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Stock Returns on Customer Satisfaction Do Beat the Market: Gauging the Effect of a Marketing Intangible

A debate about whether firms with superior customer satisfaction earn superior stock returns has been persistent in the literature. Using 15 years of audited returns, the authors find convincing empirical evidence that stock returns on customer satisfaction do beat the market. The recorded cumulative returns were 518% over the years studied (2000–2014), compared with a 31% increase for the S&P 500. Similar results using back-tested instead of real returns were found in the United Kingdom. The effect of customer satisfaction on stock price is, at least in part, channeled through earnings surprises. Consistent with theory, customer satisfaction has an effect on earnings themselves. In addition, the authors examine the effect of stock returns from earnings on stock returns from customer satisfaction. If earnings returns are included among the risk factors in the asset pricing model, the earnings variable partially mitigates the returns on customer satisfaction. Because of the long time series, it is also possible to examine time periods when customer satisfaction returns were below market. The reversal of the general trend largely resulted from short-term market idiosyncrasies with little or no support from fundamentals. Such irregularities have been infrequent and eventually self-correcting. The authors provide reasons why irregularities may occur from time to time.

Keywords: customer satisfaction, customer lifetime value, intangibles, stock portfolio returns, abnormal returns

Among the many potential performance outcomes for marketing, there has been a rapid rise in interest in measures of stock performance and customer satisfaction over the past several years (e.g., Katsikeas et al. 2016). The literature on customer satisfaction and stock returns has also become fairly extensive (Aksoy et al. 2008; Anderson, Fornell, and Mazvancheryl 2004; Anderson and Mansi 2009; Bell, Ledoit, and Wolf 2014; Fornell, Mithas, and Morgeson 2009a, b; Fornell et al. 2006; Gruca and Rego 2005; Ittner and Larcker 1998; Ittner, Larcker, and Taylor 2009; Jacobson and Mizik 2009a, b; Lambert 1998; Luo, Homburg, and Wieseke 2010; Malshe and Agarwal 2015; Ngobo, Casta, and Ramond 2012; O'Sullivan, Hutchinson, and O'Connell 2009; O'Sullivan and McCallig 2009; Peng et al. 2014; Tuli and Bharadwaj 2009). Although most of these studies examine customer satisfaction using the same data source (American Customer Satisfaction Index [ACSI]; www.theacsi.org) and find predominantly positive risk-adjusted stock returns, their conclusions differ with respect to the statistical significance of the abnormal returns and whether there is evidence of mispricing.

Some researchers (Bell, Ledoit, and Wolf 2014; Jacobson and Mizik 2009a; O'Sullivan, Hutchinson, and O'Connell 2009) have argued that abnormal returns cannot be distinguished from random variation, or that there is no evidence that customer satisfaction predicts long-term stock returns (Ittner, Larcker, and Taylor 2009). These arguments and predictions can now be put to the test. If they are correct, then customer satisfaction returns subsequent to these cited studies should approximately equal market returns. The new empirical evidence, however, points to anything but equal to market returns. For the full 15-year time period (2000–2014), the model-free audited cumulative gross returns on customer satisfaction amounted to 518%.[1] By comparison, the Standard & Poor's [S&P] 500 grew by 31% over the same period (2000–2014). On an annual basis, the customer satisfaction portfolio outperformed the S&P in 14 out of 15 years. The magnitude of such a return disparity over a period of 15 years

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[1]The lead author is the owner and founder of the U.S. fund studied and the American Customer Satisfaction Index (ACSI). As registered under the Investment Advisers Act of 1940, the fund's investment manager is regulated by the SEC. This should not be taken to imply a certain level of skill or training. The returns were audited by an independent third-party accounting firm, unaffiliated with the authors and registered with the Public Company Accounting Oversight Board. The audited returns have also been provided to the Editor in Chief as a part of the review process.

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implies that known risk factors or sector biases are very unlikely explanations because investors would have had enough time to discover the anomalies and adjust to them accordingly.

These findings do not mean, however, that the returns cannot be mitigated by known factors from time to time. Indeed, we find that this is the case. Moreover, and similar to the impact of employee satisfaction on stock prices (Edmans 2011), there is evidence that the effect of customer satisfaction is channeled, at least to some extent, through earnings surprises. That is, to the extent that the market does not react to news about customer satisfaction, there is a reaction to its materialization in corporate earnings and effect on earnings surprises. We find significant relationships between customer satisfaction and earnings and that customer satisfaction is predictive of earnings surprises. In turn, stock returns on earnings mitigate the effect on customer satisfaction returns. That is, some of the effect on stock prices from customer satisfaction seems to be absorbed by the effect of earnings on stock prices.

In addition, we identify time periods under which the abnormal returns are negative (even though the absolute returns remain positive), but they are too short in duration to be statistically significant and are overwhelmed by the predominance of positive risk-adjusted alphas. Nevertheless, there are lessons to be learned from the return reversals. They seem to happen largely without assistance from a corresponding reversal in fundamentals but as a reaction to price increases of hitherto strong performing stocks in favor of less expensive stocks (i.e., stocks with lower price-to-earnings [P/E] ratios).

The remainder of the study is structured as follows. We begin with the theoretical impetus behind the proposition that customer satisfaction is germane to firm value and demonstrate how a small increase in customer retention can have a large effect on equity value. This is of critical importance because the equity value grows exponentially at higher levels of customer retention, whereas the value of an increase in customer retention from a low level to a somewhat higher level is much smaller. The implication, which we test in this study, is that changes in customer satisfaction are much more likely to have an effect when they are accompanied by high levels of customer satisfaction.

Next, we present the data from the ACSI and the stock portfolio. We describe the relevant properties of each—the ACSI, with respect to the degree to which it is representative of the U.S. stock market (S&P 500 index), and the stock portfolio, with respect to how it is constructed with ACSI data as input. In both cases, we take these data sets as they are. The same is true with respect to the U.K. customer satisfaction data, but not the U.K. portfolio returns. The U.K. portfolio returns result from back testing that we performed. Because of the low credibility of back testing due to the risk of data snooping (Lo and MacKinlay 1990), we selected the simplest and most transparent of trading rules, as we detail subsequently.

Following this, we turn to the analyses and findings. We employ the standard capital asset pricing model (CAPM) to estimate the market risk premium and add the momentum risk premium (Carhart 1997), the size risk premium, and the growth risk premium (Fama and French 1993). The Barra model, controlled for market returns, is used for additional attribution analysis and shows that only 2 (technology and retail) out of 16 style factors have a significant effect, and approximately 80% of the return variance is due to idiosyncratic effects. Next, we estimate the effect of customer satisfaction on earnings and earnings surprises as well as the effect of earnings returns on customer satisfaction returns. We find that customer satisfaction has a significant effect on both earnings and earnings surprises. As we hypothesize, changes in customer satisfaction have an effect on earnings only if they are complemented by high levels of customer satisfaction. We also use the new five-factor Fama–French (2015) model to estimate the effect of earnings returns on customer satisfaction returns, finding that returns on earnings reduce returns on customer satisfaction to some degree.

Finally, we examine the extent to which the returns to customer satisfaction can be generalized. Confirmatory evidence from the United Kingdom shows results similar to those in the United States. There is also disconfirmatory evidence: over the 15-year time period, stocks of companies with strong customer satisfaction did not always outperform the market. In particular, there was a time period in 2012–2013 marked by underperformance. We examine market behavior during this period and find that it deviates substantially from the norm in the sense that companies that have weak balance sheets, are heavily shorted, and have low price-to-earnings ratios outperformed the market.

Theoretical Impetus

Major shifts in economic activity over the past several decades have caused intangible assets to become a major force for value creation, economic growth, and performance assessment (e.g., Katsikeas et al. 2016). These assets loom large in the modern economy and are often valued higher than the assets on balance sheets. They are generally not, however, capitalized like other investments, thereby disconnecting the timing of income from expenditure in financial statements. For example, even though the benefits accrue in the future, investments in customer service are usually fully expensed when they occur. As a result, they might become visible in income statements as an input variable without much information about the nature or timing of actual outputs. Under such circumstances, it is difficult to ascertain the real value contribution from having satisfied customers. Fortunately, there is output information available, but even so, the economic value of customer satisfaction still might not become manifest until there is an impact on other outputs (e.g., earnings).

