



How Economic Growth Affects Customer Satisfaction

Björn Frank*, Takao Enkawa

Department of Industrial Engineering and Management, Tokyo Institute of Technology, Japan

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Abstract

Changes in customer satisfaction are usually linked to a firm's performance in satisfying its clients or to developments within its direct competitive environment. In order to correctly interpret such changes in corporate consumer surveys, managers should also account for macroeconomic influences on customer satisfaction. Using data from national consumer barometers in Germany, South Korea, Sweden, and the United States, this study reveals that economic growth positively affects customer satisfaction. Based on correlation analysis and Granger tests, these results challenge recent studies claiming that, conversely, there is a unidirectional impact of customer satisfaction on economic growth. With more comprehensive data from Germany, structural equation modeling shows that economic growth drives customer satisfaction via the expansion of the average consumer's budget and via an increasing perceived value of offerings. The effect is stronger in high-tech industries, industries with rapid innovation cycles, and industries with fierce price competition.

Keywords: Customer satisfaction, economic growth, perceived value, national consumer barometer

1. Introduction

By countless field studies, marketing researchers have discovered the great significance of customer satisfaction (CS) for commercial performance: Customer satisfaction leads to repurchase behavior (Bolton, 1998; Fornell, 1992) and thus to lower long-term costs (Reichheld and Sasser, 1990), positive word-of-mouth (Oh, 1999), fewer customer complaints (Bearden and Teel, 1983), lower warranty costs (Garvin, 1988), a better corporate image (Anderson and Sullivan, 1993), higher sales (Gómez et al., 2004), lower business risk (Fornell et al., 2006), higher profitability (Ittner and Larcker, 1998), and higher stock value (Anderson et al., 2004).

Therefore, it has become a regular measure for companies to conduct consumer satisfaction surveys in order to gauge corporate performance from the customer's point of view. Improvements on such surveys are usually viewed as improvements of the competitive position, thanks to better offerings and better customer service. In this article, we suggest that, under certain circumstances, those interpretations can be wrong and may lead to erroneous conclusions and thus suboptimal marketing strategies. Changes in customer satisfaction may be a consequence of economic processes not only on the supply side but also on the demand side. Economic expansion endows consumers with a higher purchasing power which enhances their customer satisfaction even if customer-oriented corporate performance remains unchanged. If management falsely interpreted this rise

* Corresponding author. E-mail: frank.b.aa@m.titech.ac.jp

in customer satisfaction as improved consumer-oriented performance, this misinterpretation might lead to erroneous marketing strategies. Therefore, we recommend marketing managers to account for aggregate financial changes on the demand side when interpreting customer satisfaction surveys.

A few studies have examined the relationship between customer satisfaction and economic growth. US researchers found coherence between these two variables, but their interpretation regarding the directionality of the link was opposite to our understanding. They argued that, since customer satisfaction has positive effects on corporate performance, increases in average customer satisfaction would also lead to increases in overall economic growth (Fornell, 2003; Fornell and Rust, 2005; Fornell and Stephan, 2002; VanAmburg, 2004; 26 press releases from 2002 to 2007 in National Quality Research Center [NQRC], 2008). However, we believe that increases in customer satisfaction only improve the relative position of companies in their markets (Ikeshoji and Enkawa, 2004) and do not lead to aggregate increases in economic output. Conversely, more recent studies from Japan argued that macroeconomic processes affect the average customer satisfaction (Ikeshoji and Enkawa, 2004; Ikeshoji et al., 2005).

Our objectives are to solve the contradiction between these two existing theories and to explore the internal mechanisms within the relationship between economic growth and customer satisfaction. For these ends, our study uses data from the world's most comprehensive national consumer barometers in Germany, South Korea, Sweden, and the United States and thus also extends to the Asia-Pacific region.

2. Development of hypotheses

Since marketing became aware of the great importance of convincing consumers, myriad studies have analyzed the antecedents to customer satisfaction. A first wave of literature revealed that the perceived quality of goods and services is the main driver of customer satisfaction (e.g. Churchill and Surprenant, 1982; Oliver, 1980). Later studies extended this notion to the concept of perceived value, also called the consumer-perceived performance-price ratio (PPR) (Fornell, 1992; Sawyer and Dickson, 1984; Zeithaml, 1988), i.e. perceived quality in relation to the price of a good or service. Consumer satisfaction can be raised either by providing higher consumer-perceived quality at the same price or by providing the same quality at a lower price (Anderson et al., 1994; Anderson and Sullivan, 1993; Fornell, 1992; Sawyer and Dickson, 1984).

Literature has also analyzed the consequences of customer satisfaction on business success. With respect to our research purposes, the most important finding is that customer satisfaction positively affects firm-level sales (Gómez et al., 2004) via repurchase behavior (Bolton, 1998; Fornell, 1992) and word-of-mouth referrals (Oh, 1999).

In recent years, marketing researchers have analyzed the relationship between economic expansion and customer satisfaction (Fornell, 2003; Fornell and Rust, 2005; Fornell and Stephan, 2002; VanAmburg, 2004). Based on US data, their studies reveal that aggregate customer satisfaction is positively associated with both aggregate consumer spending (Fornell and Stephan, 2002; Fornell and Rust, 2005) and GDP growth (Fornell, 2003; VanAmburg, 2004), two highly correlated variables ($r > 0.99$, $p < 0.001$, 1995-2006). They argue that satisfied customers spend more, which drives the whole economy (also expressed in 26 press releases from 2002 to 2007 in NQRC, 2008). One should be very careful when making such interpretations. It has been shown that consumers who are satisfied with one company will resort to the services of that company more often (Bolton, 1998; Fornell, 1992), but at the same time they consume fewer offerings from competitors (Reichheld and Sasser, 1990). Also, consumers reshuffle their expenses between industries (Sinha and Batra,

1999; Varian, 1992). For example, consumers who are highly satisfied with their car might take the train less often (Bhat, 1995). Or somebody who is very satisfied watching DVD's or illegally downloaded movies might go to the cinema at a lower frequency (Chan, 2006).

