Variations in consumer sentiment across demographic groups

Maude Toussaint-Comeau and Leslie McGranahan

Introduction and summary

Consumer sentiment is one of the many macroeconomic indicators tracked by policymakers. Consumer sentiment—as measured by indexes such as the Index of Consumer Sentiment (ICS) and the Consumer Confidence Index (CCI)—is seen as a barometer of economic activity, one that is a reliable indicator of the way people plan to spend their money. Consumer sentiment is important because it affects household spending. Nationally, household spending on final goods and services (retail sales) represents about 65 percent of all expenditures for final goods and services, the nation's gross domestic product (GDP). Since private consumption expenditure accounts for such a large proportion of GDP, consumer sentiment can signal changes in the direction of the economy. Numerous studies have assessed the extent to which consumer sentiment is related to fluctuations in GDP, the stock market, and other outcomes.

While the overall index scores, so closely watched by the public, are important, these aggregate numbers conceal a wealth of demographic-specific information contained in the survey data. Analyzing the survey data at disaggregated levels enhances the indexes' informative power (Dominitz and Manski, 2004). Consumers' expectations about specific sectors of the economy, such as expectations of inflation, income, employment, and home values, usually differ by demographic group and often move in opposite directions by group. These disparities in expectations translate into distinct spending patterns by different groups. Additionally, personal spending patterns vary across demographic groups. For example, older consumers tend to spend more on health care; also, poor consumers spend a higher proportion of their income on food and shelter. Because of these and other differences, examining disaggregated consumer sentiment survey data can provide us a more detailed picture of future expenditure.

Beyond predicting expenditure, household-level sentiment data tell us something about the current welfare of vulnerable populations. There is increasing evidence that consumer expectations vary systematically across demographic and socioeconomic groups. As policymakers seek to better understand the economic experiences of various societal groups over the business cycle, disaggregated consumer sentiment data can be a useful tool. For example, if a certain subpopulation expresses pessimism about general business conditions during an economic recovery or growth period, there is good reason to think that the benefits of economic expansion may not be reaching that group. These insights can inform policy initiatives aimed at assisting these populations.

In this article, we use household micro-level data to investigate the determinants of consumer sentiment. We use data from the University of Michigan's *Surveys of Consumers*, grouping respondents by characteristics such as race, ethnicity, gender, and income, among others.[1] We examine responses to the questions that go into calculating the University of Michigan's Index of Consumer Sentiment, as well as responses to other questions in the survey. One important finding is that sentiment differences across groups persist regardless of whether the question asks about personal situations or general situations—that is, groups have different views not only of their own outlook, but of the outlook for the country as a whole. We look into consumers' explanations of their sentiment to investigate why this is, considering group-level subjective

experiences and differences in information sets across individuals as possible explanations for this gap in sentiment.

We proceed with a brief literature review that outlines the basic theoretical framework for understanding the relationship between consumer sentiment and consumer behavior. Then we provide a description of how consumer sentiment is measured. After this, we continue with an analysis of the variations in sentiment across groups, while exploring explanations for the differences. Finally, we discuss the implications of our findings and comment on areas for future research.

Literature review

There is a large amount of literature that deals with the role of consumer sentiment in explaining consumption.[2] The point of departure for much of this literature is the permanent income hypothesis (PIH) (Friedman, 1957). The PIH maintains that consumption is determined solely by individuals' incomes over their lifetimes—that is, expenditure depends only on permanent income (wealth). Consistently, Hall (1978) concluded that under conditions of perfect capital markets, the PIH can be approximated by a *random walk*, meaning that no past information (aside from that needed to measure lifetime income) is required to predict current consumption.

