rust, Ambler, Carpenter, Kumar, & Srivastava, 2004). In an efficient market, stock prices should reflect all publicly available information on a firm's worth (Fama, 1970), and most empirical studies tend to confirm this expectation. However, the speed and accuracy with which the market reacts to changes in the value of intangible assets is uncertain (Bond & Cummins, 2000). It has been suggested that analysts tend to give insufficient attention to such assets (Gupta et al., 2004) and do a poor job of recognizing their value relevance (Gu & Wang, 2005). Reflecting this, security mis-pricing has been reported with respect to investments in marketing (Penman & Xiao-Jun, 2001), quality (Hendricks & Singhal, 2001) and innovation (Gu, 2005).

The issues of whether and when changes in customer satisfaction are reflected in a firm's share price have been a particular focus of

research interest. Drawing on the American Customer Satisfaction Index (ACSI), researchers have considered value relevance (whether the Index provides incremental power to accounting data in explaining stock returns) and market efficiency/inefficiency in responding to ACSI data. Research has shown that ACSI is positively and significantly associated with future firm value (e.g., Anderson et al., 2004; Fornell et al., 2006; Gruca & Rego, 2005). However, Ittner and Larcker (1998) and Fornell et al. (2006) both find that, over an event window of 8–10 days, the market does not react to positive or negative ACSI announcements. This muted response has led researchers to examine the possibility that the market is inefficient with respect to ACSI.

Recent portfolio studies provide conflicting evidence on the pricing/mis-pricing of ACSI. In the first such study, Fornell et al. (2006) document higher returns from a portfolio constructed from the top 20% of ACSI firms (relative to competition and with scores above the ACSI national average) compared to the S&P500 and the remaining 80% of ACSI firms for the sample period. Fornell et al. (2006) present the returns achieved from their ACSI-based trading strategy, coupled with results from an event study as evidence that the market is inefficient in responding to changes in customer satisfaction. Aksoy, Cooil, Groening, Keiningham, and Yalcin (2008) also present findings from ACSI-based trading strategies. In their study, an ACSI portfolio is shown to achieve market-beating returns, but only in expansionary economic conditions. In weaker economic conditions, the ACSI portfolio does not outperform the market. Further, in a comprehensive examination of the value relevance of ACSI, Jacobson and Mizik (in press) find no evidence of the widespread mis-pricing of customer satisfaction. They suggest that any mis-pricing of firms observed in their study is limited to the computer and Internet sectors

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Table 1

Comparison of methodologies, results and conclusions between the current study and Fornell et al. (2006).

	Fornell et al. (2006)	Current study
Portfolio construction criteria	<ul style="list-style-type: none"> Firms in the top 20% of ACSI (relative to their competition) Firms ACSI score is higher than the national average 	<ul style="list-style-type: none"> Firms in the top 20% of ACSI (relative to their competition) Firm's ACSI score is higher than the national average
Sample period	One sample period considered <ul style="list-style-type: none"> Feb 1997 to May 2003 	Two sample periods considered <ul style="list-style-type: none"> Feb 1997 to May 2003 March 1996 to May 2006
Aggregation of data	Compare performance of portfolio of top 20% relative to remaining 80% of ACSI firms	Compare performance of portfolio of top 20% to: <ol style="list-style-type: none"> Returns from portfolio of remaining 80% of ACSI firms Returns from each of 4 portfolios constructed from relative ACSI scores
Risk adjustment	<ol style="list-style-type: none"> Estimate market betas (S&P 500) Compare average book-to-market ratios and revenues between top 20% and remaining 80% of ACSI firms 	<ol style="list-style-type: none"> Control for market risk, book-to-market, size and momentum effects in one model Estimate risk coefficients for 6 discrete portfolios
Tests for abnormal returns	No statistical tests of abnormal returns.	Estimate Jensen's alpha (Jensen, 1968)
Results	Sample period Feb 97–May 03 <ul style="list-style-type: none"> Portfolio constructed from top 20% of ACSI firms returns 5% p.a. versus 3% p.a. for Dow Jones Industrial Average and remaining 80% of ACSI stocks Report beta risk of 0.78 Find no difference in average revenues and average book-to-market ratios Find evidence of abnormal returns from buying stocks based on ACSI scores Conclude that the market is inefficient in reacting to ACSI announcements 	Sample period Feb 97–May 03 <ul style="list-style-type: none"> Returns from portfolio of top 20% of ACSI firm are higher than remaining 80% of firms Sharpe ratios marginally higher for portfolio of top 20% of ACSI firms The market model, Fama and French (1993) model, and four-factor model exhibit no significant abnormal returns for all portfolios Sample period March 96–May 06 Returns of portfolio constructed from bottom 20% of ACSI firms are highest. Portfolio constructed from top 20% of ACSI firms provides a middle ranking return and exhibits average return-to-risk ratios The market model, Fama and French (1993) model, and four-factor model exhibit no significant abnormal returns for all portfolios Find no evidence of abnormal returns from buying stocks based on ACSI scores Find no evidence in support of the contention that the market is inefficient in reacting to ACSI announcements
Conclusions		