Consumers reorganize their expenses to get the best trade-off between quality and price. They can be expected to either look for higher utility at the same cost, for the same utility at lower cost, or for a trade-off in between (Sinha and Batra, 1999; Varian, 1992). Accounting for substitution between firms, products, and industries, it is not reasonable that this utility-cost trade-off points to an increase of aggregate consumption expenditures (Sinha and Batra, 1999; Varian, 1992). Therefore, literature does not support the theoretical and untested explication of Fornell (2003) for an allegedly positive impact of customer satisfaction on aggregate spending.

On the contrary, we rather assume that economic expansion affects the average customer satisfaction. Since the size of the economy is measured as the sum of all incomes (GDP: Gross domestic product) (Blanchard, 2006), an expansion of the economy is equivalent with a higher average income (Blanchard, 2006) and thus a higher average consumer budget. With a rising consumer budget, prices seem lower (more affordable) relative to the budget (Gamble, 2006; Sinha and Batra, 1999; Varian, 1992), which mathematically implies that the average perceived performance-price ratio increases. Since the perceived performance-price ratio is the main driver of customer satisfaction (Anderson et al., 1994; Fornell, 1992; Oh, 1999; Sawyer and Dickson, 1984; Zeithaml, 1988), economic expansion should positively affect the average customer satisfaction (see Figure 1). Conversely, falling incomes in times of economic recession should lead consumers to downgrade their consumption towards lower-grade products, which should reduce customer satisfaction (Dobson et al., 1994; Eriksson and Löfmarck Vaghult, 2000; Meijaard, 2001).

Besides these marketing-related considerations, economics and social science also strongly support a positive impact of income on utility (Duesenberry, 1949; Scitovsky, 1976; Solow, 1990; Van de Stadt et al., 1985; Veblen, 1899/1949) and happiness (Andrews, 1986; Argyle, 1999; Diener, 1984; Easterlin, 2001). This mechanism is mediated by the ability of income to improve life through consumption and is thus based on largely the same psychological patterns as the formation of customer satisfaction (Cantril, 1965; Easterlin, 2001; Ogikubo and Enkawa, 2006).

Based on support from marketing, economics, and social science, we conjecture in hypothesis H1 that economic expansion has a positive impact upon the average customer satisfaction. This hypothesis challenges the illustrated argumentation of Fornell (2003), Fornell and Rust (2005), Fornell and Stephan (2002), and VanAmburg (2004) who interpret the directionality of this relationship conversely.

H1: Economic expansion has a positive impact upon the average customer satisfaction.

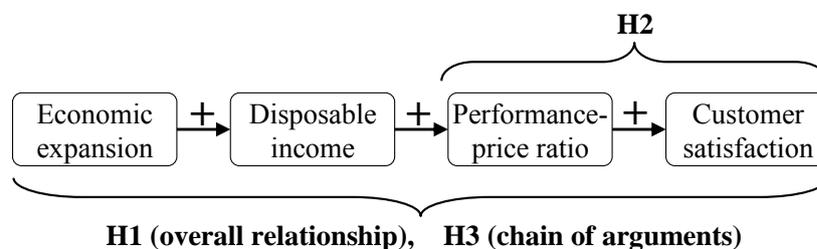


Figure 1. Hypotheses H1, H2, and H3

Our chain of arguments includes a positive impact of perceived value on customer satisfaction. While this relationship has been proven for cross-sectional studies of individual

consumers, our study will conduct time-series analysis of aggregate data. Therefore, it is important to confirm that this relationship is also valid at the aggregate level. While certain individual-level relationships disappear at the aggregate level (Johnson et al., 1995; Oh, 1999), the relationship between perceived value and customer satisfaction has been argued (Oh, 1999) and empirically shown for Sweden (Anderson et al., 1994) to become even stronger at the aggregate level. To verify the international validity of their finding, we will re-examine this aggregate relationship and adopt the following hypothesis:

H2: The average consumer-perceived performance-price ratio has a positive impact upon the average customer satisfaction.

Fornell (2003), Fornell and Rust (2005), Fornell and Stephan (2002), and VanAmburg (2004) analyzed the overall relationship between economic growth and customer satisfaction, but they only relied on theoretical explications and did not empirically verify their chain of arguments. This is the main reason why their works could not fully convince us. As we propose a substantially different understanding of the relationship between economic growth and customer satisfaction, we consider it important to test our argumentation as a model. Hypothesis H3 briefly summarizes our chain of arguments (see Figure 1).

H3: Economic expansion has a positive impact upon the average customer satisfaction via disposable income and the average consumer-perceived performance-price ratio of goods and services.

3. Data and methodology

The verification of our hypotheses requires time-series data on economic growth, customer satisfaction, and the perceived value of goods and services. In recent years, numerous countries have implemented initiatives to measure customer satisfaction at a national level. These national consumer barometers (Fornell, 1992) strongly differ in the number of industries analyzed. For our country-level analyses, it is important that the aggregate customer satisfaction indices reflect customer satisfaction in a high number of industries and are thus representative of the national situation (Fornell et al., 1996). Also, it is imperative to have relatively long time series in order to ensure statistical reliability (Greene, 2003).

