Claes Fornell, Michael D. Johnson, Eugene W. Anderson,
Jaesung Cha, & Barbara Everitt Bryant

The American Customer Satisfaction Index: Nature, Purpose, and Findings

The American Customer Satisfaction Index (ACSI) is a new type of market-based performance measure for firms, industries, economic sectors, and national economies. The authors discuss the nature and purpose of ACSI and explain the theory underlying the ACSI model, the nation-wide survey methodology used to collect the data, and the econometric approach employed to estimate the indices. They also illustrate the use of ACSI in conducting benchmarking studies, both cross-sectionally and over time. The authors find customer satisfaction to be greater for goods than for services and, in turn, greater for services than for government agencies, as well as find cause for concern in the observation that customer satisfaction in the United States is declining, primarily because of decreasing satisfaction with services. The authors estimate the model for the seven major economic sectors for which data are collected. Highlights of the findings include that (1) customization is more important than reliability in determining customer satisfaction, (2) customer expectations play a greater role in sectors in which variance in production and consumption is relatively low, and (3) customer satisfaction is more quality-driven than value- or price-driven. The authors conclude with a discussion of the implications of ACSI for public policymakers, managers, consumers, and marketing in general.

The economy The economy is changing. The central feature of the old economy was the mass production and consumption of commodities. The modern economy is based on production and consumption of increasingly differentiated goods and services.

How should we measure economic performance in this new world? As the economy changes, theories and measures must change, too. In particular, it seems clear that conventional "output," or "quantity," measures of economic performance, such as productivity, are not only extremely difficult to compute in a differentiated marketplace, but also that they probably tell us less than they used to. For example, the United States leads the world in productivity, but incomes have stagnated. Italy has had one of the most dramatic productivity increases of any country, but it has not translated into strong economic growth. The current trend toward downsizing in U.S. firms may increase productivity in the short term, but the downsized firms' future financial performance will suffer if repeat business is dependent on labor-intensive customized service (Anderson, Fornell, and Rust 1996).

Hence, in the new economy, producing more—however efficiently—is not necessarily better. There is a pressing need to augment current approaches to evaluating the financial health of individual firms, let alone the wealth of nations. Moreover, as the economy continues to evolve, "the gap between the two economies—the one that government measures and the one businesses and economists are struggling to understand—is widening" (*Fortune* 1993, p. 108). To understand more fully the modern economy, and the firms that compete in it, we must measure the *quality* of economic output, as well as its *quantity*.

We introduce the American Customer Satisfaction Index (ACSI), which represents a new type of customer-based measurement system for evaluating—and enhancing—the performance of firms, industries, economic sectors, and national economies. It is designed to be representative of the economy as a whole and covers more than 200 firms, with 1994 sales in excess of $2.7 trillion competing in over 40 industries in the seven major consumer sectors of the economy. On an annual basis, the ACSI system estimates a firm-level customer satisfaction index for each company in the sample and weights these firm-level indices to calculate industry, sector, and national indices.

The American Customer Satisfaction Index measures the quality of the goods and services as experienced by the customers that consume them. An individual firm's ACSI represents its served market's—its customers'—overall evaluation of total purchase and consumption experience, both actual and anticipated (Anderson, For-

Claes Fornell is the Donald C. Cook Professor of Business Administration and Director of the National Quality Research Center, University of Michigan Business School. Michael D. Johnson is Professor of Marketing and a core faculty member of the National Quality Research Center, University of Michigan Business School. Eugene W. Anderson is Associate Professor of Marketing and a core faculty member of the National Quality Research Center, University of Michigan Business School. Barbara Everitt Bryant and Jaesung Cha are Research Scientists at the National Quality Research Center, University of Michigan Business School. The authors gratefully acknowledge the financial support of the University of Michigan Business School, the American Society for Quality Control (ASQC), and the ACSI's corporate sponsors. The authors also thank Jack West of ASQC for his contributions in spearheading the development and deployment of the ACSI. This research has benefited from the constructive contributions of the Editor and three anonymous *JM* reviewers.

nell, and Lehmann 1994; Fornell 1992; Johnson and Fornell 1991). Analogously, an industry ACSI represents an industry's customers' overall evaluation of its market offering, a sector ACSI is an overall evaluation of that sector, and the national ACSI gauges the nation's total consumption experience. Hence, ACSI represents a cumulative evaluation of a firm's market offering, rather than a person's evaluation of a specific transaction. Although transaction-specific satisfaction measures may provide specific diagnostic information about a particular product or service encounter, overall customer satisfaction is a more fundamental indicator of the firm's past, current, and future performance (Anderson, Fornell, and Lehmann 1994).

The balance of this article is structured into five sections. First, we explain the nature of ACSI: the theory underlying the ACSI, the nation-wide survey methodology used to collect the data, and the econometric approach employed to estimate ACSI. Second, we discuss the use of ACSI in conducting benchmarking studies, both cross-sectionally and over time. Third, to demonstrate the model's general applicability and usefulness, we estimate the model for the seven major economic sectors for which data are collected. Fourth, we discuss systematic cross-sector variation in each of these areas. Fifth, we conclude with a discussion of the implications of ACSI for public policymakers, managers, and individual consumers, as well as for marketing in general.