and is unlikely to be related to customer satisfaction.⁴ The current study is motivated by this conflicting evidence.

Our aim is to shed further light on the market's pricing/mis-pricing of customer satisfaction. To do so, we revisit two ACSI-based trading strategies considered in prior research (Fornell et al., 2006; Jacobson & Mizik, in press), to consider whether portfolios formed following these specifications generate abnormal returns and allow investors to outperform the market. We draw on insights from recent portfolio studies in marketing (e.g., Sorescu, Shankar, & Kushwaha, 2007; Srinivasan, Pauwels, Silva-Risso, & Hanssens, 2006) and approaches developed in the finance literature to provide statistical tests for measuring portfolio performance. We initially estimate Sharp ratios (Sharpe, 1966) to identify risk-return reward for each portfolio. Next, we formally adjust portfolio returns for market, size, book-to-market and momentum risk. Finally, we statistically test each portfolio for abnormal returns. We find that the returns of ACSI-based portfolios are not excessive, relative to risk, and do not indicate that the market mis-prices ACSI. This result bears directly on the current debate as to whether the market mis-prices the value of customer satisfaction.

Given the growing popularity of portfolio studies in marketing, our paper provides a timely framework for considering the robustness of observed pricing anomalies through methods such as alternative risk measurement methodologies and portfolio aggregation strategies. In addition, our use of the Sharpe ratio focuses attention on the economic as well as statistical significance of alleged mis-pricing—a point that is sometimes overlooked in the emerging literature. Economic significance is, in our view, a core consideration, since a statistically significant abnormal return can easily be negated by transaction costs associated with the quarterly portfolio balancing required by the simulated trading strategies presented in prior work. To date, in contrast to work on widely accepted and long standing market

anomalies—such as the post-earnings-announcement-drift (Bernard & Thomas, 1989, 1990)—issues related to economic significance and the associated impact of transaction costs have not been addressed in studies reporting ACSI-driven market anomalies.

1. Can a trading strategy based on ACSI data generate excess returns?

If, Fornell et al. (2006) are correct in arguing that the market underweights ACSI, we would expect stocks with declining ACSI scores to be overvalued and stocks with increasing ACSI scores to be undervalued. By dividing stocks into portfolios according to ACSI data, and holding those portfolios for a time period, investors' longer-term reaction to ACSI announcements can be ascertained. If the market delays in reacting to ACSI announcements, portfolios of high scoring ACSI stocks will outperform portfolios of low scoring ACSI stocks. Indeed, Fornell et al. (2006), find evidence that it is possible to systematically outperform the market using ACSI-based trading strategies. We draw on the finance literature to further examine the performance of portfolios formed by their trading strategy.

Following evidence of market mis-pricing, it is common to test the robustness of a reported anomaly using alternative approaches (see, for example, Fama, 1998).⁵ Our study is in keeping with this tradition, employing the same sample period and portfolio construction techniques described by Fornell et al. (2006). The key differences in our analysis concern (1) lower aggregation of portfolios, (2) an alternative approach to risk adjustment, and (3) formal statistical tests of abnormal returns. We also examine two sample periods, one mirroring the original study and an extended sample. Table 1 illustrates the differences in methodologies, results and conclusions between the present study and Fornell et al. (2006).

⁴ Jacobson and Mizik (in press) also find that ACSI has no incremental value relevance beyond these sectors, thereby providing an alternative explanation for the muted market response observed in earlier event studies.

⁵ For example, it is common to test market anomalies in a range of sample periods and, to avoid bad-model problems, using a number of asset pricing model specifications.

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