Perhaps more than any other intangible, satisfied customers are essential for any seller in a competitive market if repeat business is a significant portion of total revenue. Accordingly, customer satisfaction occupies a central place in both micro and macro analysis. At the micro level, it is a leading indicator of favorable (high level/low volatility) net cash flows (e.g., Gruca and Rego 2005). At the macro level, it is related to economic growth through consumer spending and to the efficiency by which capital is allocated (e.g., Fornell, Rust, and Dekimpe 2010). Allocative efficiency, in this sense, depends on the joint ability of consumer and equity markets to punish (reward) firms that fail (succeed) in satisfying their customers. That is, consumer markets reward high-consumer-utility-producing firms with repeat business and punish low-consumer-utility-producing ones by

defection. By rewarding high-consumer-utility-producing firms and their shareholders with higher stock prices and penalizing low-consumer-utility-producing firms with capital withdrawal, capital markets would be in line with consumer markets under the notion of allocative efficiency. It is in this sense that buyer satisfaction plays a vital role in the individual company's ability to generate wealth at the micro level and in allocative efficiency at the macro level.

Most consumer markets are characterized by numerous purchase alternatives and by repeat sales as a large portion of firm revenue. High customer satisfaction, relative to competition, is associated with repeat purchase, market share protection, lower price elasticity, lower transaction costs, and lower selling/marketing costs (Anderson, Fornell, and Lehmann 1994). Satisfied customers are therefore important for earnings, return on investments, return on assets, and cash flows (Aksoy et al. 2008; Anderson, Fornell, and Mazvancheryl 2004; Fornell et al. 2006; Gruca and Rego 2005; Tuli and Bharadwaj 2009). Because of its influence on buyer loyalty, customer satisfaction is also beneficial for risk reduction. Systematic, idiosyncratic, and downside risk are lower for firms with strong customer satisfaction (Fornell, Mithas, and Morgeson 2009a, b; Tuli and Bharadwaj 2009). In addition, customer satisfaction is associated with other benefits, such as positive word of mouth, higher reservation prices, more cross-buying, fewer consumer complaints, lower warranty and field service costs, and less customer defection and employee turnover (Fornell et al. 2006). Most of these effects have positive impacts on acceleration, stability, size, and—by implication (from loyal customers)—risk reduction regarding future cash flows.

Although there is substantial empirical support for many of the aforementioned effects, the most fundamental finding has to do with repeat business. There is a large literature on customer lifetime value (CLV), or customer equity, whereby the economic value of repeat business is determined by the discounted net present value of future cash flows from current customers. Consistent with the proposition that customer satisfaction has a positive impact on stock price, research has shown that an increase in CLV can lead to an increase in stock price (Kumar and Shah 2009, 2011) and to higher future profits (Venkatesan and Kumar 2004). Although there are several ways to measure CLV (Holm, Kumar, and Rohde 2012; Kumar and George 2007), for our purposes and without loss of generalization, assuming that profit margins are constant, the time period is infinite, and the customer retention rate does not vary over time, we can theoretically express customer equity value as follows:

$$\text{CEV} = m\left(\frac{r}{1+i-r}\right), \tag{1}$$

where CEV = customer equity value, m = the profit margin multiple, r = the proportion of retained customers, and i = the discount rate. By way of example, consider a company in which 75% of customers return as future buyers and the discount rate is 5%. Solving Equation 1 gives a margin multiple of 2.5. If customer satisfaction increased and led to a growth in the proportion of retained customers by, say, 5 percentage points (r = .8), the corresponding margin multiple would be 3.2—a growth in equity value of 28%. Note that a fairly small increase in retention (5 percentage points) leads to a much larger growth in the value of customer equity (28%). The effect obviously becomes more pronounced at higher levels of r, but even at moderate levels, it is quite substantial and of relevance to investors. Because customer satisfaction is a major contributor to buyer retention, it follows that it too may affect stock price.

Practically, it may be useful to illustrate a few short examples of relationships between customer satisfaction and share price before turning to formal analysis. Consider four firms—Apple, Netflix, Costco, and Home Depot—over an identical ten-year time period. In Figure 1, Panels A–D, we depict the relationship between ACSI and stock price for these companies.

The most dramatic relationship is the one for Apple. As its customer satisfaction increased from a middle-of-the pack company to best in class, Apple's stock price soared (Figure 1, Panel A). Netflix depicts a reversal of fortunes in both ACSI and stock price (Panel B). In contrast to Apple, Netflix already had a very high level of customer satisfaction when the ACSI began tracking it. As its ACSI score continued upward, its stock price did too. However, Netflix frustrated customers by increasing its prices by 30%–50% in 2011. Both its ACSI and stock price plummeted. Costco illustrates yet another type of relationship (Panel C). Here, it is change in the ACSI that is most relevant. Even though Costco customer satisfaction is high, it is not as high as that for many other companies. Finally, Home Depot shows what can happen to a company that starts out with a reasonable level of customer satisfaction, drops back significantly (to a low ACSI score of 66), and later not only recovers but also achieves a higher ACSI score than it had before the slump (Panel D). As customer satisfaction deteriorates, Home Depot's stock price falls. When customer satisfaction increases sharply later on, so does the firm's stock price. These companies illustrate how ACSI and stock price move together in different ways: from good to superb (Apple); from superb to weak (Netflix); from good to better (Costco); and from good, to bad, to better (Home Depot). Although these are just examples of individual companies, they do show a strong relationship between customer satisfaction and stock price. Next, we examine the extent to which these examples can be generalized in a portfolio of companies, selected on the basis of ACSI data.

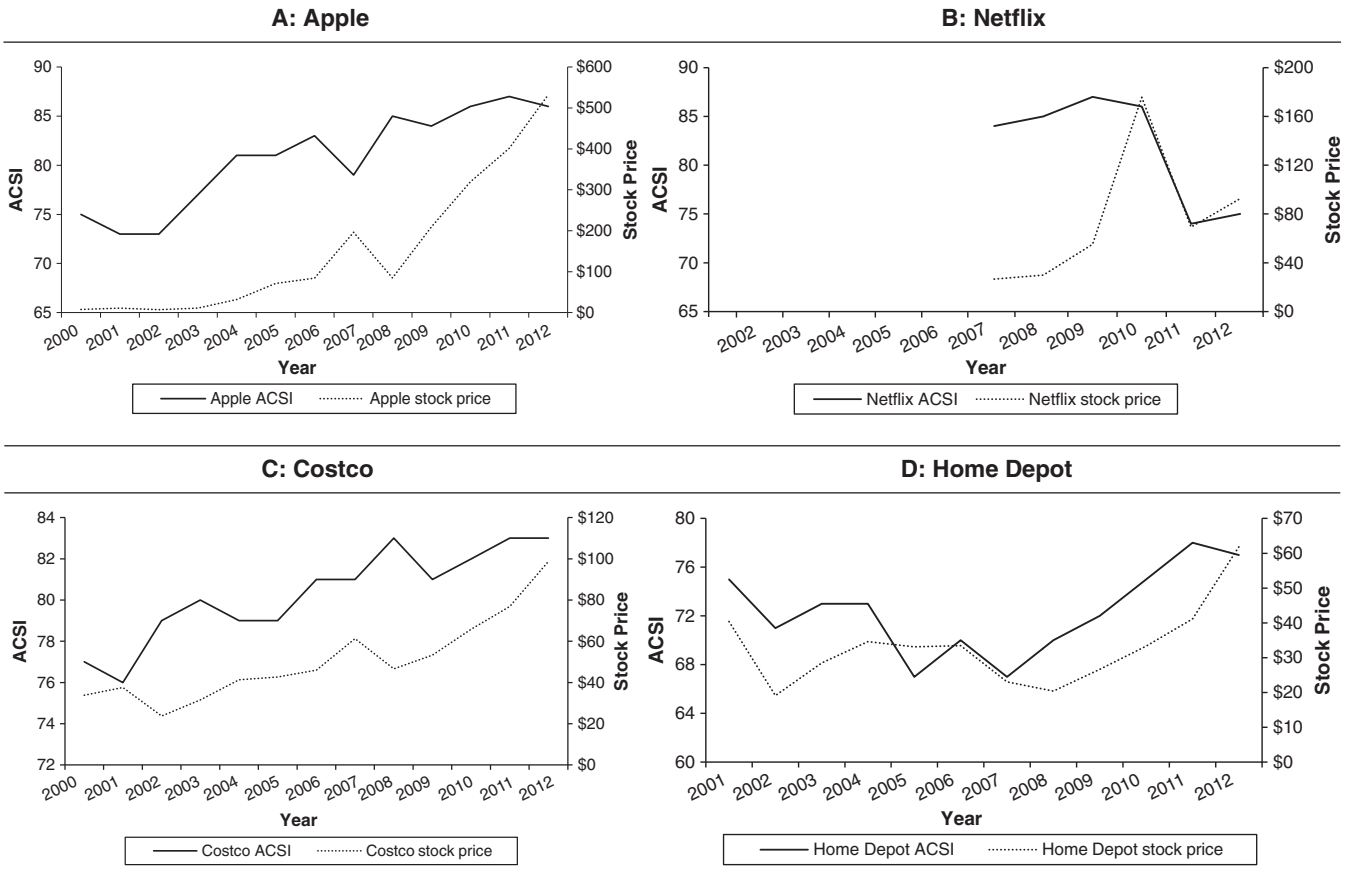
Data

Customer Satisfaction Data

The customer satisfaction data used in this study come from the ACSI, which provides annual customer satisfaction scores from a latent variable structural equation model estimated from survey data on customer satisfaction for approximately 300 of the largest companies, across 45 distinct industries, in the U.S. consumer market (e.g., Fornell et al. 2006).[2] Data are collected on a quarterly basis for different industries, with approximately

[2]Customer satisfaction is measured for the largest companies in each industry. Within each industry, those with the largest U.S. market shares are covered. The sample of measured ACSI companies includes mostly larger consumer goods firms. Although this means that the ACSI is not perfectly representative of the broader universe of publicly traded companies, it is in keeping with the prior literature investigating the impact of satisfaction (and other intangibles) on market performance (Edmans 2011).