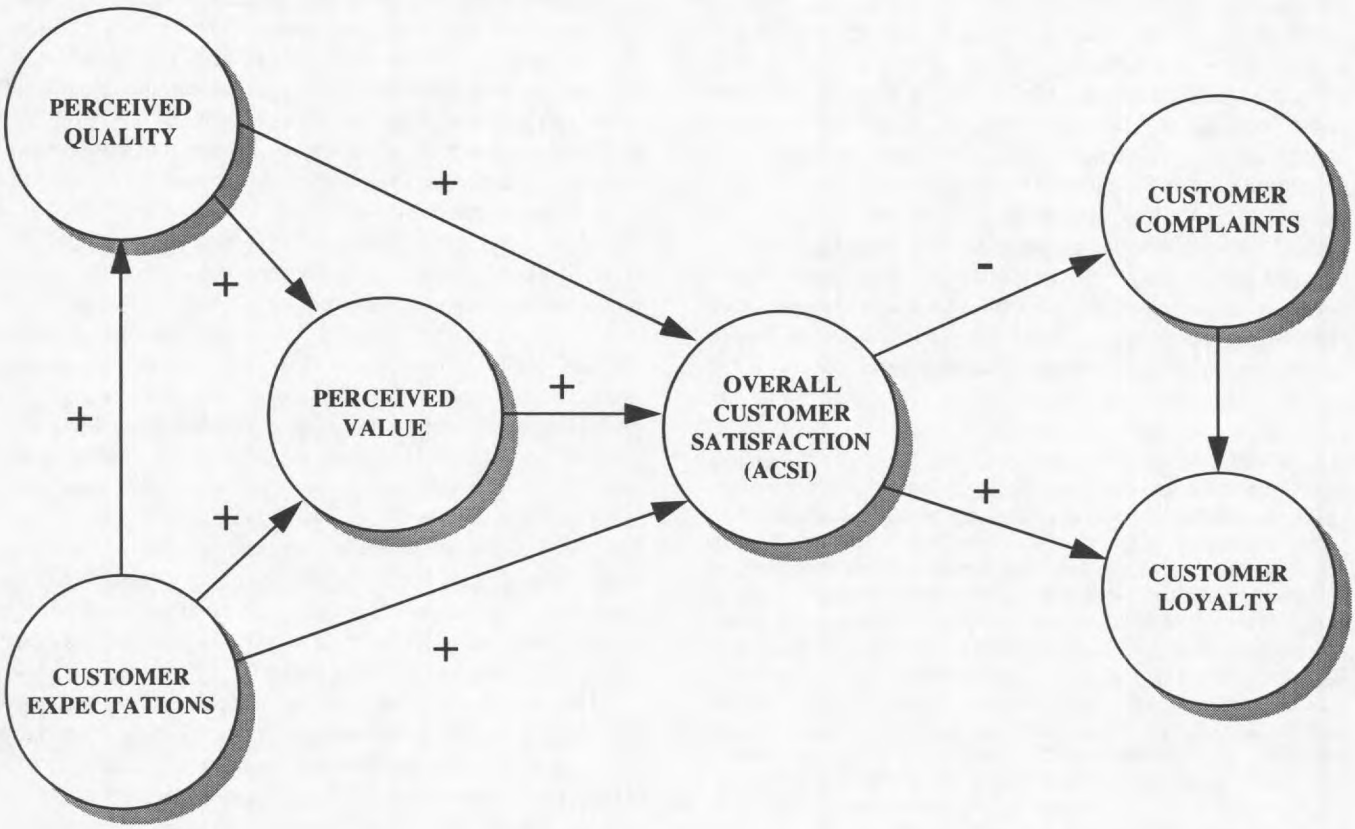
The ACSI Model and Methodology

The concept behind ACSI, namely, a measure of overall customer satisfaction that is uniform and comparable, requires a methodology with two fundamental properties.[1] First, the methodology must recognize that ACSI and the other constructs in the model represent different types of customer evaluations that cannot be measured directly. Accordingly, ACSI uses a multiple indicator approach to measure overall customer satisfaction as a latent variable. The result is a latent variable score or index that is general enough to be comparable across firms, industries, sectors, and nations.

Second, as an overall measure of customer satisfaction, ACSI must be measured in a way that not only accounts for consumption experience, but also is forward-looking. To this end, ACSI is embedded in the system of cause and effect relationships shown in Figure 1, which makes it the centerpiece in a chain of relationships running from the antecedents of overall customer satisfaction—expectations, perceived quality, and value—to the consequences of overall customer satisfaction—voice and loyalty. As was indicated, the primary objective in estimating this system or model is to explain customer loyalty. It is through this

[1]For a more extensive and detailed description of the ACSI methodology, please see American Society for Quality Control (1995).

FIGURE 1
The American Customer Satisfaction Index (ACSI) Model



design that ACSI captures the served market's evaluation of the firm's offering in a manner that is both backward- and forward-looking. Moreover, modeling ACSI as part of such a system serves to validate the index from a nomological standpoint. Nomological validity, a form of construct validity, is the degree to which a construct behaves as predicted within a system of related constructs called a *nomological net* (Cronbach and Meehl 1955). To the extent that the model predictions are supported, the validity of the ACSI is supported.

ACSI Antecedents

As is shown in Figure 1, overall customer satisfaction (ACSI) has three antecedents: perceived quality, perceived value, and customer expectations. The first determinant of overall customer satisfaction is perceived quality or performance, which is the served market's evaluation of recent consumption experience, and is expected to have a direct and positive effect on overall customer satisfaction. This prediction is intuitive and fundamental to all economic activity. To operationalize the perceived quality construct, we draw on the quality literature to delineate two primary components of consumption experience: (1) customization, that is, the degree to which the firm's offering is customized to meet heterogeneous customer needs, and (2) reliability, that is, the degree to which the firm's offering is reliable, standardized, and free from deficiencies.

The second determinant of overall customer satisfaction is perceived value, or the perceived level of product quality relative to the price paid. Adding perceived value incorporates price information into the model and increases the comparability of the results across firms, industries, and sectors. Using value judgments to measure performance also controls for differences in income and budget constraints across respondents (Lancaster 1971), which enables us to compare high- and low-priced products and services. For perceived quality, we expect a positive association between perceived value increases and customer satisfaction.

The third determinant of overall customer satisfaction is the served market's expectations. The served market's expectations represent both the served market's prior consumption experience with the firm's offering—including nonexperiential information available through sources such as advertising and word-of-mouth—and a forecast of the supplier's ability to deliver quality in the future. As such, the expectations construct is both backward- and forward-looking. It captures all previous quality experiences and information from $t - 1$, $t - 2$, ..., $t - m$. Hence, it naturally has a direct and positive association with a cumulative evaluation of the firm's performance, such as overall customer satisfaction. At the same time, the served market's expectations at time t forecast a firm's ability to satisfy its market in future periods $t + 1$, $t + 2$, ..., $t + n$. This role of expectations is important because the nature of the ongoing relationship between a firm and its customer base is such that expected future quality is critical to overall customer satisfaction. This predictive role of expectations also suggests that it should have a positive effect on overall customer satisfaction (Anderson, Fornell, and Lehmann 1994).

Finally, customer expectations should be positively related to perceived quality and, consequently, to perceived value. Customer knowledge should be such that expectations accurately mirror current quality. Hence, we expect the served market to have expectations that are largely rational and that reflect customers' ability to learn from experience and predict the levels of quality and value they receive (Howard 1977).

