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The statistical significance of portfolio returns

Claes Fornell [a,*], Sunil Mithas [b], Forrest Morgeson [a]

[a] University of Michigan, United States
[b] University of Maryland, United States

At the time of this writing, stock markets around the world are plunging. The U.S. market is down some 40–50%. Nonetheless, the year-to-date return (as of October 2008) on a portfolio of high customer satisfaction companies, a portfolio first described in Fornell, Mithas, Morgeson and Krishnan (2006), hovers around zero. Over the past 8 years (from June 2000–June 2008), the portfolio generated an average annual return of +25.5% (or 15.1% annualized), compared with −0.5% for the S&P 500. At first glance, therefore, it may seem surprising that O'Sullivan, Hutchinson, and O'Connell (2009) do not find a significant alpha.

However, and similar to Jacobson and Mizik (2009), the findings of O'Sullivan et al. (2009) are actually quite consistent with ours (Fornell et al., 2006), although we differ with regard to conclusions. Jacobson and Mizik and O'Sullivan et al. find evidence for above-market returns. O'Sullivan et al. report that their back-tested, hypothetical stock portfolio of companies with high satisfaction outperforms the market by a large margin over a 10-year period. Specifically, they find a cumulative return of 164% vs. 98% for the market (S&P 500), corresponding to above-market annualized returns of +3.8%. To put this in perspective, less than 10% of actively managed portfolios generate even a positive alpha, let alone one with returns as high as 3.8% above-market per year (Barras, Scaillet and Wermers 2008). Also consistent with our findings, O'Sullivan et al. find low systematic risk (beta = .66), and even though the returns are above market, volatility (standard deviation) is lower than market (Table 4). Thus, an extraordinarily simple portfolio design of firms with high levels of customer satisfaction consistently outperforms not only the market, but also almost all professional stock pickers — and it does this at low specific and low systematic risk. Yet, O'Sullivan et al. and Jacobson and Mizik conclude that the results are not statistically significant. We have addressed the problems with Jacobson and Mizik's analysis elsewhere (Fornell, Mithas and Morgeson 2009), but a few comments on O'Sullivan et al. might be useful.

How is it possible to consistently produce substantial above-market returns at lower-than-market risk, and yet fail to find a statistically significant effect? The answer is most likely found in the model used for analysis and the assumptions imposed by it. O'Sullivan et al. rely on the standard Capital Asset Pricing Model (CAPM) and the empirically-based extensions by Fama and French (1993) and Carhart (1997). Under the market efficiency hypothesis, the predictor variables in these models are interpreted as risk factors, and a positive and significant intercept (alpha) as indicative of abnormal returns. Under the same hypothesis, the predictor variables must completely account for the return variance. For example, Fama and French (1996) report R2's above 0.9. The portfolio of relevance (Portfolio 1) in O'Sullivan et al.'s analysis does not come close to this figure, but rather shows a large residual. Accordingly, this is not evidence in support of efficient markets — if anything, it is evidence to the contrary. But it is not particularly surprising since the above-market returns from customer satisfaction-based models do not come from alpha alone, but also from a surfing beta. The latter is exhibited by a high beta coefficient in up-markets and a low coefficient in down markets. This is a feature that follows from standard customer satisfaction theory: Independent of alpha, investors participate less in falling share prices when markets go down and receive more positive momentum when markets go up.

There are many other issues with the CAPM and its extensions, but let us just mention one. These models have very low power in detecting above-market performance. For example, the Fama-French model fails to detect even 3% above-market risk-adjusted returns almost 70% of the time (Kothari and Warner, 2001). The problem gets worse when the number of securities in the portfolio is less than 75 — in O'Sullivan et al.'s case, the average number of securities in their portfolios is about half that. Rather than subjecting the returns to an analysis model that assumes market efficiency along with very tight restrictions on the nature of the parameters, it might make more sense to simply ask what the probability is that returns of 164% vs. 98% (a difference of 66%) over a 10-year period are due to chance. Some assumptions would still be necessary of course, and one would have to specify the alternative. But almost regardless of what one assumes, the probability that above-market returns of this magnitude are due to chance is very low.

In a similar vein, one should be careful not to over-interpret the results of standard statistical hypothesis testing. O'Sullivan et al. conclude that there is no evidence to suggest that customer satisfaction is an indicator of future share prices, but failing to reject the null hypothesis implies no such thing. The probability of above-market returns due to customer satisfaction is much higher than the probability of the alternative (returns equal to market), even using O'Sullivan et al.'s results.

It is also not exactly accurate to say that "recent portfolio studies provide conflicting evidence on whether the stock market (mis) prices

* Corresponding author.
E-mail address: cfornell@umich.edu (C. Fornell).

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the value of customer satisfaction," as stated by O'Sullivan et al. The actual empirical evidence is not conflicting. For example, the Jacobson Mizik study finds that the customer satisfaction-stock return relationship is statistically significant. It is only after selective data trimming, where observations from the right tail of the distribution (but not the left tail) are separated out (first computer companies, then internet companies), that the effect in the remaining sample becomes "insignificant". But the data trimming itself makes inferential statistics inoperative. Otherwise, one might just as well eliminate observations from the left tail and thereby "restore significance".

Aksoy et al. (2008) also find above-market returns from a customer satisfaction-based portfolio. Tuli and Bharadwaj (2009) confirm that both idiosyncratic and downside risk is low. Chen, Matsumura and Shin (2008) find that ACSI provides information incremental to ROI. In a study of the bond market, Anderson and Mansi (2009) find that firms with high customer satisfaction (using ACSI data) have reduced risk associated with future cash flows, leading to higher credit ratings and lower debt costs. There is now a good deal of evidence suggesting that firms that do well by their customers also tend to do well by their shareholders. The stock portfolios of such firms tend to provide returns that consistently beat the market. It is also true that companies with very low levels of customer satisfaction often beat the market as well. As first discussed by Fornell (1992), these firms usually enjoy strong customer relationships due to some degree of monopoly power.

This is not to suggest that it would be impossible to construct a stock portfolio based on customer satisfaction that does not beat the market. That would be easy to do, but it would not be very constructive and would prove little. It would be more productive, in our opinion, to attempt to construct portfolios superior to ours — not worse or the same.

Another issue concerns the nature of the portfolio test itself. Back testing can only take us so far, as it always has an element of capitalizing on chance. Real data and real portfolios are better. Such research would take longer and involve more cost, but the potential contribution and the potential for demonstrating the real value of marketing information would be much greater.

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