Research has found that consumption is partly determined by current income, a notion that is referred to as "excess sensitivity" of consumption relative to income. For example, Campbell and Mankiw (1990) find that only half of consumers tend to be "life-cyclers," following the PIH assumptions, while the others tend to be "rule-of-thumbers," or those who consume from their current income rather than just from their lifetime income. Studies have attributed excess sensitivity of consumption relative to current income to liquidity constraints and precautionary savings motives (Shea, 1995; Flavin, 1991; Alessie and Lusardi, 1997). Liquidity constraints mean that individuals may not be able to borrow as they desire. That is, even if consumers anticipate more income (and consumers' confidence increases), with binding liquidity constraints, they will not be able to immediately act on the improvement in permanent income; the consumers will increase consumption only when the rise in income materializes. Some consumers accumulate precautionary savings when there is uncertainty relative to future income, which will cause them to have higher expected utility, since they reduce current consumption in case of a drop in income. In other words, even if consumers' financial positions remain unchanged, greater uncertainty about their future positions (hence a decrease in confidence) might cause consumers to engage in precautionary savings, which would affect their marginal propensity to consume. If lower consumer confidence reflects higher uncertainty about the future and enhances the precautionary motive for savings, then lower consumer confidence today causes consumption to decrease today relative to tomorrow. In contrast, higher consumer confidence is associated with lower savings and more consumption in the present, as well as lower consumption growth in the future. In the PIH framework, the ability of consumer sentiment to explain consumption arises from the fact that consumer sentiment serves as a proxy for liquidity constraints and precautionary savings motives (Acemoglu and Scott, 1994).[3]

Empirical research using micro-level sentiment data has focused on inflation expectations of households. For example, Bryan and Venkatu (2001b) find that predictions of inflation significantly differ by socioeconomic and demographic characteristics of consumers. Palmqvist and Strömberg (2004), Lombardelli and Saleheen (2003), and Ranchhod (2003) find similar results in Sweden, the United Kingdom, and New Zealand. Souleles (2004) provides some explanations for people's differences in sentiment as he suggests that differences in people's expectations may be due to time-varying group-specific shocks (for example, during a recession the less educated may be disproportionately adversely affected). Another set of research examines the nature of the information to which consumers have access. This includes information that might help form their expectations, such as private local information, information they have gathered from their industries, or news media reports. For example, Dunn and Mirzaie (2004) calculate manufacturing employment concentration as a proxy to measure agents' private information to explain regional variations in consumer confidence.[4] Sims (2003) presents a theoretical framework for evaluating the way people process information, accounting for the fact that people might have capacity constraints in processing information and extracting signals from the information that is transmitted to them. (That is, two people may be exposed to the same information, but they may not assimilate or use the information the same way. Therefore, their expectations of the same event may be different.) Doms and Morin (2004) analyze the role of the news media. They suggest that even if media coverage affects consumer sentiment, the effects are very short-lived. These findings underscore the difficulty in assessing the role of information in consumer sentiment and, ultimately, consumer behavior.

Friedman (1957) and Hall (1978), under the PIH framework, assume specific types of preferences—exogenous and stochastic income, no borrowing constraints, and rational expectations. However, the field of behavioral economics has extended our understanding of preferences to account for "psychological factors," such as addiction and lack of self-control (Gul and Pesendorfer, 2002) and discrimination (Becker, 1976). There is in fact a tradition of portraying the connection between sentiment and behavior in psychological terms: John Maynard Keynes (1936) wrote that household consumption is influenced by "spontaneous optimism" and "animal spirit." Similarly, George Katona (1975)—the founder of the Survey Research Center (SRC) at the University of Michigan, which generates the ICS—explained that in addition to factors that affect a consumer's ability to pay, consumption is based on a consumer's "willingness to pay." These suggest that households form their expectations about the future based on preferences, technology, market frictions or borrowing constraints, and subjective experiences; indexes like the ICS and CCI are summaries of their views. This article builds upon this literature with its exploration of the possible links between consumer sentiment, personal characteristics of individuals, their subjective experiences, and exposure to news information.

Measuring consumer sentiment

While sentiment surveys are well known, their methods of construction are more obscure. Here, we describe how the Index of Consumer Sentiment from the University of Michigan's Survey Research Center is designed, and examine business cycle components of its trends.[5] This aggregate index, the ICS, is constructed using a formula based on responses to the following five survey questions. (The names of the variables, as identified by the survey, are in parentheses after the questions.)

1) We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are *better off* or *worse off* financially than you were *a year ago*? (*PAGO*)

2) Now looking ahead—do you think that *a year from now* you (and your family living there) will be *better off* financially, or *worse off*, or just about the same as now? (*PEXP*)