Therefore, we obtained customer satisfaction data from the world's four oldest and most comprehensive consumer barometers: the Swedish Customer Satisfaction Barometer (SCSB: 1989-2007 except in 1998; Svenskt Kvalitetsindex, 2008), the German Customer Monitor (GCM: 1992-2007; Servicebarometer, 2008), the Korean Customer Satisfaction Index (KCSI: 1992-2007; KMAC, 2008), and the American Customer Satisfaction Index (ACSI: 1994-2007; NQRC, 2008). The number of consumer opinions included in these consumer barometers ranges between 20,000 and 40,000. In all four countries, customer satisfaction is measured with a yearly periodicity. The ACSI is published in the form of quarterly scores, but the data are updated only once per year, one quarter of the industries each quarter. Hence, these quarterly scores are actually a four-quarter moving average of yearly data (Fornell et al., 1996). For all four countries, inflation-adjusted economic data was obtained from the European Union (2008).

Economic and customer satisfaction data alone can only serve to examine the overall association between economic growth and customer satisfaction. We will analyze this relationship using correlations and Granger tests (Granger, 1969; Greene, 2003) which provide information about the directionality of the relationship and should thus help solve the conflict between the two contradictory consumer theories (see hypothesis H1) in our area of research.

To explore the detailed mechanisms within this relationship as outlined by hypotheses H2 and H3, we also need data on the perceived value of goods and services. Such data are only available from the GCM for the years 1993-2007 (Servicebarometer, 2008). Therefore, the in-depth analyses of our study will focus on Germany. We will use structural equation modeling (SEM; Garson, 2006; Greene, 2003) to illustrate the detailed relationship between economic expansion, disposable income, perceived value, and customer satisfaction.

4. Results

This section will present the results of our study. In the first step, we will use international data to generate information regarding the strength and directionality of the relationship between economic growth and customer satisfaction. Afterwards, we will use additional data from Germany to investigate the hypothesized internal mechanisms within this relationship.

In hypothesis H1, we conjecture a positive impact of economic growth on customer satisfaction. While researchers have shown the existence of such a positive association using American data (Fornell, 2003; Fornell and Rust, 2005; Fornell and Stephan, 2002; VanAmburg, 2004), their interpretation of the directionality is opposite to ours. Table 1 is meant to solve that contradiction with data from the world’s four comprehensive customer satisfaction barometers in Germany, South Korea, Sweden, and the United States. As US customer satisfaction data is collected with yearly periodicity (NQRC, 2008), we consider it appropriate to use yearly aggregates of customer satisfaction. However, Fornell (2003), Fornell and Rust (2005), Fornell and Stephan (2002), and VanAmburg (2004) used the quarterly moving averages of yearly data as “quarterly data”. For reasons of comparability, we also included these quarterly measures. As the right part of Table 1 shows, the correlation between economic growth (real GDP per capita) and customer satisfaction (CS) is strongly positive and highly significant in all countries.

Table 1. Granger test of causality: Economic growth drives customer satisfaction

Country	Economy ^c → CS ^a				CS ^a → Economy ^c				Correlation		
	F	(p)	F	(p)	F	(p)	F	(p)	r ^b	(p)	N ^a (Years)
Germany	7.67	(0.017)	8.08	(0.015)	0.07	(0.790)	0.03	(0.972)	0.887	(0.000)	16 (92-07)
South Korea	15.60	(0.002)	7.81	(0.011)	0.18	(0.675)	1.67	(0.237)	0.944	(0.000)	18 (89-07)
Sweden	27.99	(0.000)	12.67	(0.002)	0.48	(0.502)	0.56	(0.592)	0.914	(0.000)	16 (92-07)
USA (yearly)	10.33	(0.011)	3.21	(0.113)	0.09	(0.769)	0.62	(0.571)	0.617	(0.012)	13 (95-07)
USA (quarterly)	10.33	(0.002)	4.80	(0.013)	0.13	(0.721)	0.48	(0.625)	0.452	(0.000)	53 (94-07)
No. of time-lags	1		2		1		2				

^a CS: Customer satisfaction; N: Sample number (Sweden: no data in 1998).

^b r(p): Pearson’s correlation coefficient (1-tailed level of significance).

^c Measured by the real gross domestic product per capita.

Besides these overall correlations, Table 1 also contains the results of Granger tests (Granger, 1969; Greene, 2003) which use time-lags to examine the causal direction of the relationship between two variables. In order to examine the impact of variable A on variable

B , the Granger test compares the autoregression models 1) $B_t = Const_1 + \sum_{i=1}^L (\alpha_i A_{t-i} + \beta_i B_{t-i})$

and 2) $B_t = Const_2 + \sum_{i=1}^L \gamma_i B_{t-i}$. It calculates the test statistic

$$F_{test} = \frac{RSS_2 - RSS_1}{RSS_1} \frac{N - 2L - 1}{L} \sim F_{L, N - 2L - 1},$$

where RSS is the residual sum of squares of the

corresponding autoregression model, L is the number of time-lags used, and N is the sample number (length) of the time-series.

The left part of Table 1 examines the causal impact of economic growth (real GDP per capita) on customer satisfaction (CS) and, conversely, of customer satisfaction on economic growth. For both directions, we separately conducted Granger tests with time-lags (L) of one and two years. The results of our analysis reveal that in all four countries, economic growth significantly impacts customer satisfaction. Conversely, customer satisfaction does not impact economic growth.

These fundamental results thus confirm hypothesis H1 and demonstrate that our theory is more in line with empirical reality than that of Fornell (2003), Fornell and Rust (2005), Fornell and Stephan (2002), and VanAmburg (2004). Economic growth exhibits a significant, positive, and unidirectional impact on aggregate customer satisfaction.