FIGURE 1
Examples of the ACSI–Stock Price Relationship



25% of the total annual probability sample of about 70,000 households interviewed each quarter, resulting in annual satisfaction scores for each company.[3] Although the ACSI is obviously skewed toward consumer markets, it seems to represent the overall stock market quite well.[4]

Audited Returns and Back-Tested Returns

The other major data source is audited stock portfolio returns obtained from the same stock fund examined in Fornell et al. (2006). Previous research has not detected an announcement effect regarding ACSI news releases and press coverage (Fornell et al. 2006; Raithel et al. 2011; Srinivasan and Hanssens 2009) or has found only a limited effect (Ittner, Larcker, and Taylor 2009). Accordingly, the trading is based on both levels and changes in a company's customer satisfaction score. Stocks are purchased both before and after the ACSI release date, with a blackout period of 48 hours surrounding the announcement.[5]

In general, access to audited returns data, which is what this study relies on for its major analysis, is advantageous because data snooping bias is eliminated (Black 1993; Lo and MacKinlay 1990; Merton 1987). Data snooping refers to the reuse of data for model testing. For example, trying out various rules for stock portfolio construction in a back-testing scenario is almost always subject to data snooping bias—leading to stock-picking rules based on sample uniqueness but without predictive superiority. There is substantial evidence that

[3]The ACSI database contains approximately 3,200 firm-year observations over a 20-year period, with an average customer satisfaction score of 76.44 and an average annual standard deviation of 2.43.

[4]For the time period 1997–2003, Fornell et al. (2006) examined the top 20% ACSI firms and found that they outperformed the Dow Jones Industrial Average (DJIA) by 21%–40%, but that the bottom 80% ACSI firms had a return virtually identical to the DJIA (20.4% and 21%, respectively). For this study, the correlation between the returns of the ACSI universe and the S&P 500 (for the time period 2000–2014) was .88. The reason for the high correspondence between the ACSI universe returns and S&P returns is probably that consumer spending is such a large proportion of the gross domestic product and that many firms covered by ACSI compete in both consumer and nonconsumer markets.

[5]The blackout period is not imposed by regulation, but it is used to remove any reasonable risk of trading on announcements. Even though most prior research has not detected a significant announcement effect, its existence cannot be completely ruled out, especially as the returns on customer satisfaction become more widely known. For example, a recent study by Ivanov, Joseph, and Wintoki (2013) finds that stock trading volume is 2.8% higher on average during a ten-day period around the ACSI announcements and that there is a market reaction to these announcements over six trading days.

data-driven discovery leads to seriously distorted findings and that it is endemic in the literature (White 2000). The lack of credibility is so serious that the SEC prohibits the use of back-tested results in presentations of stock funds to investors. In academia, however, back testing is common, presumably because real returns data are difficult to obtain. The advantage of back-tested results is that the portfolio construction rules can be made explicit, but that is of limited value if the process of how these rules were established is not disclosed. If the rules were established through trial and error, the predictive powers of back-tested results are greatly curtailed.

However, even though actual returns are generally preferable, they are not without limitations. They can almost never be perfectly replicated because, in practice, stock trading rules are almost never truly formulaic. Most professional investors require different risk exposure, stop-loss criteria, portfolio diversification, leverage, and so on. Yet perfect numerical replication is not required for generalization or for theory testing—verification and general principles are. Only audited returns can provide true numerical verification.

The general trading principle can be succinctly stated as follows: go long in firms with strong customer satisfaction (i.e., high and rising levels of ACSI scores relative to other firms in the same industry), and short in firms with weak customer satisfaction (i.e., low and declining ACSI scores relative to other firms in the same industry). This principle may be operationalized in slightly different ways; the issue is the extent to which different studies using the same theoretical principle, with different operationalizations, arrive at similar results. Among the studies that have examined the customer satisfaction–stock return relationship, most have obtained similar numerical results. Indeed, *all* previous studies that have analyzed stock returns of firms with strong customer satisfaction (high levels and positive changes) have reported numerically large abnormal returns. When the regression estimates, which typically reflect monthly returns in these studies, are expressed as annual returns, it is evident that the abnormal returns are very large.

For example, Jacobson and Mizik (2009a) report risk-adjusted monthly abnormal returns of .007. Had they expressed these returns in annual terms, it would have been obvious that a monthly above-market return of .007 is very high, equaling a market outperformance of 8.4% per year over ten years, even after adjustments for additional risk factors—better than almost any mutual fund over the same time period. Aksoy et al. (2008) report abnormal annual returns of 10.6% over a different (but somewhat overlapping) ten-year period. As we show herein, these estimates are similar to our findings over a time period 50% longer. We return to other studies subsequently and discuss circumstances under which some of them reached conclusions different to ours, but for now it is important to point out that even though our main study does not include formulaic trading rules, it does not follow that the general principle behind the portfolio construction is insufficient for verification or that the results cannot be approximated in a meaningful way.

In our case, then, we expect that the general principle of going long in firms with strong customer satisfaction and short in firms with weak customer satisfaction would lead to similar returns even though operationalizations of the principle may differ. We test this prediction by using data from an additional market and country and, in so doing, mitigate the strengths and weaknesses of real data versus back-tested data. In this case, we back test a paper portfolio based on customer satisfaction data in the United Kingdom and compare its returns with the Financial Times Stock Exchange (FTSE) 100 index. Notwithstanding the limitations of back testing, it serves as a complement to the actual and audited returns data in the U.S. study. By combining actual and back-tested returns, the weakness in one approach is compensated by the strength of the other, and vice versa. The estimated annual abnormal return (12%) in the U.K. study is fairly similar to what we and others find in the United States (8.4%–10.8%). The difference is most likely due to the fact that there are more variables available for adjusting the returns for risk in the United States and that the U.K. returns do not take dividends into account. If dividends had been included, the returns would have been reduced by approximately 2%, bringing the U.K. returns in line with the U.S. results.

Portfolio Returns

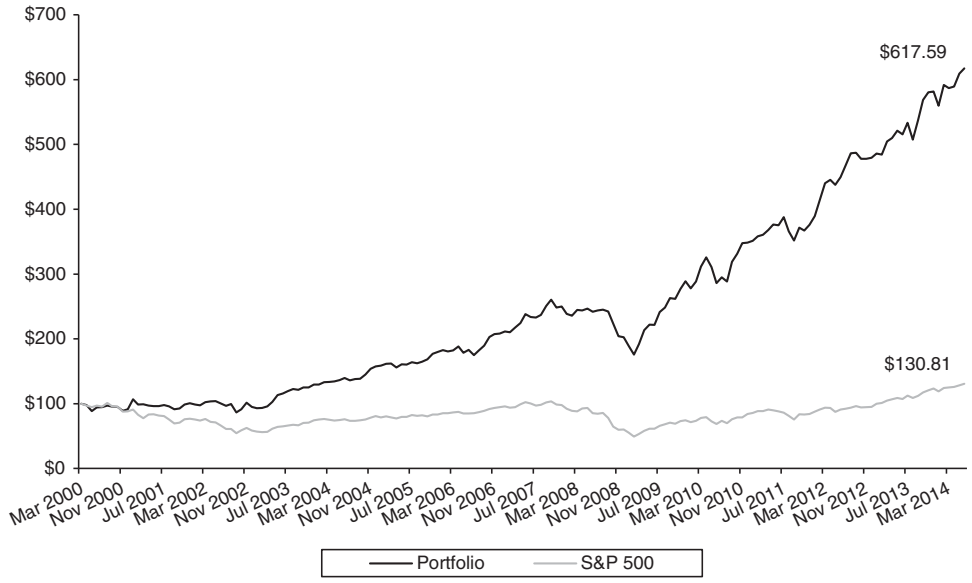
Let us begin with the returns on the U.S. customer satisfaction portfolio described previously. Figure 2 shows the cumulative, model-free returns, expressed as the value of $100 invested from April 2000 through June 2014. The investment grew to $618 (+518%). Although it might appear that the 2009 recession dip in the portfolio returns in Figure 2 was larger than market, the opposite is actually the case in terms of percentage changes. This finding is consistent with Merrin, Hoffman, and Pennings (2013), in that customer satisfaction is found to act as a buffer after the bursting of price bubbles. It is also evident that the returns are not due to spectacular performance in a few years and underperformance in others, as is often the case with mutual funds. As Figure 2 illustrates, the customer satisfaction returns were higher than the returns for the S&P 500 in 14 of the 15 years, with 2013 as the sole outlier. In view of the large difference between the S&P 500 and the customer satisfaction portfolio performance over a long period of time, it is very unlikely that the result can be explained by known (risk) factors or sector bias (whether retail, technology, or otherwise). With a short time period, the impact of such factors could be substantial, but this is not true in the long run. This is because investors would have had sufficient time to react, and the abnormal returns would have been eliminated. In the absence of these factors, it would seem reasonable to conclude that the results were essentially driven by customer satisfaction and that investors in the main were unaware of its effect or its manifestation. It may be possible, however, that known factors, to a limited extent, mitigate customer satisfaction returns. This is what we examine next.