3) Now turning to business conditions in the country as a whole—do you think that during the *next 12 months* we'll have *good* times financially, or *bad* times, or what? (*BUS12*)
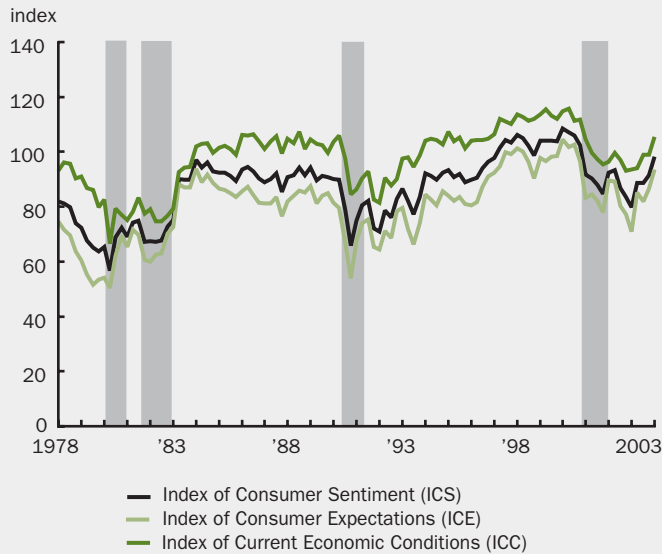
4) Looking ahead, which would you say is more likely—that in the country as a whole we'll have continuous good times during the *next five years* or so, or that we will have periods of widespread *un*employment or depression, or what? (*BUS5*)

5) About the big things people buy for their homes—such as furniture, a refrigerator, stove, television, and things like that. Generally speaking, do you think now is a *good* or *bad* time for people to buy major household items? (*DUR*)

To compute the ICS, first an index for each of the five questions is constructed as the "net balance," where the proportion of negative responses is subtracted from the proportion of positive responses. The overall ICS is then calculated as an average of the net balance for these questions. There are two other indexes derived from these questions. The Index of Current Economic Conditions (ICC) is based on the two questions that ask about present personal and economic situations, *PAGO* and *DUR*. The Index of Consumer Expectations (ICE) is based on the three questions that ask about consumer-expected changes in business conditions and respondents' income, *PEXP*, *BUS12*, and *BUS5*.[6]

Figure 1 plots the three indexes—the ICS, the ICE, and the ICC—using quarterly data for the period 1978 to 2004.[7] (By design, the ICS lies between the ICE and the ICC. The correlation between the ICE and the ICC is 0.82). Looking at the figure, one can note the relationship between the indexes and business cycles. From 1978 to 2004, there were four recessions. These are shown as shaded regions in the figure. The most recent was from March 2001 to November 2001 (2001:Q1–2001:Q4). The ICS always takes a dip during a recession, although there are some brief intervals outside of the recession periods when this index also takes a dip. The three indexes begin decreasing one to four quarters ahead of three of the four recessions. (The one exception is the 1980 recession, at which time the indexes fell as the recession began.) The indexes rise prior to all upturns. These observations suggest the potential predictive power of the indexes. The indexes climbed to historically high levels throughout the expansionary years of the 1990s, before a reversal of the trend prior to the 2001 recession. Various researchers have found that the Index of Consumer Expectations has some predictive power for GDP, consumption, and the stock market, among other outcomes.[8]

Sentiment and demographic characteristics

Next, we examine the ICS by group on a quarterly basis (due to space constraints, we do not report

FIGURE 1

ICS, ICE and ICC of whole population

Note: The shaded areas are recessions as identified by the National Bureau of Economic Research.
Source: University of Michigan, Survey Research Center, *Surveys of Consumers*.

(Wall, 2003). Starting after the 1990–91 recession, there was a tendency for the gap in the ICS between blacks and whites to narrow. The gap appears to have widened recently. Differences in the ICS based on education attainment and gender persist and remain constant over time.

Because the ICS is made up of disparate questions, the changes over time in the ICS by group as indicated by figure 2 are not easy to interpret. The ICS is made up of five component questions concerning personal financial situations as well as general business conditions. These responses can move in opposite directions, even within a demographic group. If more blacks since 1991 are responding that their personal financial situations have improved relative to the proportion of blacks who are projecting that the economy will do well, then the improvement in their ICS may be interpreted as reflecting an improvement in their personal financial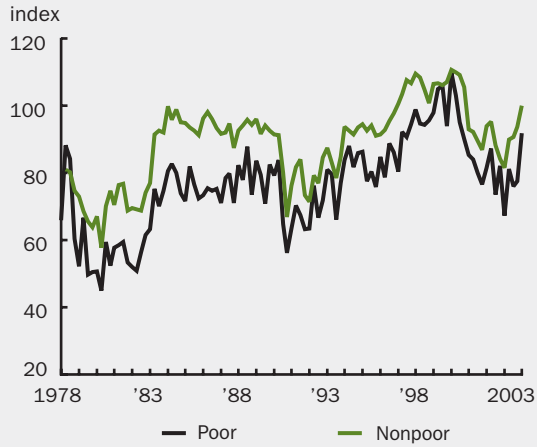 situations. The opposite would indicate that blacks simply think that the economy will do well, although they do not think that their own situations have changed. We take a closer look at the components of the index to ascertain the factors that might explain changes over time in the ICS by group.