In the next step, we will investigate whether we correctly hypothesized that economic growth impacts customer satisfaction via disposable income and the perceived value (= perceived performance-price ratio) of goods and services (see Figure 1). Since perceived value data is only publicly available in Germany, the following analyses will only focus on Germany. Table 2 shows the longitudinal correlations between various economic variables, perceived value (PPR), and customer satisfaction (CS). Since the perceived value data is available for only 63 out of 85 industries and not in 1992, we also included a customer satisfaction indicator based on the same reduced subset of industries and years.

The lower part of Table 2 shows that the perceived value and customer satisfaction averages exhibit a strong and highly significant longitudinal correlation which is higher when both measures are based on the same set of industries. Moreover, we examined the cross-industrial association between perceived value and customer satisfaction (per industry: average of all yearly values from 1993 to 2007) and found a correlation of 0.790 (p-value < 10^{-14} ; sample number: 63 industries). These time-series and cross-industrial results confirm hypothesis H2 and show that the argumentation of Oh (1999) and the empirical findings of Anderson et al. (1994) for Sweden are also applicable to Germany. The strong impact of individual-level perceived value on customer satisfaction, for which the extant literature has found overwhelming support (Fornell, 1992; Sawyer and Dickson, 1984), persists at the aggregate (industrial, national) level.

Table 2. The impact of economic expansion on perceived value and customer satisfaction

Economic indicators ^c	PPR ^a		CS ^a		CS: Same industries as PPR (Subset) ^a	
	r ^b	(p)	r ^b	(p)	r ^b	(p)
Gross domestic product	0.643	(0.005)	0.884	(0.000)	0.776	(0.000)
Gross domestic product / capita	0.655	(0.004)	0.887	(0.000)	0.779	(0.000)
Gross national disposable income	0.662	(0.004)	0.903	(0.000)	0.792	(0.000)
Gross national disposable income / capita	0.673	(0.003)	0.905	(0.000)	0.794	(0.000)
Private final consumption	0.615	(0.007)	0.841	(0.000)	0.774	(0.000)
Private final consumption / capita	0.634	(0.006)	0.849	(0.000)	0.784	(0.000)
PPR ^b			0.832	(0.000)	0.933	(0.000)
Sample number (years)	15 (1993-2007)		16 (1992-2007)		15 (1993-2007)	

^a CS: Customer satisfaction; PPR: Consumer-perceived performance-price ratio (= perceived value).

^b r (p): Pearson's correlation coefficient (1-tailed level of significance).

^c Inflation-adjusted.

The upper part of Table 2 lists correlations of economic indicators with perceived value and customer satisfaction. All correlations are positive and highly significant. Our analyses find the correlations to be higher for the customer satisfaction average including more industries than for the average including only a subset of industries, probably because more industries are more representative of the national situation. The correlations are stronger for per-capita economic indicators than for aggregate national indicators because both perceived value and customer satisfaction measures relate to individual consumers. Moreover, the correlations with perceived value and customer satisfaction are higher for gross disposable income than for the gross domestic product and private consumption. This lends support to hypothesis H3 suspecting that economic growth drives customer satisfaction via an income effect.

An interesting observation from Table 2 is that disposable income more significantly affects customer satisfaction than perceived value. This challenges our hypothesis H3 claiming that perceived value mediates the relationship between disposable income and the average customer satisfaction. To further investigate this issue, Figure 2 compares three structural equation models (SEM) with maximum likelihood estimation (Greene, 2003). It shows the standardized path coefficients, the corresponding levels of significance (in parentheses), and fit measures selected according to Garson (2006): the relative chi-square (χ^2/df : to be below 5), the minimum sample discrepancy (level of significance in parentheses: not to be significant), the normed fit index (NFI: to be over 0.9), the goodness of fit index (GFI: to be over 0.9), and the root mean square error of approximation (RMSEA: to be below 0.08).

Model 1 corresponds to the argumentation of hypothesis H3 (see Figure 1). In this model economic growth (real gross domestic product per capita: GDP/Capita) affects the average customer satisfaction (CS) via disposable income (real gross national disposable income: DI/Capita) and the average perceived value of goods and services (perceived performance-price ratio: PPR). While all path coefficients of model 1 are highly significant, the model does not have an optimal fit. Although the χ^2/df , minimum sample discrepancy, and NFI indicators are good and in the acceptable range, the GFI and RMSEA criteria are not fulfilled (Garson, 2006).