Let us begin the analysis of risk-adjusted returns by using the standard Sharpe–Lintner CAPM (Lintner 1965a, b; Sharpe 1965):

$$SAT_{it} = \alpha_{it} + b_1 MKT_t + \varepsilon_{it}, \quad (2)$$

where SAT_{it} = the portfolio return minus the risk-free rate at time t (month), α_{it} = the estimate of risk-adjusted above-market

FIGURE 2
Cumulative Returns on $100 Invested in Customer Satisfaction: Portfolio Versus the S&P 500 (April 2000 Through June 2014)



returns at time t, MKT_t (market risk premium) = the market returns in excess of the risk-free rate at time t, and ε = the error term. We obtained the risk data for this and subsequent equations from Kenneth French's website and data library (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html). The results (presented in Table 1) indicate a significant alpha of .009, equivalent to annualized market risk-adjusted returns of 10.8%, as well as a significant market beta of .692.

Jacobson and Mizik (2009a) claim that that abnormal returns from satisfaction are limited to the technology sector, where they found adjusted abnormal annual returns of 32.4%–38.4% over ten years. No commercially available portfolio of common stock has ever even been close to outperforming the market by 32%–38% annually over a period of ten years, so there is reason to be somewhat skeptical about these numbers. This finding also seems inconsistent with other results reported by Jacobson and Mizik. When technology (and utilities) is removed from the portfolio, the abnormal returns are reduced by only 1.0%–3.3% for the full sample (depending on the model they use), which must be statistically insignificant if 6.4%–8.4% is insignificantly different from zero (or nearly so for the latter alpha), as they report in their study.

Even though we could not find any theoretical or empirical justification for treating technology differently, we did check to determine whether the results changed under narrower market indices, such as NASDAQ and the Dow Jones Industrial Average (DJIA). The estimated annual alpha (adjusting for dividends as an average of 2%) relative to NASDAQ is 11.2%, slightly higher than the Fama–French benchmark (MKT) at 10.8%, and the alpha with the DJIA is 10.0%, slightly lower. If technology stocks were much more sensitive to customer satisfaction, an even larger alpha would be expected.

TABLE 1
Risk-Factor Model Results

	Sharpe–Lintner CAPM	Fama–French Three-Factor CAPM	Carhart Four-Factor CAPM	Winsorized (95%) Carhart Four-Factor CAPM
α	.009***	.009***	.009***	.009***
α (%)	10.8%	10.8%	10.8%	10.8%
MKT	.692***	.654***	.622***	.608***
SMB	—	.171*	.183**	.072
HML	—	.005	–.003	.028
MOM	—	—	–.062*	.050

*$p < .05$ (one-tailed).
**$p < .01$ (one-tailed).
***$p < .001$ (one-tailed).
Notes: MKT = monthly market returns excess of the risk-free rate; SMB = size risk-factor returns; HML = value risk-factor returns; MOM = momentum risk-factor returns.

Other known factors cannot be expected to do much better, but we examine the extent to which they mitigate the returns. Adding risk factors proposed by Fama and MacBeth (1973) and Fama and French (1993, 2004), we specify a three-factor model:

$$(3) \quad SAT_{it} = \alpha_{it} + b_1MKT_t + b_2SMB_t + b_3HML_t + \varepsilon_{it},$$

where the additional factors are SMB_t (stock size risk premium) = the size risk-factor returns at time t and HML_t (stock growth risk premium) = the value risk-factor returns at time t.

With respect to alpha, the result is identical to the original CAPM (an alpha of .009, or 10.8% annual return). The market beta is somewhat smaller at .654, as some of the effect is picked up by the small stock risk factor (.171). The effect of the growth risk premium is not significant. We are not aware of any theoretical basis for interpreting the size risk-factor returns effect, even though it is statistically significant at .05. The ACSI is, by design, dominated by large cap stocks. The returns of small stocks minus big stocks do covary with the customer satisfaction returns (of large stocks), but that association is most likely a spurious one.

Finally, we add another risk factor, suggested by Carhart (1997)—MOM_t (stock momentum risk premium) = the momentum risk-factor returns at time t—but this factor is not significant and the results do not change.

$$(4) \quad SAT_{it} = \alpha_{it} + b_1MKT_t + b_2SMB_t + b_3HML_t + b_4MOM_t + \varepsilon_{it}.$$

To summarize, the results show an annual four-factor alpha of 10.8% over a 15-year period from a stock fund long in strong customer satisfaction stocks and short in weak customer satisfaction stocks. The results are unchanged even when more risk factors are added to the model, but the results are at odds with the conclusions, though not necessarily with the numerical results of Jacobson and Mizik (2009a), Bell, Ledoit, and Wolf (2014), and Ittner, Larcker, and Taylor (2009). There are several reasons for this discrepancy beyond the longer time period we used.

First, consider Ittner, Larcker, and Taylor (2009), who report that customer satisfaction has incremental informational value beyond financial information but find no abnormal returns or evidence of mispricing. However, levels of customer satisfaction are disregarded in their portfolio construction; only changes are deemed relevant. The assumption is that customer satisfaction levels are already impounded in stock prices—consistent with the efficient market hypothesis of zero alpha. Aside from ignoring information implied by CLV (Equation 1), which posits that (high) levels are critical because of their exponential impact on value, there is the logical challenge of assuming that levels of customer satisfaction are already reflected in share prices when that very assumption (market efficiency) is being tested. High serial correlation notwithstanding, the importance of levels (in combination with changes) is that firms with high levels of customer satisfaction (and thus, retention) create much greater customer equity value than firms with low levels of customer satisfaction, even if the latter firms also have increasing satisfaction.

Two other studies (Bell, Ledoit, and Wolf 2014; Jacobson and Mizik 2009a) obtain large positive alphas but likewise conclude that these abnormal returns cannot be distinguished from chance. Jacobson and Mizik (2009a) also apply a conditional model with time-varying parameters and find an alpha of zero.[6] However, such a result would require the correlation between alpha and beta to be "enormous" (to cite Lewellen and Nagel 2006). We find that correlation to be no greater than .36, but that may not matter because time has passed and the prediction of zero alpha is now testable and shown to be inaccurate.

The Earnings Effect

Systematic underpricing of customer satisfaction could be due to multiple factors, but recent research has suggested earnings surprises as a major factor (Ngobo, Casta, and Ramond 2012; O'Sullivan and McCallig 2009). That is, investors do not react to information about customer satisfaction per se either because they are not aware of it or because they place little trust in it until it is substantiated by financials. Instead, they react to earnings surprises, which, in turn, may have been caused by strengthening or weakening customer satisfaction. Thus, we examine the impact of customer satisfaction on both earnings and earnings surprises.