Figures 3 through 6 show the results of disaggregating the ICS into its component questions for selected groups. (The *DUR* variable is not reported in our figures because the differences in responses by group are minor by comparison to those of the other variables.) First, consider the results for blacks and whites (figure 3). Before 1991, the fact that consumer sentiment among blacks was lower can be attributed to their lower confidence in both the overall economy and their personal financial situation. This is indicated by the gap in the *BUS5*, *BUS12*, and *PAGO* series over that period. In contrast, after 1991 the relatively higher consumer confidence of blacks can be attributed to the fact that they had relatively more confidence regarding their financial situation, as indicated by the small gap in the *PAGO* series between blacks and whites and as evidenced by higher *PEXP* among blacks in the post-1991 period. In short, the convergence of black and white sentiment measures since 1991 can be largely attributed to improvement in black consumers' reports of their own financial situation.

the results for the ICE and the ICC in this section).[9] We calculate the ICS for each group in a similar way to the calculations for the entire sample.[10] The results are consistent with previous studies that noted that consumer confidence varies by demographic characteristics. In our study, we define the following set of populations to be "vulnerable": the poor, elderly, females, blacks, Hispanics, or those without a high school diploma. By vulnerable, we mean that each of these populations has lower income relative its complement, for example, the poor relative to the nonpoor. The set of plots in figure 2 shows that the populations that we classify as vulnerable populations have, on average, lower confidence than their counterparts.[11]

Figure 2 reveals a number of patterns: For the poor and nonpoor, we observe a large gap in the ICS in the 1980s, a sharp contrast to what later occurred with the expansion of the 1990s.[12] In both periods, the trend in the ICS for the poor is more variable than that of the nonpoor. The confidence pattern for the elderly (age 65 or older) and non-elderly is similar to that which we observe for the poor and nonpoor—that is, it is lower and more variable for the elderly. Comparing the ICS of blacks and whites, we find that during the 1980 and the 1981–82 recessions there was an increase in the gap between the two groups—consistent with findings in other research that blacks may have been disproportionately affected by these recessions

FIGURE 2

Index of Consumer Sentiment by demographic group

A. Poverty status
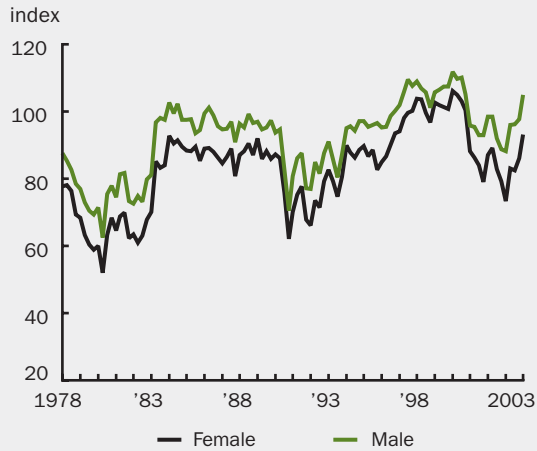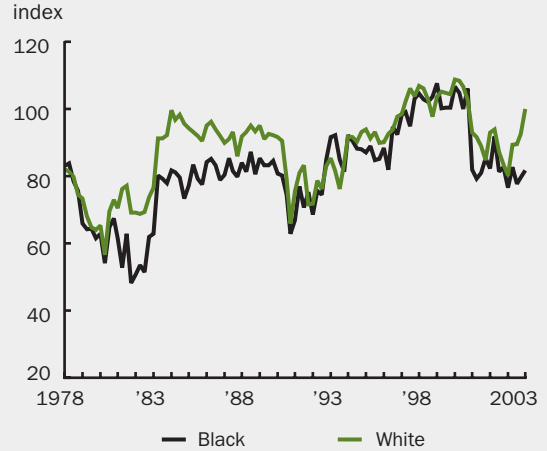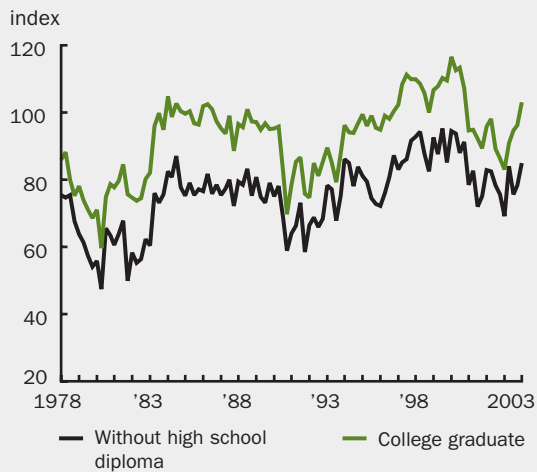
index