ACSI Consequences

Following Hirschman's (1970) exit-voice theory, the immediate consequences of increased customer satisfaction are decreased customer complaints and increased customer loyalty (Fornell and Wernerfelt 1987). When dissatisfied, customers have the option of exiting (e.g., going to a competitor) or voicing their complaints in an attempt to receive retribution. An increase in overall customer satisfaction should decrease the incidence of complaints. Increased overall customer satisfaction should also increase customer loyalty. Loyalty is the ultimate dependent variable in the model because of its value as a proxy for profitability (Reichheld and Sasser 1990).

The final relationship in the model is between customer complaints and customer loyalty. Although there are no direct measures of the efficacy of a firm's customer service and complaint-handling systems, the direction and size of this relationship reflect on these systems (Fornell 1992). When the relationship is positive, the implication is that the firm is successful in turning complaining customers into loyal customers. When negative, the firm's complaint handling has managed to make a bad situation even worse—it has contributed further to customer defection.

ACSI Methodology

The American Customer Satisfaction Index is designed to be representative of the nation's economy as a whole. Accordingly, in selecting the companies to measure, each of the seven major economic sectors (one-digit standard industrial classification [SIC] code level) with reachable end-users were included in the design: (1) Manufacturing/Nondurables, (2) Manufacturing/Durables, (3) Transportation/Communications/Utilities, (4) Retail, (5) Finance/Insurance, (6) Services, and (7) Public Administration/Government. Within each sector, the major industry groups (two-digit SIC codes) were included on the basis of relative contribution to the gross domestic product. Within each industry group, several representative industries (four-digit SIC codes) were included on the basis of total sales. Finally, within each industry the largest companies were selected, such that coverage included the majority of each selected industry's sales.

For each firm, approximately 250 interviews were conducted with the firm's current customers. Interviews came from 48 replicate national probability samples of households in the continental United States with telephones (95% of households). Prospective respondents (selected without substitution from the household by the "nearest birthday" method) were screened to identify purchasers of specific goods or services within defined purchase and consumption time periods. These periods vary from three years for the purchase of a major durable, to "within the past month" for

TABLE 1
Measurement Variables Used in the ACSI Model

Measurement Variable	Latent Variable
1. Overall expectation of quality (prepurchase)	Customer expectations
2. Expectation regarding customization, or how well the product fits the customer's personal requirements (prepurchase)	Customer expectations
3. Expectation regarding reliability, or how often things would go wrong (prepurchase)	Customer expectations
4. Overall evaluation of quality experience (postpurchase)	Perceived quality
5. Evaluation of customization experience, or how well the product fit the customer's personal requirements (postpurchase)	Perceived quality
6. Evaluation of reliability experience, or how often things have gone wrong (postpurchase)	Perceived quality
7. Rating of quality given price	Perceived value
8. Rating of price given quality	Perceived value
9. Overall satisfaction	ACSI
10. Expectancy disconfirmation (performance that falls short of or exceeds expectations)	ACSI
11. Performance versus the customer's ideal product or service in the category	ACSI
12. Has the customer complained either formally or informally about the product or service?	Customer complaints
13. Repurchase likelihood rating	Customer loyalty
14. Price tolerance (increase) given repurchase	Customer loyalty
15. Price tolerance (decrease) to induce repurchase	Customer loyalty

frequently purchased consumer goods and services, to currently having a bank account or insurance policy in the person's own name.

Once a respondent was identified as a customer, the interviewer proceeded with the customer satisfaction questionnaire. Each questionnaire contains the same 17 structured questions and 8 demographic questions. Lead-in wording and examples were tailored to specific goods and services. In Table 1, we describe the 15 measurement variables from the ACSI survey that are used in the model estimation and identify the associated latent variable.

Customer expectations were measured by asking respondents to think back and remember the level of quality they expected on the basis of their knowledge and experience with a good or service.[2] Three expectation measures were collected: (1) overall expectations, (2) expectations regarding customization, and (3) expectations regarding reliability. Customers then rated their recent experience with the good or service by using three measures: (1) overall perceived quality, (2) perceived customization, and (3) perceived reliability. Two questions then tapped perceived value, quality relative to price, and price relative to quality.

Overall customer satisfaction (ACSI) was operationalized through three survey measures: (1) an overall rating of satisfaction, (2) the degree to which performance falls short of or exceeds expectations, and (3) a rating of performance relative to the customer's ideal good or service in the category. Whereas the latter are commonly used as antecedents in models of transaction-specific satisfaction (Oliver 1980; Yi 1991), their use as reflective indicators of overall customer satisfaction is consistent with the cumulative nature of ACSI, because each measure represents a qualitatively different benchmark customers use in making cumulative evaluations, such as overall customer satisfaction (ACSI). Moreover, the latent variable methodology employed to estimate overall customer satisfaction only extracts shared variance, or that portion of each measure that is common to all three questions and related to the ACSI construct's position in the model's chain of cause and effect. Thus, satisfaction is not confounded by either disconfirmation or comparison to an ideal. Only the psychological distance between performance and expectations, and between performance and the customer's ideal point, was used to estimate overall customer satisfaction (ACSI).

Customer complaints were measured by whether a customer had complained either formally (as in writing or by phone to a manufacturer) or informally (as to service personnel or a retailer). In addition, there were two measures of customer loyalty. The first was repurchase likelihood. The second measure was constructed from two survey variables: the degree to which a firm could raise its prices as a percentage before the customer would definitely not choose to buy from that firm again the next time (given that the customer has indicated he or she is likely to repurchase) and the degree to which a firm could lower its prices as a percentage before the customer would definitely choose again from that firm the next time (given that the customer has indicated he or she is unlikely to repurchase).

Scales and Model Estimation

The frequency distribution of satisfaction and quality ratings is always negatively skewed in competitive markets (Fornell

[2]Although such post hoc measures of expectations are imperfect, the cost of obtaining expectations prior to purchase is prohibitive in a study of this magnitude.