Over time, the portfolio has held substantially more longs than shorts (920 vs. 88). In Table 2, the first two mean scores reflect average earnings surprises for the long (3.3 cents per share) and short (.9 cents per share) books, respectively. The long positions had positive quarterly earnings surprises 60% of the time. That may not, in itself, suggest anything out of the ordinary, because most S&P stocks tend to beat earnings estimates (Jakab 2012). However, only 37% of the longs had negative earnings surprises. The short positions had negative

[6]Unlike the unconditional (or static) CAPM, the conditional CAPM suggests that beta (or exposure to market risk) varies over time, as rational investors anticipate future investment conditions that could change adversely and thus alter their investment strategies intertemporally. According to the logic of the conditional CAPM, investor expectations lead to a correlation between beta and market risk premium that also varies over time, and that can help better explain contemporaneous market risk premium (or alpha). Either short-window regressions testing for the existence of intertemporal variation in beta (Adrian and Franzoni 2009; Lewellen and Nagel 2006) or a version of the CAPM that integrates lagged terms for market risk premium and beta ($alpha_{t-1} \times beta_{t-1}$) (Jagannathan and Wang 1996) are used to test the conditional CAPM. Although results from these studies also vary, and although a debate in the finance literature over the usefulness of the conditional CAPM in better explaining asset pricing anomalies remains active, most research has found only a marginally better explanation of risk premiums through the conditional CAPM. Some studies have found that the conditional CAPM decreases the size of the market risk premium moderately or slightly but without alpha falling to zero or becoming statistically insignificant (Adrian and Franzoni 2009; Jagannathan and Wang 1996). Other studies have found virtually no impact of the conditional CAPM, suggesting that the correlation between alpha and beta over time would need to be "enormous" to explain away asset pricing anomalies (Lewellen and Nagel 2006). Yet all agree that the intertemporal covariance between beta and alpha needs to be very large for the conditional CAPM to improve explanation of market risk premiums from the CAPM.

TABLE 2
Customer Satisfaction Portfolio Earnings Surprises

	N	M	Min	Max	SD
Long Positions					
EPS – median EPS forecast	920	.0330	–6.3867	3.9900	.5999
EPS – median EPS forecast ($ millions)	920	26.1132	–6,663.75	2,477.3910	432.8846
Short Positions					
EPS – median EPS forecast	88	.0086	–2.1033	3.7200	.6029
EPS – median EPS forecast ($ millions)	88	–62.3988	–3,497.84	697.6367	447.2678

Notes: Earnings surprise = quarterly earnings per share – median earnings per share forecast (source: Bloomberg L.P.). A t-test of the difference between long and the short positions shows that the long positions had significantly more positive earnings surprises than the short positions ($p < .05$, one-tailed).

quarterly earnings surprises 49% of the time, much more frequently than S&P 500 firms; they also had 49% positive earnings surprises, less common than S&P 500 firms. At first glance, these findings would seem to suggest that strong customer satisfaction is more closely associated with positive earnings surprises than weak customer satisfaction with negative earnings surprises. Yet looking at quarterly earnings surprises in dollar terms (the second set of mean scores in Table 2, with mean earnings per share [EPS] multiplied by common shares outstanding), negative earnings surprises are larger: approximately –$62.4 million on average for the shorts versus +$26.1 million for the longs.

Accordingly, firms with strong (weak) customer satisfaction are more likely to have positive (negative) earnings surprises, suggesting that investors react to tangible consequences of customer satisfaction and not necessarily to information about customer satisfaction itself. This effect seems to overwhelm the potentially countervailing impact from the accounting practice of expensing, rather than capitalizing, investments in customer service improvements. Unless the increased service improvement is due to technology investment or some other capital expenditure, expensing can lead firms with strong short-term earnings growth and weak customer satisfaction to be overvalued by the market, whereas firms with weak short-term earnings growth but strong customer satisfaction would be undervalued. It is easy to find conditions under which this can happen.

For example, on the one hand, employee turnover or cost cutting in customer service may have a positive effect on short-term earnings but a detrimental impact on customer satisfaction, thus eroding future earnings power. On the other hand, a firm's investment in better customer service may have a positive effect on customer satisfaction and lead to greater future earnings potential, but—if the investment is expensed instead of capitalized over time—short-term earnings would be negatively affected. If, under these circumstances, investors pay attention to accounting information but not to prior and subsequent customer satisfaction, the resulting valuation bias might be considerable. Even if 37% of the companies with strong customer satisfaction did indeed have negative earnings surprises, that is not enough to offset the cumulative positive earnings surprises for companies with strong customer satisfaction.

In light of these results, it seems that there is a relationship between customer satisfaction and earnings surprises, which we confirm by combining long and short positions and estimating the following regression:

$$(5)\quad SUR_{it\ldots t+3} = b_0 + b_1 CS_{it} + b_2 \Delta CS_{it} + b_3 (CS_{it} \times \Delta CS_{it}) + \varepsilon_{it},$$

where SUR is earnings surprise for company i at time t, measured each quarter following the inclusion of the stock in either the long or the short book as quarterly EPS minus the Institutional Brokers Estimate System quarterly median analyst forecast; CS is the annual ACSI customer satisfaction score; ΔCS is changes from the prior year in the annual ACSI customer satisfaction score; and CS × ΔCS is the interaction effect between the two.[7] Table 3 presents the results. The effect of ACSI and the interaction between ACSI changes and levels are significant. The ACSI changes alone are not significant. This result underscores the importance of the standard customer value equation (Equation 1) in that changes are conditional on high values to have an effect. Unless there is a change from a level that is already high, there is no effect on earnings surprises from a change in customer satisfaction.

If customer satisfaction leads to earnings surprises in the manner suggested by the estimates in Equation 5 and in

TABLE 3
The Effect of Customer Satisfaction on Earnings Surprises

	Coefficient	SE
α	.030	.019
CS	.006*	.003
ΔCS	–.795	.582
CS × ΔCS	.120*	.062

*$p < .05$ (two-tailed).

Notes: CS = annual ACSI customer satisfaction score; ΔCS = changes in the annual ACSI customer satisfaction score; CS x ΔCS = the interaction effect between CS and ΔCS.

[7]Because ACSI scores are constant from the quarter they are released until new results come out 12 months later, and because earnings surprises are quarterly, the same independent variable is applied to four different dependent variables further and further into the future (current quarter, next quarter, two quarters ahead, etc.).

Tables 2 and 3, it might also have an impact on earnings themselves, as we postulate in Equation 6:

$$(6)\quad EPS_{it\ldots t+3} = b_0 + b_1CS_{it} + b_2\Delta CS_{it} + b_3(CS_{it} \times \Delta CS_{it}) + \varepsilon_{it},$$

where EPS is earnings for company i at time t, measured each quarter following the inclusion of the stock in either the long or the short book as quarterly earnings per share; CS is the annual ACSI customer satisfaction score; ΔCS is changes in the annual ACSI score; and CS × ΔCS is the interaction effect between the two. Table 4 provides the results, which are consistent with the effect on earnings surprises. The level of customer satisfaction is significant, as is the interaction between levels and changes. Changes by themselves are not significant. Unless changes are accompanied with high levels of customer satisfaction, they do not seem to have an impact on earnings.

We have examined earnings, earnings surprises, and how they are affected by customer satisfaction. Next, we investigate whether stock returns on earnings explain the effect of customer satisfaction returns. If they do, the substantial alphas shown previously might be reduced. A new five-factor model proposed by Fama and French (2015) enables us to estimate the effect of earnings returns on customer satisfaction returns. In the new model, earnings are defined as annual revenues minus cost of goods sold; interest expense; and selling, general, and administrative expenses at time t − 1. The factor, termed RMW by Fama and French, is the difference in returns between diversified portfolios with robust versus weak profitability. In that sense, it is similar to the customer satisfaction portfolio, which, by going long and short, respectively, also becomes the difference in returns between robust and weak customer satisfaction. The Fama–French model also includes an investment factor (CMA); however, we do not discuss it further because it turns out to be irrelevant in this circumstance. Accordingly, we specify the five-factor model as follows:

$$(7)\quad SAT_{it} = \alpha_{it} + b_1MKT_t + b_2SMB_t + b_3HML_t + b_4RMW_t + b_5CMA_t + \varepsilon_{it}.$$

An important finding is that earnings mitigate the effect of customer satisfaction on stock returns. The estimate of abnormal returns is reduced from .009 to .007, or from an annualized return of 10.8%–8.4%. However, it is not surprising that customer satisfaction and profitability are related. The literature supports such a finding (Morgan and Rego 2006), though it is not always the case that high customer satisfaction has a positive impact on profitability. Yet when buyers have choice and are reasonably well informed, it is usually the case.

The Winsorized estimates in Table 5 are consistent with the full sample results, but the effect of earnings is smaller and the abnormal returns larger. This means that the outliers are more strongly correlated to earnings returns (as measured by RMW). Again, this follows from the exponential effects encapsulated in Equation 1: stocks with the highest (lowest) return had the highest (lowest) correlation to earnings returns.