Poor — Nonpoor

B. Age

index

Elderly — Non-elderly

C. Gender

index

Female — Male

D. Race

index

Black — White

E. Education attainment

index

Without high school diploma — College graduate

Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

Components of Index of Consumer Sentiment by race

A. PAGO
index

B. BUS5
index

C. PEXP
index

D. BUS12
index

Note: See the text for definitions of the variables.
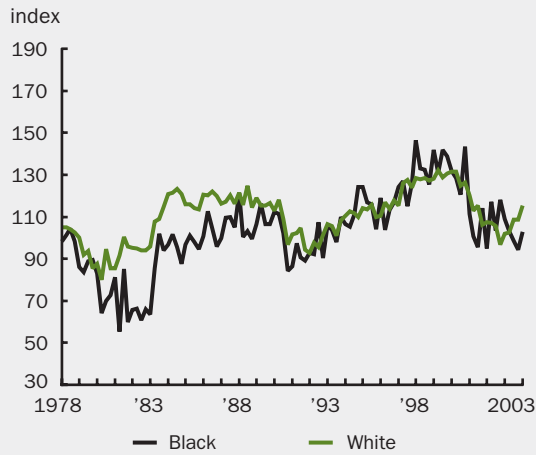Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

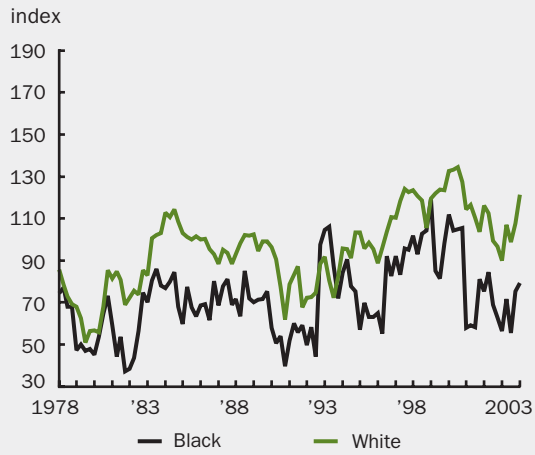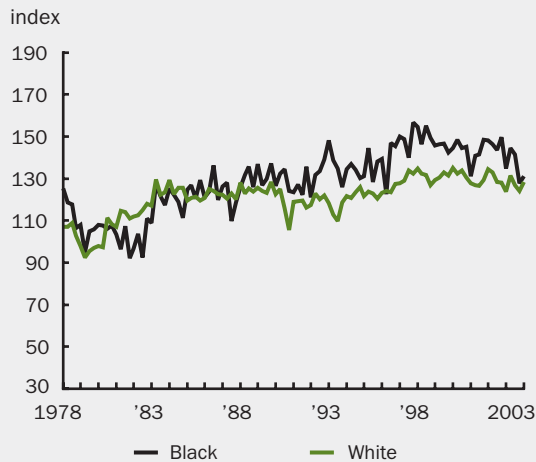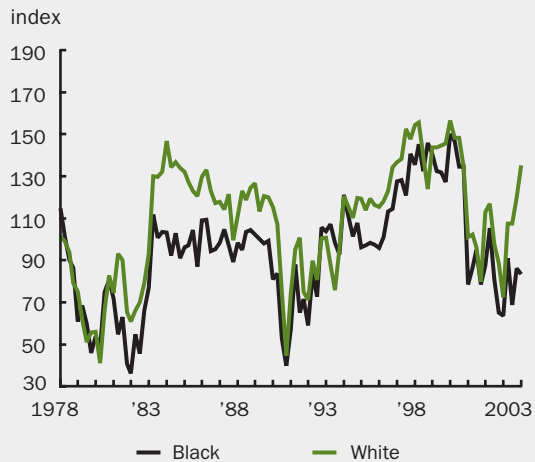Turning to figure 4, we note that the elderly have a similar level of confidence in the overall economy compared with the non-elderly. This is indicated by the fact that the *BUS12* and *BUS5* series of the elderly and non-elderly virtually coincide in both level and pattern. The triggering factor for the lower overall consumer sentiment shown by the elderly is their lower assessment of their financial situation, at present and as predicted for the future. This can be seen from the gap between the *PAGO* and the *PEXP* series of the elderly and the non-elderly. Similarly, for those without a high school diploma (figure 5) and the poor (figure 6), a lower confidence in their personal financial situation (*PAGO*) seems to be a contributing source of lower consumer sentiment overall. (The pattern