1995). To reduce the statistical problems of extreme skewness, the ACSI uses 10-point (versus 5- or 7-point) rating scales to enable customers to make better discriminations (Andrews 1984). The use of multiple indicators also reduces skewness (Fornell 1992). A version of partial least squares (PLS) is used to estimate the model (Wold 1989). Partial least squares is an iterative procedure for estimating causal models, which does not impose distributional assumptions on the data, and accommodates continuous as well as categorical variables. Because of the model structure, PLS estimates weights for the survey measures that maximize their ability to explain customer loyalty as the ultimate endogenous or dependent variable. The estimated weights are used to construct index values (transformed to a 0- to 100-point scale) for ACSI and the other model constructs.

The ACSI values for individual industries and sectors, as well as the overall economy are computed by aggregating firm-level results. An industry-level ACSI is an aggregate of firm results weighted by firm sales (such as Philip Morris sales for Miller Beer in the beverages and beer industry and excluding other corporate Philip Morris sales). A sector ACSI is an aggregate of industry results weighted by industry sales. The overall ACSI is an average of the sector results weighted by each sector's contribution to the gross domestic product. A formal statement of the ACSI model and its measurement is provided in the Appendix.

The Evolution of National Indices

The first truly national customer satisfaction index was the Swedish Customer Satisfaction Barometer, or SCSB (Fornell 1992). Developed in 1989, the SCSB includes 31 major Swedish industries. In Germany, the Deutsche Kundenbarometer, or DK, was introduced in 1992 and as of 1994 also includes 31 industries (Meyer 1994). The American Customer Satisfaction Index was first introduced in the fall of 1994, with information on 40 industries and seven major sectors of the U.S. economy (National Quality Research Center 1995). Recently, New Zealand and Taiwan also have started indices for customer satisfaction. The European Union also has recommended that it be done in its member countries.

The original Swedish Barometer used perceived value (quality given price and price given quality) and a single measure of customer expectations. It has since been respecified to conform to the ACSI. By drawing on the quality literature and its distinction between customization and reliability, the ACSI approach introduces a perceived quality index to go with the original value index. The addition of this quality construct has two advantages. Distinguishing between quality and value provides information regarding the degree to which satisfaction is price- versus quality-driven. The quality construct also provides information regarding the relative importance of customization and reliability in determining quality.

Other improvements incorporated into the ACSI focus on the measurement properties of the model. The three measures of perceived quality (see Table 1) furnish the ACSI model with three corresponding measures for operationalizing customer expectations (compared to the single expectations measure used in the original SCSB model). An additional question is asked in the ACSI to improve the measurement of price tolerance. In the original Swedish model, customers were only asked how much more they would pay, given that they were likely to repurchase. In the ACSI model, customers are also asked how much the price would need to be reduced for them to repurchase, given that they are unlikely to repurchase. This provides a more complete price tolerance measure that improves the measurement properties of the loyalty construct.

Finally, the ACSI requires a different approach to survey sampling because of the complexity of the U.S. economy. In the SCSB, a firm is surveyed for customer satisfaction with a single representative brand. This is impractical in the United States, where manufacturers such as the domestic "big three" automobile companies and General Electric offer a wide range of popular models under more than one brand name. As was described, customers in the ACSI are surveyed at the brand or model level, and the various brand or model observations are combined to estimate a firm-level model.

ACSI as a Benchmark Cross-Sectionally and Over Time

In Figure 2, we provide a breakdown of the industry, sector, and overall ACSI results for the baseline ACSI released October, 1994. The overall ACSI for the 1994 baseline was 74.5. What do the numbers shown in Figure 2 mean? As latent variables, the ACSI measures are comparable (albeit not blindly) across firms, industries, sectors, and nations. For example, the ACSI averages approximately 80 for goods, 75 for services and retailers, and 64 for public and government agencies. This implies that customers are generally more satisfied with goods than with services and are least satisfied with public administration and government agencies.

The American Customer Satisfaction Index measures lend themselves well to benchmarking over both time and context. For example, the 1994 ACSI indices provide a baseline for determining whether the marketplace is becoming more or less satisfied with the goods and services provided by individual firms, entire industries, and different sectors of the economy, as well as with the economic life of the nation as a whole. With regard to the last item, it is interesting to observe the decline in ACSI at the national level, which is shown in Figure 3. The American Customer Satisfaction Index falls from the baseline level of 74.5 in 1994 to a low of 73.0 in the first quarter of 1996. The decline is driven primarily by decreasing customer satisfaction with services. To the extent that long-term profitability depends on customer loyalty and the efficiencies gained from long-term buyer-seller relationships, this drop in satisfaction with services should be seen as a warning signal about the long-term financial prospects for the firms affected. More important, because services are a large and growing portion of the economy, such a decline may reflect a weakening of the economy in general and a lowering of living standards with regard to consumption quality.

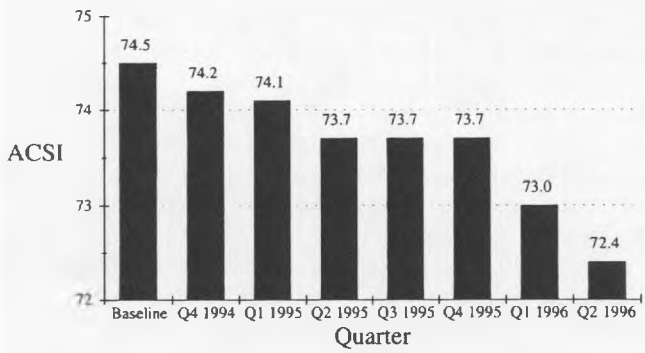
Tracking ACSI over time can also yield interesting insights at the firm level. One of the biggest winners in the first release of the firm-level results of the index was the U.S. Postal Service, which rose 13.0% to 69 in 1995 (*For-*

FIGURE 2
1994 Baseline ACSI Results

ACSI
National Score = 74.5

Manufacturing Nondurables 81.6	Manufacturing Durables 79.2	Transportation, Communications, Utilities 75.4	Retail 75.7	Finance, Insurance 75.4	Services 74.4	Public Administration, Government 64.3
82 Apparel	79 Automobiles	72 Airlines	77 Department Stores	74 Banks/ Commercial	74 Hospitals	Garbage Service:
79 Athletic Shoes	83 Consumer Electronics	77 Broadcasting, Television	77 Discount Stores	77 Insurance/ Life	75 Hotels	74 Central City
83 Beer	85 Household Appliances	75 Electric Service	69 Restaurants, Fast Foods	81 Insurance/ Property	77 Motion Pictures	74 Suburban
81 Cigarettes	78 Personal Computers, Printers	81 Express Delivery	76 Supermarkets			Police:
87 Canned Food		79 Phone/Local				61 Central City
87 Chocolate		82 Phone/Long Distance				65 Suburban
86 Milk, Ice Cream		60 U.S. Postal Service				55 Internal Revenue Service
84 Baked Goods						
82 Cold Meats, Cheese						
83 Cereal						
78 Gasoline						
72 Newspapers						
84 Personal Care						
86 Soft Drinks						

FIGURE 3
National ACSI Over Time



tune 1995). The postal service is engaged in a massive effort to improve the quality of their services, and it posted record profits last year. Large declines in the index were seen at companies that recently engaged in substantial downsizing, such as GTE (down 5.3% to 72) and Kmart (down 5.4% to 70).