In addition to the models common in the academic financial literature, there are also commercially available multifactor models. As we have seen, when controlling for risk factors such as market, size, value, profitability, momentum, and so forth, the customer satisfaction alpha survives. Does it also survive when using an expanded multifactor model? The most well-known of these types of models is the model introduced by Rosenberg and McKibben (1973) and made available by Barra Inc., until the firm was acquired by MSCI in 2004. Table 6 presents the results from applying the most current commercially available Barra USE4 comprehensive trading model, using customer satisfaction returns from July 2006 to November 2013. This analysis was performed by Morgan Stanley.

Of these factors, the estimated factor loading betas for technology and retail are significant at the .05 level. This is not surprising, because technology stocks in general did well during this time period and because the ACSI tracks both consumer technology and many retail firms. No other factors were significant. Approximately 80% of the variance was unaccounted for, taking all factors into account. Accordingly, there seems to be no known factor that can explain the market outperformance; it is due to either customer satisfaction or some yet unknown factor that is correlated with customer satisfaction.

TABLE 4
The Effect of Customer Satisfaction on EPS

	Coefficient	SE
α	.630***	.028
CS	.032***	.005
ΔCS	−.673	.882
CS × ΔCS	.249**	.094

**$p < .01$ (two-tailed).
***$p < .001$ (two-tailed).
Notes: CS = annual ACSI customer satisfaction score; ΔCS = changes in the annual ACSI customer satisfaction score; CS x ΔCS = the interaction effect between CS and ΔCS.

Generalizability

We are not aware of previous research reporting higher risk-adjusted returns for an intangible asset other than those found

TABLE 5
Five-Factor Model Results

	Fama–French Five-Factor CAPM	Winsorized (95%) Fama–French Five-Factor CAPM
α	.007***	.008***
α (%)	8.4%	9.6%
MKT	.718***	.626***
SMB	.213**	.124*
HML	−.142	−.059
RMW	.392**	.234*
CMA	.117	.059

*$p < .05$ (one-tailed).
**$p < .01$ (one-tailed).
***$p < .001$ (one-tailed).
Notes: MKT = monthly market returns excess of the risk-free rate; SMB = size risk-factor returns; HML = value risk-factor returns; RMW = profitability risk-factor returns; CMA = investment risk-factor returns.

TABLE 6
Barra USE4 Model Results

Factor	Coefficient
Technology	.30*
Retail	.24*
Small-large	.20
Volatility large cap	.12
OTM put	.24
EM-dev.	.10
Momentum	.06
Financials	−.13
Japan	−.05
Energy	−.07
Industrials	.11
Health care	−.05
Europe	.06
Illiquidity	.02
Credit	.04
Market	−.06

*$p < .05$ (two-tailed).

Notes: Technology = long technology growth stocks; Retail = long consumer, developed market bias; Small-large = long small caps, short large caps; Volatility large cap = long volume, large cap exposure; OTM put = long tail protection, downside exposure management; EM-dev. = emerging markets bias, commodity bias; Momentum = long momentum stocks, trading style; Financials = short financials/real estate, long growth/short value; Japan = short bias Japan, long carry trades; Energy = short global growth, long transports/developed markets; Industrials = long cyclicals/long deep value stocks; Health care = short health care biotech, short cyclicals; Europe = long bias Europe, long dollar protection; Illiquidity = long less liquid stocks, long credit; Credit = long credit sensitive equities; Market = short global equity. The Barra model results were prepared by Morgan Stanley.

in this study. For example, annual abnormal returns from research and development have been estimated at 4.6% (Lev and Sougiannis 1996) and 3.5% (Edmans 2011) from employee satisfaction. Because the customer satisfaction returns are so different than the returns on other intangibles, they call for extra efforts in validation. We are fortunate in the sense that we have access to comparable data in which both settings and time periods are different and in which we can use trading rules based on the same principle but with a different operationalization. Ultimately, observed empirical regularities need not only to be confirmed in time and space but also to be understood in terms of theory such that the conditions under which they occur can be specified (competitive consumer markets, repeat purchases, market failure, etc.) and under which they do not. Next, we discuss the former condition.

Confirmatory Evidence

Do these results generalize across time and space? As to the question of whether the results hold in a different stock market and are robust with respect to simpler but perfectly replicable trading rules, the analysis is extended to the United Kingdom, where the returns are not obtained from audited profits, but from back testing. Although customer satisfaction data comparable to the United States do not exist for many countries, there is a similar customer satisfaction index in the United Kingdom: the National Customer Satisfaction Index (NCSI-UK, www.ncsiuk.com). It uses the same latent structural equation model as the ACSI and it is also updated quarterly. The U.K. data were available from 2007 to 2011 from the customer satisfaction universe of publicly traded firms (74 companies). We obtained the returns with simple trading rules that generated two portfolios: the first portfolio comprised the top 50% of companies in customer satisfaction, and the second contained the bottom 50%, all equally weighted.[8] We purchased stocks at the end-of-month closing price for the quarter in which NCSI-UK results were announced and held all stocks for one calendar year. Each quarter, we examined the stocks with new customer satisfaction information and adjusted the portfolios accordingly. If a stock was no longer in the top 50%, we moved it from the first portfolio to the second portfolio, and vice versa. Figure 3 provides the model-free returns (trading costs excluded) on the two portfolios compared with returns on the FTSE 100.

Except for a short period following inception, the top 50% customer satisfaction portfolio outperformed both the FTSE and the bottom 50% portfolio. From August 2007 to April 2011, the top 50% portfolio earned a (model-free) return of 59%. The bottom 50% portfolio returned 13%, and the FTSE had a return of –6%, all model free. The estimated CAPM alpha was .010 (12% annualized) for the top 50% portfolio, compared with .005 (6% annualized) for the bottom 50% portfolio. The former was significant at the .01 level; the latter was insignificant. The market beta coefficient was significant at the .001 level for both portfolios; it was very high for the bottom 50% portfolio at 1.163 and substantially lower for the top 50% portfolio at .759.

The estimated alpha for the top 50% customer satisfaction portfolio is large and, at an annualized rate of 12.0%, similar to the U.S. alpha at 10.8%. The alpha of the bottom 50% customer satisfaction portfolio is not significant, but it might still seem odd that stocks of the weakest 50% customer satisfaction companies did better than market. The reason is probably an effect of beta (i.e., the regression coefficient for the FTSE 100), as the market moved up sharply after the 2007–2008 recession. As we have mentioned, the beta for the bottom 50% portfolio was 1.163, compared with .759 for the top 50% portfolio. In other words, high customer satisfaction reduced market exposure, whereas low customer satisfaction exacerbated it. Overall, the real audited profit abnormal returns to customer satisfaction in the United States correspond well to the back-tested paper profits returns in the United Kingdom.

[8]We assigned all subsidiaries covered by the NCSI-UK the stock prices of their parent company and deleted all private or government-owned companies from the data set prior to analysis. The U.K. data include only one manufacturing industry (autos), so the concentration bias that would result from taking the top 50% firms in the ACSI does not exist. Even though data relating to the Fama–French risk factors are not readily available in the United Kingdom, there is no a priori reason to suggest that these factors would be relevant when they were not significant in the U.S. study (see also Griffin 2002). Accordingly, we analyze the U.K. data with the standard Sharpe–Lintner CAPM.

FIGURE 3
Cumulative Returns on £100 Invested in Customer Satisfaction: High NCSI-UK Portfolio, Low NCSI-UK Portfolio, and the FTSE 100

Notes: The high NCSI-UK portfolio consists of the top 50% of measured companies in customer satisfaction; the low NCSI-UK portfolio consists of the bottom 50% of measured companies in customer satisfaction.