for the *PEXP* series of the poor and nonpoor is less clear than that for *PAGO*.) In addition, those without a high school diploma and the poor are also less confident about the economy as a whole (*BUS12* and *BUS5*).

It is not surprising to find that respondents have different expectations concerning their personal experiences. However, it is puzzling that they should also have different expectations of the same economic events (business conditions). One possibility is that they form their expectations of the economy based on their own subjective experiences. We investigate this possibility by looking at respondents' expectations of unemployment and their actual (group-level) experiences of unemployment. Besides the five questions mentioned previously, respondents are asked in

FIGURE 4

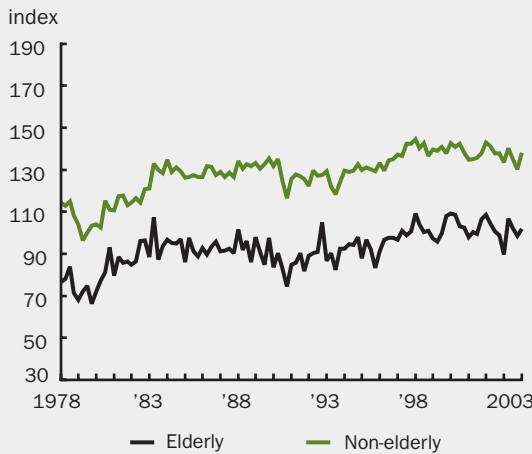**Components of Index of Consumer Sentiment by age**

A. PAGO
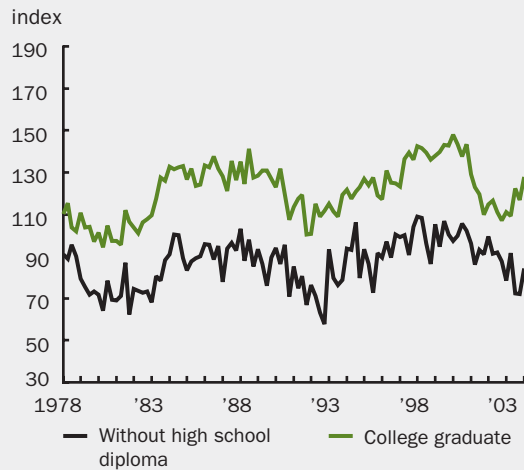index

B. BUS5
index

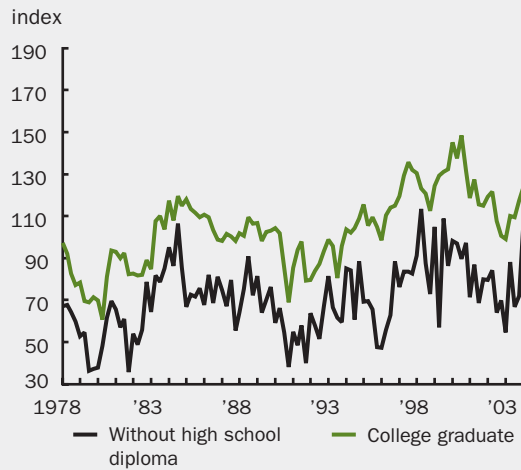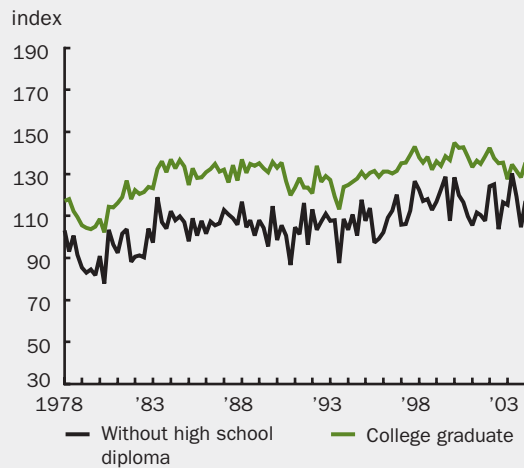**C. PEXP**
index