Firm, industry, sector, and national ACSI scores also can be compared cross-sectionally within a given time period. For example, we can determine how well a particular firm is doing relative to the best firms in its own industry, the best firms in other industries in that sector, or the best in nation as a whole. Industries and sectors can be compared with one another in a similar fashion.

The American Customer Satisfaction Index also can be compared to the findings of Sweden's SCSB and Germany's DK. For example, the pattern of sector differences found in the ACSI is consistent with that observed in the SCSB and the DK. That is, goods score higher than services, and public administration is always the lowest scoring sector. However, viewed against the SCSB and DK, the ACSI scores are relatively high, especially in the goods and services sectors.

Although it is relatively straightforward to ask which firms, industries, sectors, and nations are relatively more effective at providing satisfying goods and/or services, it is a different question to ask whether a particular firm, industry, sector, or nation is "performing well." To do so, it is necessary to put the ACSI index numbers in context. From research conducted using SCSB data, it is known that certain factors make it more or less difficult to achieve high customer satisfaction and are likely to lead to higher or lower customer satisfaction for different types of industries. Fornell and Johnson (1993) find customer satisfaction higher in industries with a significant level of competition and differentiation. Anderson (1994) finds satisfaction higher when competition, differentiation, involvement, or experience is high or when switching costs, difficulty of standardization, or ease of evaluating quality is low. Both studies find satisfaction higher for goods than for services or retailers. This research enables us to conjecture that the observed higher satisfaction in the United States is due to the greater degree of competition found in most U.S. industries.

The question remains, however, once structural differences are taken into account, is a particular ACSI score "good" or "bad"? This question pertains to differences in the ACSI that are attributable to conduct, as opposed to structure. Such benchmarking judgments are relatively straightforward within a particular industry, in which firms can be compared against one another. In such cases, industry structure is held constant, such that differences in firm performance may be attributed to the firm's conduct.

Firms that do particularly well relative to their competition include Southwest Airlines, with an ACSI of 76 relative to an industry average of 69, and Wal-Mart, with a score of 80 relative to an industry average of 74. Both firms have developed difficult-to-imitate strategies and resources that have put them far ahead of the competition in their respective industries. Firms that trail the competition in their industry include Hyundai, with an ACSI of 68 relative to the automobile industry average of 80, and A&P, with a score of 69 relative to the supermarket industry's average of 74, and are each increasingly vulnerable to aggressive competitors.

Within a sector, though different industries are likely to share similar characteristics, benchmarking should be done with deference to differences in industry structure, such as the degree of competition. As is shown in Figure 2, the ACSI for long-distance telephone service (82) is greater than local telephone service (79). Consequently, it is possible to say that customer satisfaction with long-distance service is higher. However, it is not possible to say whether industry performance is good or bad without first taking into account differences in satisfaction due to structural characteristics. In other words, greater competition is likely driving the ACSI higher in long-distance service, but it is not appropriate to evaluate the conduct of the industry without first taking this structural difference into account. For example, long-distance service's score of 82 may be weak, given the industry's structural characteristics, whereas the local telephone industry's score of 79 may be high, given its situation. If so, then though long-distance service would be providing higher customer satisfaction, it might be encouraged to do better. At the same time, local telephone's performance would be "better," because the served market is more satisfied than would be expected on the basis of its industry characteristics. Hence, benchmarking requires further "handicapping" to account for differences in both. Development of a deeper understanding of how to handicap ACSI scores for benchmarking purposes is a promising avenue for further research.

General Applicability and Usefulness of ACSI

Using individual respondents as observations, we here describe the results of estimating the ACSI model for the seven measured sectors of the economy.[3] In contrast to the baseline results, in which the model is estimated for each firm and the results are aggregated to industry and sector indices and to an overall national ACSI, here each sector is treated as a subsegment of the overall ACSI population of respondents. In particular, we discuss the general applicability of the model and several key findings regarding (1) the relative importance of customization and reliability, (2) the predictive nature of expectations, and (3) the relative importance of price and quality. Throughout, we use standardized variables (correlations) to evaluate the measurement portion of the model and fit measures, whereas we use unstandardized variables (covariances) as input to estimate effect sizes. Jackknifing is used to obtain standard errors for each of the model parameters. Wherever model estimates (loadings and effects) are compared or contrasted across sectors in the discussion of results, the differences are significant ($p < .05$).

General applicability of the model. Overall, we expect the ACSI model to be generally applicable to multiple sectors. The model and measures are designed to provide this generality. This prediction is examined through several indicators. The first is whether the estimated path coefficients are significant in the predicted directions. We find the model's path coefficients to be significant and in the predicted direction for 54 of 56 possible cases.[4]

The second indicator of the model's performance is it's ability to explain important latent variables in the model, especially overall customer satisfaction (ACSI) and loyalty. We find that the estimated model explains a substantial proportion of the variance in both constructs. For overall customer satisfaction (ACSI), R^2 measures range from .70 for sector 1 to .80 for sector 5 (average of .75). For customer loyalty, R^2 ranges from .26 for sector 6 to .47 for sector 5 (average of .36).

The third and fourth indicators capture the fit of the measurement variable (MV) and latent variable (LV) portions of the model: the proportion of available covariance in the MVs explained, and the proportion of available covariance in the LVs explained. The measurement variable loadings for the ACSI model (not shown) are all relatively large and positive. The percent of MV covariance explained ranges from 84% for sector 1 to 89% for sectors 3 and 5 (average of .87). The percent of LV covariance explained ranges from 92% for sector 2 to 95% for sector 5 (average of 94%). Each model, therefore, explains well over 90% of the LV covariance available in a model that specifies 9 of 15 possible LV relationships. This suggests that there are no major relationships in our data that the ACSI model fails to capture.