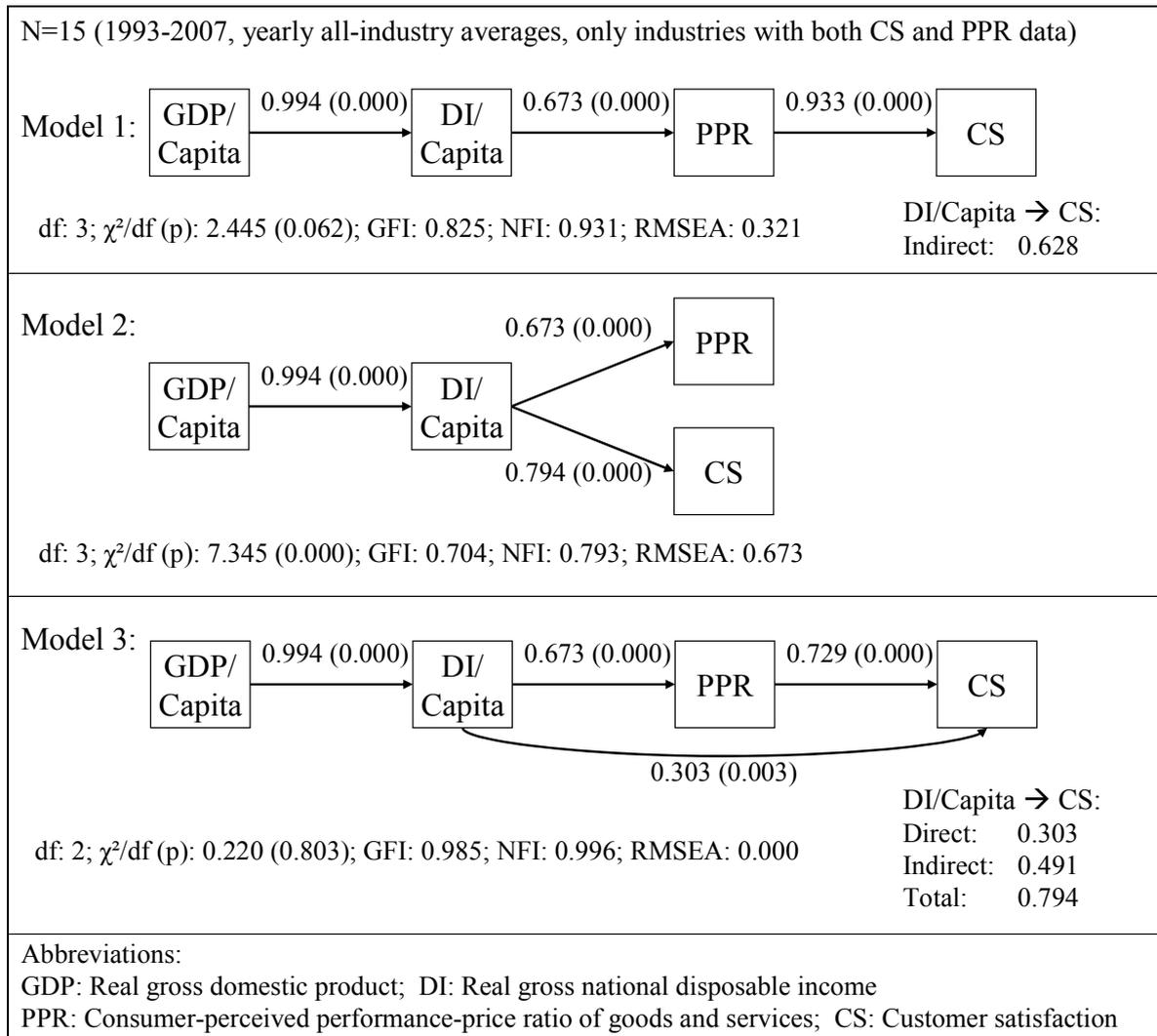


Figure 2. Comparison of hypothesized structural model with alternatives

One reason for the sub-optimal fit of the hypothesized model 1 could be that perceived value might not mediate the impact of disposable income on customer satisfaction. This assumption is tested in model 2 where disposable income directly impacts both perceived value and customer satisfaction. However, model 1 has a much better fit than model 2, which lends support to the idea of mediation. Consequently, model 3 tests the possibility that the impact of disposable income on customer satisfaction is only partially mediated by perceived value. It turns out that model 3 has an excellent fit and is superior to both models 1 and 2.

Regarding model 3, we compared the hypothesized *indirect* effect of disposable income on customer satisfaction via perceived value with the parallel *direct* effect of disposable income on customer satisfaction. As shown in Figure 2, the indirect effect (standardized coefficient: 0.491 because the individual path coefficients are DI/Capita \rightarrow PPR: 0.673; and PPR \rightarrow CS: 0.729; which leads to DI/Capita \rightarrow PPR \rightarrow CS: $0.673 * 0.729 = 0.491$) is stronger than the additional direct effect (DI/Capita \rightarrow CS: 0.303). Hence, the impact of economic expansion on customer satisfaction is mainly, but not completely, mediated by perceived value.

One possible reason for the additional direct effect (not mediated by perceived value) of disposable income on customer satisfaction is that the image of the provider of goods and services might serve as an intermediate construct for the direct effect of income on customer

satisfaction. Recent consumer literature has identified image and trust, which are closely related (Johnson et al., 2001), as significant drivers of customer satisfaction (Johnson et al., 2001; Law, Wong, and Lau, 2005). Perhaps, consumers care more about firm/brand image relative to perceived value (quality for money) as their income grows and they can afford luxury goods.

Table 3. Moderators of the relationship between disposable income and customer satisfaction

Subgroup analysis: Industry-level data (1993-2007)			SEM paths ^{a,c}	
Criterion for industry classification	Subgroup category	N ^a	DI/Capita → CS ^b	
			Direct ^d	Indirect ^d
Consumer orientation: Quality vs. price	Quality	33	0.176	-0.055
	Equal	102	0.080	0.175
	Price	222	0.064	0.177
Degree of technology	Low	180	0.156	0.026
	High	177	-0.005	0.251
Speed of innovation	Low	207	0.025	0.120
	High	150	0.188	0.199
Total		357	0.078	0.139

^aSEM: Structural equation model; N: Sample number.

^bCS: Customer satisfaction; DI/Capita: Real gross national disposable income per capita.

^cSEM paths correspond to model 3 in Figure 2.

^dDirect: not mediated by perceived value (PPR); Indirect: mediated by perceived value.

To learn more about the potential sources of the direct (not mediated by perceived value) vs. indirect (mediated by perceived value) impact of income on customer satisfaction, Table 3 briefly compares SEM model 3 (see Figure 2) across three potentially important industrial dimensions: quality vs. price orientation in consumer purchase decisions, degree of technology, and speed of innovation. These three dimensions are classified based on Fornell et al. (1996), Center for European Economic Research (1993-2005a, 2002-2006b), and Organization for Economic Co-operation and Development (2007), as shown in Table 4. The path coefficients are smaller than in Figure 2 because we use industry-level averages of perceived value and customer satisfaction instead of a national all-industry average, whereas the disposable income remains the same for all industries. Nevertheless, this industry-level model has an excellent fit because of the large sample size.