Boundary Conditions

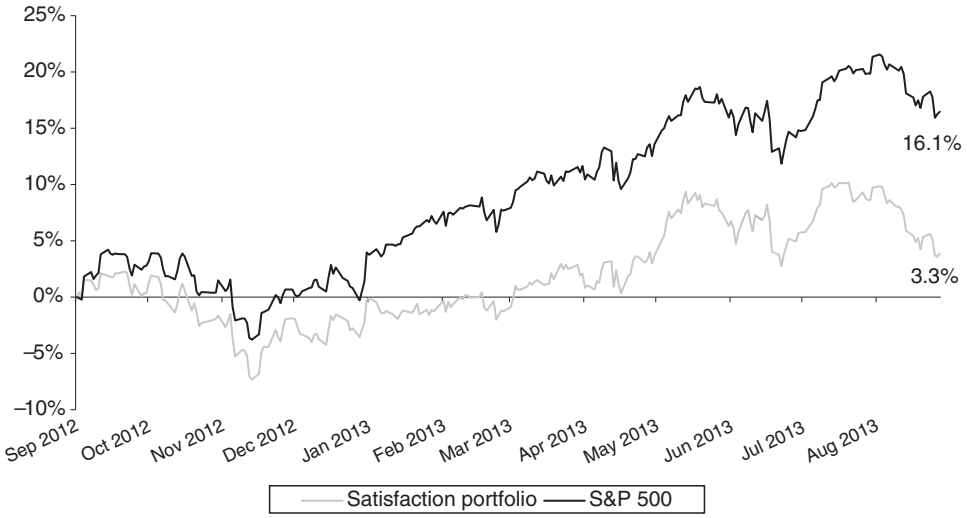
As for boundary conditions and disconfirmatory evidence relating to our findings, let us examine the periods of time when the results deviated from the overall time period. Figure 4 shows that from September 2012 to August 2013, the stocks of companies with strong customer satisfaction underperformed the S&P 500. As a result, the satisfaction portfolio returns for the full year of 2013 were lower than market. In other words, strong customer satisfaction did not produce a positive alpha during this period or during 2013. Because this was the only year of underperformance, it might be justified to consider it a chance incident. Nonetheless, the time period seems long enough to warrant closer examination, albeit not persistent enough for statistical inference.

In 2013, the long-short customer satisfaction portfolio returned 21%, its long book was up 25% (both model free), and the S&P 500 was up 30%. According to Xydias (2013), not only was the stock market rally one of the broadest in history, but firms with weak balance sheets outperformed those with strong balance sheets. There were other idiosyncrasies as well. The most heavily shorted stocks dramatically outperformed the market indices. Specifically, the 100 most heavily shorted stocks in the Russell 3000 index were up 34%, while the index itself was up 18%. The best performing stocks also had lower customer satisfaction than the average stock. The best 25 stock performers in the ACSI universe had an exceptionally high average return of 95%, but their average ACSI score was only 75, lower than the average of the longs in the portfolio (82) as well as the overall ACSI average (77).

With little or no economic justification, there were also massive reversals in stock returns, from high to low and vice versa. During the 2011–2012 time period, the top 25 ACSI universe stocks in terms of returns—with an average return of 95% in 2012–2013—returned only 1.7% on average over the previous 12 months. The S&P 500 stocks had a similar reversal. As Table 7 shows, the top 100 stock performers in the 12-month 2012–2013 period had dramatically greater returns when compared with the prior 12-month 2011–2012 period and greatly outperformed the S&P average. Specifically, the top 100 returned 60% in 2012–2013, but these stocks returned only 8% in 2011–2012. The corresponding returns for the remainder of the S&P were 16% and 13%, and for the total S&P 500, 14% and 24%.

Given that there was a significant reversal in stock returns both for the ACSI universe and for the S&P 500, what do the data suggest regarding the justification of these reversals on the basis of revenue and earnings? As Table 7 shows, the top 25 ACSI universe stock performers in 2012–2013 had an average trailing 12-month revenue growth of 6.7%. This was lower than the long stocks in the portfolio, which had a revenue growth of 7.8%, but slightly higher than both the average ACSI stock (at 5.6%) and the average S&P 500 stock (at 5.7%). Accordingly, the higher share prices could hardly be justified from revenue growth. Were they driven by earnings growth? As Table 7 shows, the trailing 12-month EPS growth for the top 25 ACSI stock performers was 33% during the underperformance period, compared with 12% for the ACSI universe, 11% for the long portfolio, 10% for the average S&P 500 stock, and 17% for the top 100 S&P 500 stock performers in 2012–2013. That is, the top stock performers did have substantially higher EPS growth. However, the multiples for the EPS increase on stock price were

FIGURE 4
Customer Satisfaction Portfolio Versus the S&P 500 (September 2012–August 2013)



extraordinarily high. For example, the top 100 S&P 500 stock performers had EPS growth 63% greater than the average S&P firm, but a stock return 153% greater. The top 25 ACSI stock performers had EPS growth 194% greater than the long stocks, but a stock return 417% greater.

If increasing stock price cannot be justified by revenue growth but rather is driven by a very large increase in multiples of EPS growth, did these stock prices rise because they were "cheap"? Table 8 provides some statistics answering this question.

The top 25 ACSI stocks in 2012–2013 had an average P/E ratio of 14.98 in 2011–2012. This compares with a P/E ratio of 17.64 for the long book and a P/E ratio of 18.24 for the S&P 500. Thus, if the P/E is interpreted as the relative price of a stock, then the long stocks were notably more expensive than the top 25 stock performers. Again, the S&P shows a similar pattern. The average S&P 500 stock was 28% higher in P/E ratio than the subsequent top 100 stock performers.

Overall, the evidence suggests that the market exhibited unusual characteristics during the 2012–2013 time period. In addition to an unusually broad rally and above-market performance by stocks with weak balance sheets and by those most shorted, there was a significant reversal in stock returns between 2011–2012 and 2012–2013 for both the ACSI universe and the S&P 500. It is not that the stocks that did well in 2011–2012 did poorly in 2012–2013, but they did not do as well as the (previous) underperformers of 2011–2012. There is no evidence to suggest that the reversal is due to differences in revenue increases, but some of the reversal seems to be due to differences in earnings increases. There were lower P/E ratios for the stocks that gained the most and evidence that the investors preferred lower-priced stock even without relating price to earnings. In 2011–2012, the long-book customer satisfaction portfolio stocks were priced (P/E) 100% higher than the 2012–2013 top 25 ACSI stock performers. Even though the underperforming period began

TABLE 7
Satisfaction Portfolio and S&P 500 Stock Returns, Revenue Growth, and EPS Growth

	2011–2012 Avg. Ret. %	2012–2013 Avg. Ret. %	2013 T12M EPS Growth	2013 T12M Rev Growth	ACSI Absolute Δ	ACSI % Δ	ACSI Mean	ACSI Median
Satisfaction Long Portfolio								
Top 25 in ACSI	1.7%	94.6%	33.2%	6.7%	.63	.9%	75.0	77.0
Bottom 111 in ACSI	17.3%	15.3%	7.3%	5.3%	.87	1.2%	78.8	80.0
Total ACSI	14.4%	29.9%	12.1%	5.6%	.82	1.2%	76.9	79.0
Total satisfaction portfolio	17.0%	18.3%	11.3%	7.8%	2.24	2.9%	81.9	83.0
S&P 500								
Top 100 S&P 500	8.4%	60.1%	16.5%	7.8%	—	—	—	—
Bottom 349 S&P 500	15.6%	13.4%	8.3%	5.1%	—	—	—	—
Total S&P 500	14.0%	23.8%	10.1%	5.7%	—	—	—	—

Notes: Avg. Ret. % = average stock return percentage; T12M EPS Growth = trailing 12-month revenue growth; T12M Rev Growth = trailing 12-month revenue growth. For the satisfaction portfolio, among the 235+ companies measured in ACSI 136 were both publicly traded and had data available during the entire time period examined, resulting in a comparison between the Top 25 in satisfaction and the Bottom 111 in satisfaction. For the S&P 500, 449 companies were available during the entire time period examined, resulting in a comparison between the Top 100 in returns and the Bottom 349.

TABLE 8
Average Returns and P/E Ratios

	2011–2012 Avg. Ret. %	2012–2013 Avg. Ret. %	2011–2012 P/E Ratio	2012–2013 P/E Ratio
S&P 500	14.9%	23.2%	18.24	18.57
ACSI	17.2%	23.9%	15.72	18.25
Longs	15.5%	18.9%	17.64	19.24
S&P Top 100	9.7%	54.4%	14.26	18.25
ACSI Top 25	7.5%	65.9%	14.98	20.28
S&P Bottom 349	16.4%	13.6%	19.46	18.66
ACSI Bottom 111	19.8%	12.6%	15.92	17.71

Notes: Avg. Ret. % = average return percentage (source: Compustat); P/E Ratio = price-to-earnings ratio (source: Compustat). As in Table 6, "S&P 500" = the total sample of 449 measures available during the period; "ACSI" = the 136 companies in the ACSI universe for which data were available; "Longs" = the long positions within the satisfaction portfolio; "S&P Top 100" = top 100 performing companies in the S&P 500 (vs. the "Bottom 349"); "ACSI Top 25" = top 25 performing companies in the ACSI (vs. the "Bottom 111").

in the fourth quarter of 2012, the calendar year returns for 2012 were consistent with prior years, with an above-market return of 12%.