Customization versus reliability. The measurement loadings suggest that customization is more central to customers' expectations and perceptions of quality than reliability. The average loadings for the expectations construct were .81, .85, and .68 for expected quality, customization, and reliability, respectively. The average loadings for the perceived quality construct were .907, .906, and .77 for

[3]The samples were as follows: (1) Manufacturing/Nondurables (n = 12,075; 26.8% of sample), (2) Manufacturing/Durables (n = 7,828; 17.4%), (3) Transportation/Communications/Utilities (n = 10,101; 22.4%), (4) Retail (n = 7,243; 16.1%), (5) Finance/Insurance (n = 3,236; 7.2%), (6) Other Services (n = 3,328; 7.4%), and (7) Public Administration/Government (n = 1,183; 2.6%).

[4]The two relationships that were not correctly predicted were for sector 5 (Finance/Insurance), in which there is a negative, albeit not significant, effect of expectations on overall customer satisfaction, and sector 7 (Public Administration/Government), in which the effect of expectations on value is positive but not significant (.035).

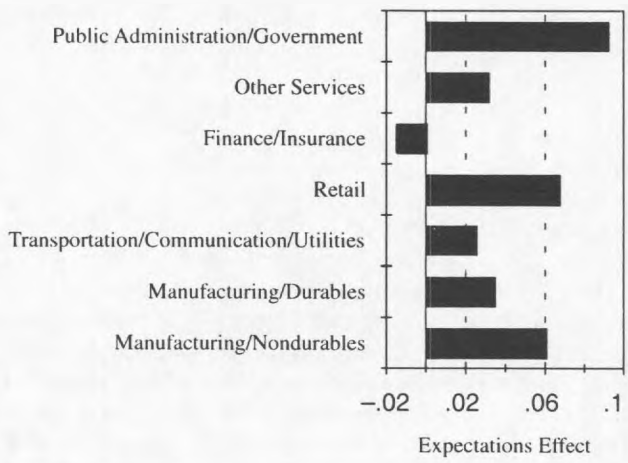
quality, customization, and reliability, respectively. Consistent with the nature of production and consumption in service-oriented sectors, customization is more central to quality for sectors 3, 5, 6, and 7 (average of .909) than for the manufactured goods sectors, 1 and 2 (average of .899). For all sectors, the loadings for the customization measures are significantly higher than the loadings for the reliability measures (for both the expectations and perceived quality constructs). This implies that squeezing more variance out of a manufacturing or service delivery process may not increase perceived quality and customer satisfaction as much as tailoring goods and services to meet customer or market segment needs.

The predictive nature of customer expectations. As was expected, we find that customer expectations are largely rational in that expectations predict quality, value, and customer satisfaction. This is consistent with previous research using the SCSB, which shows that the served market's expectations are relatively stable and accurate, especially in the aggregate (Anderson, Fornell, and Lehmann 1994; Johnson, Anderson, and Fornell 1995).

With regard to the impact of expectations on quality and value, it is useful to look at the sum of the two effects ([expectations on quality] + [expectations on value]). This joint effect is greatest in four sectors: Manufacturing/Nondurables = .68; Transportation/Communications/Utilities = .71; Retail = .81; and Public Administration/Government = .67. The joint effect is smaller in Manufacturing/Durables, Finance/Insurance, and Services (.45, .58, and .59, respectively). These findings are compatible with the argument that expectations are less predictive when variance in consumption and production factors are high (Anderson 1994). On the production side, if a particular good or service is difficult to standardize or quality is relatively unambiguous, variance in consumption experience is greater and expectations should have less influence. Similarly, on the consumption side, if customers are more likely to perceive variance in production—perhaps because of involvement or expertise gained through experience—then expectations should, again, have less influence. For example, customer expectations should be better predictors of quality, value, and satisfaction in those sectors in which customers make frequent and relatively routine purchase and consumption decisions (Howard 1977). When such interactions are less frequent, customers have less direct knowledge and their expectations should be weaker predictors of perceived quality and value.

The findings for the direct association between expectations and satisfaction are similar (see Figure 4). The impact of expectations is larger in two sectors (sector 1: Manufacturing/Nondurables = .06, and sector 4: Retail = .07), in which variance in production and consumption factors is relatively low. The effect is not as high in the other four competitive market sectors. The largest effect of expectations on satisfaction is for sector 7: Public Administration/Government at .09. This may reveal the impact that a negative image can have on satisfaction because of the halo surrounding certain publicly provided services (such as the Internal Revenue Service). This interpretation is consistent with research in which negative factors and framing effects have a larger impact on evaluations than do their positive counterparts (Kahneman and Tversky 1979). The observed negative effect for Finance/Insurance (–.01) is not significant.

FIGURE 4
The Direct Effect of Expectations on Customer Satisfaction



An examination of the total effect of expectations on satisfaction—the direct effect of expectations on satisfaction plus the effect of expectations on overall customer satisfaction through quality and value—yields similar results. Expectations have the greatest impact in the Public Administration/Government (.59) and Retail (.59) sectors, followed by Transportation/Communications/Utilities (.53), Manufacturing/Nondurables (.49), and Services (.47). The total effect of expectations is lowest for the Manufacturing/Durables (.36) and Finance (.41) sectors. For the latter, current quality experiences may be relatively more salient—such as the performance of an automobile or a mutual fund—and may take precedence over previous quality experiences in determining overall customer satisfaction, whereas long-term reputation effects may play a greater role in sectors in which expectations have a greater impact.

Price- versus quality-driven satisfaction. The impact of quality on overall customer satisfaction is greater than that of value in each of the seven sectors. The average direct effect of quality on overall customer satisfaction is .55, whereas the direct effect of value on overall customer satisfaction is .36. The total effect of quality on satisfaction—the direct effect plus the effect through value—averages .76. This difference is consistent with the notion that though value may be more central to the formation of customers' initial preferences and choice, quality, in contrast, is more central to the consumption experience itself.