For the first industrial dimension, quality vs. price orientation, we can observe from Table 3 that the indirect effect (mediated by perceived value = PPR) of disposable income (DI/Capita) on customer satisfaction (CS) is much stronger than the direct effect (not mediated by perceived value) for price orientation and weaker for quality orientation. Our hypothesized indirect effect is thus more valid for markets with more price competition where consumers minimize the money they pay for the quality they get (Fornell et al., 1996). It seems reasonable to believe that the direct effect owes to firm/brand image because image helps firms shield themselves from price competition (Garvin, 1988). The indirect effect is also stronger in high-tech and weaker in low-tech industries. In high-tech industries, consumers seem to choose products according to their features as opposed to low-tech industries (e.g. clothing) where image seems to be more important (Chen and Hennart, 2002; Esch et al., 2006).

Table 4. Classification of industries along three dimensions

Industry	Q/P ^a	Tech ^b	SoI ^b	Industry	Q/P ^a	Tech ^b	SoI ^b
Airlines (consumers)	E	High	Low	Magazines	Q	Low	High
Airports	Q	High	Low	Mail-order companies	E	Low	High
Automobile associations	P	Low	Low	Mail-order companies (clothing)	E	Low	High
Banks	P	High	Low	Mail-order companies (technical goods)	P	High	High
Building society banks	P	High	Low	Mail-order bookstores	P	Low	High
Car inspection agencies	P	High	Low	Motorcycles	E	High	High
Car manufacturers	E	High	High	Newspapers	Q	Low	High
Car repair shops	P	High	High	Opticians	E	High	High
Charity organizations	Q	Low	Low	Parcel delivery (consumers)	P	Low	Low
Clothing stores	E	Low	High	PC (hardware)	E	High	High
Coffee stores	Q	Low	Low	PC (operating systems)	Q	High	High
Credit card organizations	P	High	Low	PC (software)	E	High	High
Department stores	E	Low	High	Pharmacies	P	High	High
Drugstores	P	High	High	Post offices	P	Low	Low
Frozen food home services	E	Low	Low	Power supply companies	P	High	Low
Frozen foods	E	Low	Low	Public city transportation	P	High	Low
Furniture stores	E	Low	Low	Railway (long-distance)	E	High	Low
Gas stations	P	High	Low	Railway (medium-distance)	E	High	Low
Electrical appliances markets	P	High	High	Religious communities	Q	Low	Low
Hairdressers	Q	Low	High	Supermarkets	P	Low	High
Home improvement stores	E	Low	Low	Taxis	P	High	Low
Hospitals	Q	High	High	Telecom (directory info)	E	High	High
Hotels	E	Low	Low	Telecom (long-distance)	P	High	High
Household appliance repair	P	High	High	Telecom (mobile)	P	High	High
Insurance (car)	P	Low	Low	Textile dry cleaning	E	High	Low
Insurance (health)	P	Low	High	Train stations	Q	Low	Low
Insurance (legal)	P	Low	Low	Travel / tour operators	E	Low	Low
Insurance (liability)	P	Low	Low	TV magazines	E	Low	Low
Insurance (life)	P	Low	Low	Vacation resorts	E	Low	Low
Internet providers	P	High	High	Video rental	P	High	High
Investment funds	Q	Low	Low				
Lawyers	Q	Low	Low				
Letter mail (consumers)	P	Low	Low				

^a Q/P: Consumer orientation; Q: quality; P: price; E: Equal

^b Tech: Degree of technology; SoI: Speed of innovation.

The industry-specific speed of innovation does not seem to moderate the relative importance of the direct vs. indirect effect but the importance of the effect as a whole. In industries with fast innovation, the gap between owned and offered products widens

relatively fast. Disposable income enables consumers to purchase more often and thus helps close this gap and raise customer satisfaction (Ikeshoji et al., 2005).

In summary, our analyses confirm our hypotheses stating that economic expansion drives customer satisfaction (H1) and that this effect is mediated by disposable income and perceived value (H2, H3). They also reveal an additional, weaker, direct (not mediated by perceived value) impact of disposable income on customer satisfaction. From theory and a cross-industrial comparison, we would explain this direct effect by the influence of firm/brand image on customer satisfaction (Fornell et al., 1996; Johnson et al., 2001).

5. Discussion

Literature has seen different interpretations of how economic processes and customer satisfaction affect each other. To solve the conflicts between these clashing theories, we used correlation analysis and Granger tests to illustrate the strength and direction of the relationship between economic growth and customer satisfaction. With a global scope extending into the Asia-Pacific region, we conducted these time-series analyses using data from all countries with a long-term history of comprehensive customer satisfaction measurement: Germany, South Korea, Sweden, and the United States. Our results show that there is a strong, positive, unidirectional impact of economic growth on customer satisfaction in all countries.

Further analyses about the mechanisms explaining this effect focused on Germany where more consumer data are publicly available than in the other countries. Based on consumer theory, we hypothesized that economic growth impacts customer satisfaction via disposable income and the perceived value (= quality for money) of goods and services (see Figure 1). Structural equation modeling confirmed our hypothesis, but showed that perceived value does not fully mediate the impact of disposable income on customer satisfaction. We found an additional, weaker direct effect of disposable income on customer satisfaction (see Figure 2, model 3), which was due to firm/brand image. A cross-industrial comparison between these indirect (mediated by perceived value) and direct impacts confirmed our assumptions and illustrated that the hypothesized indirect effect is stronger than the direct effect in high-tech industries and in industries with fierce price competition. This is probably because in those industries, image is not effective in preventing consumers from rigorous comparisons of the quality-price ratio. The overall impact of disposable income on customer satisfaction is stronger in industries with short innovation cycles, where the gap between owned and currently offered products widens relatively fast.