In summary, the large number of market idiosyncrasies during the 2012–2013 time period accounts for a large portion of the customer satisfaction underperformance during this time period. It was an unusual market in many ways: stocks with weak balance sheets did better than stocks with strong balance sheets; companies with weak customer satisfaction did better than companies with strong customer satisfaction; there was a massive reversal in stock price growth from companies that previously had strong growth to companies that had had weak growth; the most heavily shorted stocks had much higher return than market; stocks with low P/E ratios performed better than stocks with high P/E ratios; and stocks with low absolute prices also did better. The better-performing stocks did not have superior revenue growth, but they did show greater percentage earnings growth. However, they also appear to have been unusually well-rewarded by investors for those earnings.

Even with the many oddities of the 2012–2013 stock market, it does suggest that a stock-picking strategy based on a rather limited universe (firms tracked by the ACSI) is not likely to outperform the market all the time. Unless there is large variance in temporal customer satisfaction and, thus, much turnover in the portfolio, holdings will eventually be dominated by high-priced stocks. The price differential, whether in absolute price or relative to earnings, may well make lower-priced stocks appear to be bargains, largely independent of their fundamentals. At some point, however, fundamentals will matter again and demand will shift back. It is not clear how long that usually takes, but in view of the finding that the portfolio produced higher-than-market returns for 14 years and less-than-market returns for 12 months, the period is probably rarely much longer than 1 year.

Discussion

The findings presented in this study suggest that risk-adjusted stock returns on customer satisfaction are significantly above market and that these abnormal returns are robust to a variety of alternative explanations such as size, value, and momentum risk factors as well as data snooping. Strategically, this places emphasis on customer satisfaction as an important intangible marketing asset, also labeled as an operational "customer mindset" performance variable by Katsikeas et al. (2016). Importantly, it also highlights marketing's value to the firm (e.g., Feng, Morgan, and Rego 2015) and, by at least indirect extension, supports the notion that chief marketing officers matter (e.g., Germann, Ebbes, and Grewal 2015) if these firm managers are aligned in their understanding (levels and drivers) of the customers' satisfaction (Hult et al. 2016). The finding that stock returns on customer satisfaction do beat the market is robust in that the 15-year time period studied (2000–2014) should be long enough to eliminate sector bias as an explanation. As an additional check, we also estimated models with different benchmarks, especially for technology and industrial sectors. The difference in overperformance was marginal whether we used NASDAQ or the DJIA.

There is a statistically significant relationship between customer satisfaction and lagged earnings surprises, and customer satisfaction is largely without influence on contemporaneous share prices until its effects are manifested in earnings reports. Customer satisfaction also has an effect on earnings themselves. Perhaps even more notable is the finding that earnings returns have an effect on customer satisfaction returns. When lagged earnings returns are included among the risk factors, the abnormal returns on customer satisfaction are reduced from 10.8% per annum to 8.4%.

Equation 1 alludes to the expectation of major abnormal returns because (1) equity value, expressed as the discounted net present value of future cash flows from current customers, can increase greatly even with modest growth in customer retention, and (2) investors in general do not seem to be aware of this (see Gupta, Lehmann, and Stuart 2004). Because the market does not generally value customer satisfaction until its effects show up in improved company financials, it is noteworthy that a marketing intangible can produce returns much higher than many other types of intangibles, further underscoring the conclusion that familiarity with marketing information is not widely spread among equity market participants. This may be particularly true with respect to the huge leverage from loyal customers. For example, Gupta and Lehmann (2005) find that a 1% improvement in customer retention has an effect on customer equity value that is 5 times greater than a comparable gain in profit margin and 50 times

greater than the same magnitude of improvement in customer acquisition cost.

The returns are so different from expected returns that it might not be appropriate to label them as yet another asset pricing anomaly. According to Fama and French (2008), all stock return anomalies are proxies for intangibles and for net cash flows. The reason that they are considered anomalies is that they cannot be explained by the CAPM. This is, of course, true for customer satisfaction as well. It is a predictor of future cash flows, represents an intangible asset, and is not explained by the CAPM. However, the similarities end there. The contribution of customer satisfaction to value creation—especially if viewed as consumer utility in the classical economics sense—is a more momentous economic variable relative to anomalies such as value, size, and momentum, all of which originate from observation, followed by post hoc conjecture (Fama and French 2004).

The analysis of customer satisfaction and stock returns, by contrast, did not begin with empirical observation. The reasoning is not post hoc, but ex ante. Its origins can be traced to utility theory (Kahneman, Wakker, and Sarin 1997), fortified by the marketing models of customer equity (Gupta and Lehmann 2005; Kumar 2008; Rust, Zeithaml, and Lemon 2000; Villanueva and Hanssens 2007). It is not that post hoc reasoning is omitted in its entirety, but empirical testing has generally trailed theory, not the other way around. Yet one might ask whether various intangibles and the anomalies they give rise to could be correlated to each other and therefore have a common cause. Because our study does not control for all known anomalies, might omitted variable bias have affected our results? This is possible, but unlikely. Green, Hand, and Zhang (2013) identified more than 300 anomalies and found that they were predominantly orthogonal, a finding also confirmed by McLean and Pontiff (2015).

Implications

The most obvious implication—from the finding that companies that treat their customers well tend to produce better returns to their investors—is that firms should generally try to improve customer satisfaction along with the volatility of future customer cash flow risks. This is hardly a revolutionary idea. Indeed, it has been a normative fixture in marketing literature and education for more than 50 years. However, it has taken on increasing exigency as a result of the proliferation of the Internet and information and communications technologies as well as global competition and the rise in global division of labor. Yet paradoxically, marketing has not gained stature in the business organization. Rather, the opposite seems to be the case (Nath and Mahajan 2008; cf. Feng, Morgan, and Rego 2015; Germann, Ebbes, and Grewal 2015).

As suggested by the sheer size of the abnormal returns, the reward for having satisfied customers is much greater than is generally known. By the same token, the value of marketing information (and specifically information about customer satisfaction), which generates abnormal stock returns of approximately 10% per annum, seems underappreciated. According to Edmans (2011), abnormal returns for other types of intangible assets (e.g., research and development, advertising, quality of organization, patents, human capital) range between 4% and 6%. For employee satisfaction, he estimates an alpha of 3.5%. These numbers suggest that it would be beneficial to allocate more resources to the marketing function, especially because many of the most effective ways to increase customer satisfaction lie not in product quality but in targeting, market segmentation, customer service and the management of customer relationships, and CLV (e.g., Fornell 2007; Kumar et al. 2008).

If the economic benefits of high customer satisfaction in terms of improved consumer utility and shareholder value seem apparent, why do many companies fail to improve customer satisfaction? Indeed, overall customer satisfaction, on average, has decreased over the past two years, according to the ACSI. Social and portable media, online data collection, voice-recorded automated telephone interviewing and computer-assisted telephone interviewing, Big Data, and so forth provide companies with access to more data on customers than ever before. The information and communications technologies revolution has led to extraordinary growth in data storage, transmission, and displaying. Yet it is probably safe to say that there has not been corresponding progress in data processing. Instead, raw data are often used to calculate the number of "likes," or the proportion of customers who say they will or will not recommend. Validity and reliability are concepts rarely mentioned. Calibration toward objectives is virtually unheard of in this context. The same is true with corrections for sampling and measurement error, which would be problematic not only in terms of measurement accuracy but also with respect to identifying what companies need to do to increase their customers' satisfaction. Along with measures and analysis that may be too simplistic, it is also possible that firms thereby invest too little in customer retention. This could be particularly damaging because underspending on customer retention tends to have a more harmful effect than underspending on customer acquisition (Reinartz, Thomas, and Kumar 2005).

However, it should be recognized that customer satisfaction information is not without interpretational challenges. Therefore, it would be unrealistic to expect that equity markets would be frictionless with respect to such information. In addition to the friction associated with arbitrage costs, imperfect information, limitations on investors' cognitive and reasoning skills, and institutional rigidities that impair market efficiency, customer satisfaction is not included in the analysis models most investors use (Gupta and Lehmann 2005). Consequently, it would be difficult for equity markets to instantly incorporate customer satisfaction information. It is also not the case that strong customer satisfaction always leads to above-market stock returns. As our data demonstrate, in 2012–2013 there was a period when the returns, though strong in an absolute sense, underperformed the market. Even though the market exhibited several unusual characteristics during this time, the somewhat limited stock universe provided by the ACSI, combined with small temporal variance in customer satisfaction, eventually produces a portfolio of highly priced stock vulnerable to temporary reversals in relative fortune during broad stock rallies. Nevertheless, we may well be at a point

when one can envision a debate between marketing and finance about whether earnings or customer satisfaction belongs among the risk factors in asset pricing models. Empirically, they are correlated; therefore, one mitigates the effect of the other. But which one should be mitigated? What comes first, earnings or customer satisfaction? We are not aware of research suggesting that earnings per se cause customer satisfaction, but there is ample evidence pointing in the other direction.

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