An important question is how does the relative importance of price versus quality vary across sectors? If price, rather than quality, is driving overall customer satisfaction, the effect of a one-point change in value on overall customer satisfaction should be high relative to the total effect of a one-point change in quality on overall customer satisfaction. A price- versus quality-driven satisfaction ratio is calculated

FIGURE 5
Price-Versus Quality-Driven Satisfaction Ratio

as the impact of a one-point change in perceived value on overall customer satisfaction divided by the total effect of a one-point change in perceived quality on overall customer satisfaction (the direct effect of quality on satisfaction plus the indirect effect of quality on satisfaction through value).

As is shown in Figure 5, relative price-driven satisfaction is greatest in sectors 1 and 3, in which the ratio of effects equals .53 and .56, respectively, compared to an overall average of .47 across sectors. For sector 1 (Manufacturing/Nondurables) the result is consistent with the shift toward price-based competition in this industry, which was observed throughout the 1980s (Buzzell, Quelch, and Salmon 1990), in which price competition is fostered by the availability of low-priced house and generic brands and discount retailing. Price-driven satisfaction is highest for sector 3 (Transportation/Communications/Utilities), in which competition is relatively commodity-based and price plays a correspondingly important role.

Relative price-driven satisfaction is lowest for Manufacturing/Durables (.43), Services (.43), Retail (.44), and Government Agencies (.40), which implies that quality is relatively more central to market behavior in these sectors. For the first two, this finding is consistent with the high involvement and customized nature of the products involved. For Retail, the effects on both quality and value are relatively low. This may be due to the location-driven nature of this sector. The ratio for Public Administration/Government most likely reflects the "take it or leave it" nature of pricing in this sector.

Although our observations are based on aggregation over the wide variety of segments, firms, and industries within a given sector, overall it appears that a ratio of the impact of value to the impact of quality on satisfaction provides a useful measure of price- versus quality-driven satisfaction with strong face validity. In further research, the efficacy of the price-driven satisfaction ratio also should be demonstrated through association with other constructs in the database, as well as through the relationships between those constructs. For example, in industries in which overall customer satisfaction is relatively price-driven we might expect the effect of overall customer satisfaction on loyalty to be relatively low. At the sector level, we find this to be the case for Manufacturing/Nondurables, yet the Transportation/Communications/Utility sector is average in terms of how sensitive loyalty is to overall customer satisfaction. Thus, the price-driven satisfaction ratio also should be associated with degree of loyalty.

With the notable exception of Manufacturing/Nondurables, we find loyalty to be lower in sectors in which overall customer satisfaction is relatively price-driven. In part, this is driven by relatively high price tolerance because of the low-priced nature of goods sold in that sector. However, repurchase likelihood also is highest in this sector, as well as in the Transportation/Communications/Utilities sector. Clearly, the mixed nature of these findings suggests that additional research on these subjects must carefully control for category characteristics and industrial organization factors, such as switching costs and concentration, that can affect loyalty and the overall customer satisfaction–loyalty relationship.

Discussion and Implications

The American Customer Satisfaction Index represents a significant step forward in the evolution of national satisfaction indicators. It provides an independent and uniform means of assessing the quality of what is consumed and produced in the economy. It is a much needed missing link in what we need to understand about the health of the economy and the individual firms that compete in it. For example, if quality in the United States is declining as a consequence of declining overall customer satisfaction with the service sector, this should be cause for concern.

For public policymakers, ACSI has the potential to be a useful tool for evaluating and enhancing the health of the nation's economy, both in terms of national competitiveness and the welfare of its citizens. In assessing the health of the economy, it can provide an important complement to conventional measures of the quantity of goods and services produced—such as productivity and price indices—and can balance these measures against the quality of goods and services produced. For legislative efforts, ACSI can be useful in predicting and monitoring the effects of public policy decisions on issues as diverse as deregulation, taxes, interest rates, price ceilings, and subsidies. In terms of balance of trade, ACSI can provide an early warning as to whether an industry is vulnerable to competitive encroachment under conditions of free trade.

For managers and investors, ACSI provides an important measure of the firm's past and current performance, as well as future financial health. The ACSI provides a means of measuring one of a firm's most fundamental revenue-generating assets: its customers. Higher customer satisfaction should increase loyalty, reduce price elasticities, insulate current market share from competitors, lower transaction costs, reduce failure costs and the costs of attracting new customers, and help build a firm's reputation in the marketplace (Anderson, Fornell, and Lehmann 1994). As such, ACSI provides a leading indicator of the firm's future finan-

cial health. By establishing a standard measure of quality with clear links to long-term performance, ACSI may even help instill more of a long-term perspective in both management and investors.

The empirical evidence that ACSI is a leading indicator of financial performance is becoming increasingly persuasive. This is true for accounting profits, as well as for shareholder value. Specifically, it has been shown that both the ACSI (Ittner and Larcker 1996) and its Swedish counterpart (Anderson, Fornell, and Lehmann 1994) have a positive association with return on investment. In terms of market value, Ittner and Larcker (1996) estimate that a one-unit change in ACSI is associated with a $654 million increase in the market value of equity above and beyond the accounting-book value of assets and liabilities. Stock trading strategies based on either the ACSI or SCSB have delivered portfolio returns well above market returns (Fornell, Ittner, and Larcker 1995, 1996). Also, recent results suggest that the public release of ACSI scores causes a significant stock market reaction—positive market adjusted returns for high-scoring firms and negative adjusted returns for low-scoring firms (Fornell, Ittner, and Larcker 1996).

The American Customer Satisfaction Index also has implications for managers formulating competitive strategy. One of its key benefits is that ACSI represents a uniform and comparable system of measurement that allows for systematic benchmarking over time and across firms. In addition, it can be useful in analyzing the strengths and weaknesses of the firm or its competitors. For example, declining overall customer satisfaction is likely to be symptomatic of deeper problems facing a firm. Because ACSI provides a measure of the effectiveness with which a firm is defending current customers, firms with low ACSI scores are particularly vulnerable and provide expansion opportunities for more competent organizations.

For customers, ACSI provides information that is not only useful in making purchase decisions, but also likely to lead to improvements in the quality of the goods and services they consume, as well as in their overall standard of living. The independence, uniformity, and methodology underlying ACSI means that it provides information to buyers not found in ad hoc methodologies employed in product ratings by popular magazines and commercial market research. Moreover, the mere existence of such a measure would likely lead to improvements in the quality of goods and services. In a monopoly situation, ACSI may help police the market. In addition, ACSI should have particularly important implications for both the quality of these services and the prices customers pay for them. In competitive situations, too, ACSI should encourage quality competition and lead to greater customer satisfaction over time. The ultimate outcome should be an improvement in the quality of economic life.