This study has important implications for marketing managers. The results of corporate customer satisfaction barometers may not only be influenced by a firm's own performance, but also by the industrial or even economic development. Scores on such surveys may improve as a consequence of rising spending power, even if the firm does a poor job in satisfying customers. Forecasting the impact of spending power on customer satisfaction is crucial for designing good marketing strategies and for drawing the right conclusions from customer surveys.

Future research with access to publicly unavailable, proprietary data of national customer barometers should conduct international comparisons and explain missing elements in the relationship between disposable income and customer satisfaction. We suggest that firm/brand image might complement our model. While we provided theoretical and indirect empirical support for this assumption, we did not include an image variable in our time-series analyses. An image variable only exists in very recent and industrially limited surveys, mainly of the EPSI network (EPSI Research Services, 2008) which was founded as an initiative of the European Union. In order to conduct time-series analyses

with national validity and high reliability, these consumer barometers will have to drastically grow in the number of surveyed industries and continue the measurement for many years. Therefore, reliable results from economic time-series analyses including an image variable are unlikely to be published before the year 2020.

References

- Anderson, E.W., Fornell, C., Lehmann, D.R. (1994) Customer satisfaction, market share, and profitability: Findings from Sweden. *Journal of Marketing*, 58(4), 53-66.
- Anderson, E.W., Fornell, C., Mazvancheryl, S.K. (2004) Customer satisfaction and shareholder value. *Journal of Marketing*, 68(4), 172-185.
- Anderson, E.W., Sullivan, M.W. (1993) The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, 12(2), 125-143.
- Andrews, F.M. (1986) *Research on the Quality of Life*. University of Michigan Press, Ann Arbor.
- Argyle, M. (1999) Causes and correlates of happiness. In D. Kahnemann, E. Diener, and N. Schwarz (Eds.), *Well-Being: The Foundations of Hedonic Psychology* (pp. 353-373). Russell Sage Foundation, New York.
- Bearden, W.O., Teel, J.E. (1983) Selected determinants of consumer satisfaction and complaint reports. *Journal of Marketing Research*, 20(1), 21-28.
- Blanchard, O. (2006) *Macroeconomics* (4th ed.). Pearson Prentice-Hall, Upper Saddle River, NJ.
- Bhat, C.R. (1995) A heteroscedastic extreme-value model of intercity travel mode choice. *Transportation Research Part B: Methodological*, 29(6), 471-483.
- Bolton, R.N. (1998) A dynamic model of the duration of the customer's relationship with a continuous service provider: The role of satisfaction. *Marketing Science*, 17(1), 45-65.
- Cantril, H. (1965) *The Patterns of Human Concerns*. Rutgers University, New Brunswick, NJ.
- Center for European Economic Research. (1993-2005a) *Innovation Survey*. Author, Mannheim, Germany.
- Center for European Economic Research. (2002-2006b) *Business Survey in the German ICT-Intensive Services Sector*. Author, Mannheim, Germany.
- Chan, J. (2006) The impact of unpaid movie downloading on box office sales. *Wharton Research Scholar Journal*. Retrieved February 5, 2008, from http://repository.upenn.edu/wharton_research_scholars/34/.
- Chen, S.F.S., Hennart, J.F. (2002) Japanese investors' choice of joint ventures versus wholly-owned subsidiaries in the US: The role of market barriers and firm capabilities. *Journal of International Business Studies*, 33(1), 1-18.
- Churchill, G.A., Surprenant, C. (1982) An investigation into the determinants of customer satisfaction. *Journal of Marketing Research*, 19(4), 491-504.
- Diener, E. (1984) Subjective well-being. *Psychological Bulletin*, 95(3), 542-575.
- Dobson, B., Beardsworth, A., Keil, T., Walker, R. (1994) *Eating on a low income* (Social Policy Research Paper No. 66). Joseph Rowntree Foundation, York, U.K.
- Duesenberry, J.S. (1949) *Income, Saving and The Theory of Consumer Behaviour*. Harvard University Press, Cambridge, MA.
- Easterlin, R.A. (2001) Income and happiness: Towards a unified theory. *The Economic Journal*, 111(473), 465-484.
- EPSI Research Services. (2008) *EPSI Rating*. Author, London. Retrieved February 6, 2008, from <http://www.epsi-rating.com>.

- Eriksson, K., Löfmarck Vaghult, A. (2000) Customer retention, purchasing behavior and relationship substance in professional services. *Industrial Marketing Management*, 29(4), 363-372.
- Esch, F.R., Langner, T., Schmitt, B.H., Geus, P. (2006) Are brands forever? How brand knowledge and relationships affect current and future purchases. *Journal of Product & Brand Management*, 15(2), 98-105.
- European Union. (2008) Eurostat. Author, Brussels, Belgium. Retrieved February 4, 2008, from <http://epp.eurostat.ec.europa.eu/>.
- Fornell, C. (1992) A national customer satisfaction barometer: The Swedish experience. *Journal of Marketing*, 56(1), 6-21.
- Fornell, C. (2003) Boost stock performance, nation's economy. *Quality Progress*, 36(2), 25-31.
- Fornell, C., Johnson, M.D., Anderson, E.W., Cha, J., Everitt Bryant, B. (1996) The American Customer Satisfaction Index: Nature, purpose, and findings. *Journal of Marketing*, 60(4), 7-18.
- Fornell, C., Mithas, S., Morgeson III, F.V., Krishnan, M.S. (2006) Customer satisfaction and stock prices: High returns, low risk. *Journal of Marketing*, 70(1), 3-40.
- Fornell, C., Stephan, J. (2002) Consumer spending growth predicted by buyer satisfaction. National Quality Research Center, Ann Arbor, MI.
- Fornell, C., Rust, R.T. (2005) The effect of buyer satisfaction on consumer spending growth (Working paper, September 9). University of Michigan, Ann Arbor. Presented (October 14) at the University of Western Ontario, London, Canada. Presented (March 3, 2006) at the University of Notre Dame, Notre Dame, IN. Retrieved March 15, 2007, from http://www.ivey.uwo.ca/Research/IRS_Papers/Rust.pdf.
- Gamble, A. (2006). Euro illusion or the reverse? Effects of currency and income on evaluations of prices of consumer products. *Journal of Economic Psychology*, 27(4), 531-542.
- Garson, D.G. (2006) Structural equation modeling. Retrieved April 3, 2007, from <http://www2.chass.ncsu.edu/garson/pa765/structur.htm>.
- Garvin, D.A. (1988) *Managing quality: The strategic and competitive edge*. The Free Press, New York.
- Gómez, M.I., McLaughlin, E.W., Wittink, D.R. (2004) Customer satisfaction and retail sales performance: An empirical investigation. *Journal of Retailing*, 80(4), 265-278.
- Granger, C.W.J. (1969) Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*, 37(3), 424-438.
- Greene, W.H. (2003) *Econometric Analysis* (5th ed.). Prentice-Hall, Upple Saddle River, NJ.
- Ikeshoji, M., Enkawa, T. (2004) A study on the relation between customer satisfaction index and business conditions. *Journal of the Japanese Society for Quality Control*, 34(4), pp.90-99.
- Ikeshoji, M., Schvaneveldt, S.J., Enkawa, T. (2005) An empirical study of economic condition effects on customer satisfaction: Japan-US comparisons. *Proceedings of the International Conference on Quality, Tokyo, Japan (CD-Rom)*.
- Ittner, C.D., Larcker, D.F. (1998) Are nonfinancial measures leading indicators of financial performance? An analysis of customer satisfaction. *Journal of Accounting Research*, 36(3), 1-35.
- Johnson, M.D., Anderson, E.W., Fornell, C. (1995) Rational and adaptive performance expectations in a customer satisfaction framework. *Journal of Consumer Research*, 21(4), 695-707.

- Johnson, M.D., Gustafsson, A., Wallin Andreassen, T., Lervik, L., Cha, J. (2001) The evolution and future of national customer satisfaction index models. *Journal of Economic Psychology*, 22(2), 217-245.
- KMAC. (2007) Korean Customer Satisfaction Index. Author, Seoul, South Korea. Retrieved February 5, 2008, from <http://www.kmac.co.kr/>.
- Law, M., Wong, Y.H., Lau, T. (2005) The role of trust in customer relationship management: An example to financial services industry. *Asia Pacific Management Review*, 10(4), 267-274.
- Meijaard, J. (2001) Making sense of the new economy. *E-Commerce Research Forum*, 2(5), 27-57. Massachusetts Institute of Technology, Boston.
- National Quality Research Center. (2008) The American customer satisfaction index. Author, Ann Arbor, MI. [NQRC]. Retrieved January 15, 2008, from <http://www.theacsi.org/>.
- Ogikubo, M., Enkawa, T. (2006) Customer satisfaction and cultural factors: Comparison with life satisfaction. *Asian Pacific Industrial Engineering and Management Systems Conference Proceedings*, 7 (CD-Rom).
- Oh, H. (1999) Service quality, customer satisfaction, and customer value: A holistic perspective. *International Journal of Hospitality Management*, 18(1), 67-82.
- Oliver, R.L. (1980) A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Organization for Economic Co-operation and Development. (2007) Science, Technology, and Industry Scoreboard 2007. Author, Paris.
- Reichheld, F.F., Sasser, W.E., Jr. (1990) Zero defections: Quality comes to services. *Harvard Business Review*, 68(5), 105-110.
- Sawyer, A.G., Dickson, P. (1984) Psychological perspectives on consumer response to sales promotion. In K. Jocz (Ed.), *Research on Sales Promotion: Collected papers* (pp. 1-21). Marketing Science Institute, Cambridge, MA.
- Scitovsky, T. (1976) *The Joyless Economy*. Oxford University Press, New York.
- Servicebarometer (2008) *The German Customer Monitor*. Author, Munich, Germany.
- Sinha, I., Batra, R. (1999) The effect of consumer price consciousness on private label purchase. *International Journal of Research in Marketing*, 16(3), 237-251.
- Solow, R.M. (1990) *The Labor Market as a Social Institution*. Basil Blackwell, Oxford, UK.
- Svenskt Kvalitetsindex. (2008) Customer satisfaction index. Author, Stockholm. Retrieved February 10, 2008, from <http://www.kvalitetsindex.se/>.
- VanAmburg, D. (2004) Customer satisfaction in a changing economy: Results from the American Customer Satisfaction Index. *Annual Quality Congress Proceedings*, 58, 233-236.
- Van de Stadt, H., Kapteyn, A., van de Geer, S. (1985) The relativity of utility: Evidence from panel data. *Review of Economics and Statistics*, 67(2), 179-187.
- Varian, H.R. (1992) *Microeconomic Analysis* (3rd ed.). W.W. Norton & Co, New York.
- Veblen, T. (1949) *The Theory of The Leisure Class*. George Allen and Unwin, London. (Original work published in 1899 by Macmillan, New York.)
- Zeithaml, V.A. (1988) Consumer perceptions of price, quality, and value: A means-end model and synthesis of evidence. *Journal of Marketing*, 52(3), 2-22.