To summarize, ACSI represents a new means of evaluating and enhancing performance for the modern firm and the modern economy. It provides a complement to conventional measures, such as productivity and price indices, that treat quality as a residual. In doing so, it has the potential to move to center stage the quality goods and services—as experienced by the customers of those goods and services—of firms, industries, and nations seeking to maintain and/or strengthen their positions in the increasingly competitive economic environment that is unfolding as we move into the twenty-first century. Because marketing scholars and practitioners have long recognized that customer satisfaction is an important and central concept, as well as an important goal of all business activity, the role of marketing in this new world should be self-evident.

Appendix

The formal expression of the model depicted in Figure 1 can be written as a series of equations such that the systematic part of the predictor relationships is the conditional expectation of the dependent variables for given values of predictors. The general equation is thus specified as stochastic:

$$E[\eta \mid \eta, \xi] = B\eta + \Gamma\xi,$$

where $\eta' = (\eta_1, \eta_2, ..., \eta_m)$ and $\xi' = (\xi_1, \xi_2, ..., \xi_n)$ are vectors of unobserved (latent) endogenous and exogenous variables, respectively, B (m × m) is a matrix of coefficient parameters for η, and Γ (m × n) is a matrix of coefficient parameters for ξ. This implies that $E[\eta\zeta'] = E[\xi\zeta'] = E[\zeta] = 0$, where $\zeta = \eta - E[\eta|\eta, \xi]$.

The corresponding equation that relates the latent variables in the model is

$$\begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ \beta_{21} & 0 & 0 & 0 & 0 \\ \beta_{31} & \beta_{32} & 0 & 0 & 0 \\ 0 & 0 & \beta_{43} & 0 & 0 \\ 0 & 0 & \beta_{53} & \beta_{54} & 0 \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \end{bmatrix} + \begin{bmatrix} \gamma_{11} \\ \gamma_{21} \\ \gamma_{31} \\ 0 \\ 0 \end{bmatrix} \xi + \begin{bmatrix} \zeta_1 \\ \zeta_2 \\ \zeta_3 \\ \zeta_4 \\ \zeta_5 \end{bmatrix},$$

where

ξ = customer expectations,
η_1 = perceived quality,
η_2 = perceived value,
η_3 = ACSI,
η_4 = customer complaints, and
η_5 = customer loyalty.

The general equations relating the latent variables to the measurement variables are

$$y = \Lambda_y\eta + \varepsilon,$$

and

$$x = \Lambda_x\xi + \delta,$$

where $y' = (y_1, y_2, ..., y_p)$ and $x' = (x_1, x_2, ..., x_q)$ are the measured endogenous and exogenous variables, respectively. Λ_y (p × m) and Λ_x (q × n) are the corresponding regression matrices. By implication from PLS estimation (Fornell and Bookstein 1982), we have $E[\varepsilon] = E[\delta] = E[\eta\varepsilon'] = E[\xi\delta'] = 0$. The corresponding equations in ACSI are

$$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} w_{11} \\ w_{21} \\ w_{31} \end{bmatrix} \xi + \begin{bmatrix} \delta_1 \\ \delta_2 \\ \delta_3 \end{bmatrix}.$$

and

$$\begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \\ y_8 \\ y_9 \\ y_{10} \\ y_{11} \end{bmatrix} = \begin{bmatrix} w_{11} & 0 & 0 & 0 & 0 \\ w_{21} & 0 & 0 & 0 & 0 \\ w_{31} & 0 & 0 & 0 & 0 \\ 0 & w_{12} & 0 & 0 & 0 \\ 0 & w_{22} & 0 & 0 & 0 \\ 0 & 0 & w_{13} & 0 & 0 \\ 0 & 0 & w_{23} & 0 & 0 \\ 0 & 0 & w_{33} & 0 & 0 \\ 0 & 0 & 0 & w_{14} & 0 \\ 0 & 0 & 0 & 0 & w_{15} \\ 0 & 0 & 0 & 0 & w_{25} \end{bmatrix} \begin{bmatrix} \eta_1 \\ \eta_2 \\ \eta_3 \\ \eta_4 \\ \eta_5 \end{bmatrix} + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \\ \varepsilon_6 \\ \varepsilon_7 \\ \varepsilon_8 \\ \varepsilon_9 \\ \varepsilon_{10} \\ \varepsilon_{11} \end{bmatrix},$$

where

x_1 = customer expectations about overall quality,
x_2 = customer expectations about reliability,
x_3 = customer expectations about customization,
y_1 = overall quality,
y_2 = reliability,
y_3 = customization,
y_4 = price given quality,
y_5 = quality given price,
y_6 = overall customer satisfaction,
y_7 = confirmation of expectations,
y_8 = distance to ideal product (service),
y_9 = formal or informal complaint behavior,
y_{10} = repurchase intention, and
y_{11} = price tolerance (reservation price).

The general form of the ACSI is as follows:

$$\text{ACSI} = \frac{E[\xi] - \text{Min}[\xi]}{\text{Max}[\xi] - \text{Min}[\xi]} \times 100,$$

where ξ is the latent variable for overall customer satisfaction, and $E[.]$, $Min[.]$, and $Max[.]$ denote the expected, the minimum, and the maximum value of the variable, respectively. The minimum and the maximum values are determined by those of the corresponding measurement variables:

$$\text{Min}[\xi] = \sum_{i=1}^{n} w_i \, \text{Min}[x_i],$$

and

$$\text{Max}[\xi] = \sum_{i=1}^{n} w_i \, \text{Max}[x_i],$$

where x_i's are the measurement variables of the latent overall customer satisfaction, w_i's are the weights, and n is the number of measurement variables. In calculating the ACSI, unstandardized weights must be used if unstandardized measurement variables are used.

In ACSI, there are three indicators for overall customer satisfaction, which range from 1 to 10. Then, the calculation is simplified to

$$\text{ACSI} = \frac{\sum_{i=1}^{3} w_i \bar{x}_i - \sum_{i=1}^{3} w_i}{9 \sum_{i=1}^{3} w_i} \times 100,$$

where the w_i's are the unstandardized weights.

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