D. BUS12
index

Note: See the text for definitions of the variables.
Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

the SRC survey: "How about people out of work during the coming 12 months—do you think that there will be *more un*employment than now, about the *same*, or *less*?" We calculate the coefficient of correlation between the response to this question and actual unemployment to ascertain whether a relationship exists between the two series.[13] The correlation coefficient is a measure of the degree of linear association between two variables, with –1 indicating perfect negative association, +1 indicating perfect positive association, and 0 indicating no association. The results, which are summarized in table 1 (p. 28), indicate that a respondent's expectation of unemployment corresponds to the experience of her own group (in the second column) more closely than it corresponds to the experience of

the population as a whole (in the first column), even though the question asks about the general situation. This suggests that group-based aggregate experiences tend to inform individuals' expectations of the economy.

We also consider people's expectations of price changes and the actual changes in the Consumer Price Index. We find evidence consistent with previous studies that expectations of inflation vary systematically by demographic and socioeconomic characteristics. In particular, female unmarried heads of households, the poor, the less educated, and blacks have higher expectations of inflation. Several studies have offered potential explanations of the sources of differences in inflation forecasts. These include differences in information sets across agents and substantial variation in

the cost of consumption baskets across individual households (Carlson and Valev, 1999; Michael, 1979). However, McGranahan and Paulson (2005) derive inflation rates for specific population groups by re-weighting price index components (price indexes for individual items) based on the market basket consumed by members of the population group of interest. They find that from 1983 to 2004, the series are similar for all the groups. Given this, variation among people's perceptions of inflation is difficult to explain in the context of people's own subjective experiences with inflation (since inflation does not seem to vary by group).

Next, we review a two-part question about news in the SRC survey to explore the role of information in consumer sentiment. This survey question asks whether the respondent has "heard of any favorable or unfavorable changes in business conditions." If the respondent answers "yes," it further asks, "What did you hear?" Respondents can provide up to two responses to this two-part question. From the responses, we can examine whether different groups have different levels of exposure to the news. Table 2 presents the percentage of people that have heard any news—those who responded "yes" to the first part of the question above—by demographic group. In table 2, we see that only 58 percent of the sample reports hearing any news concerning the economy. The differences across groups are quite substantial. While 72 percent of college graduates report

Components of Index of Consumer Sentiment by poverty status

A. PAGO
index

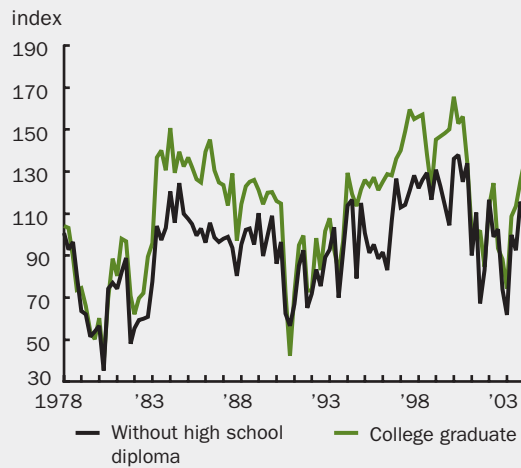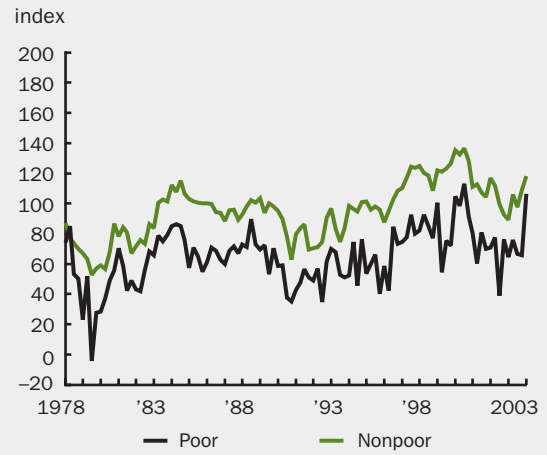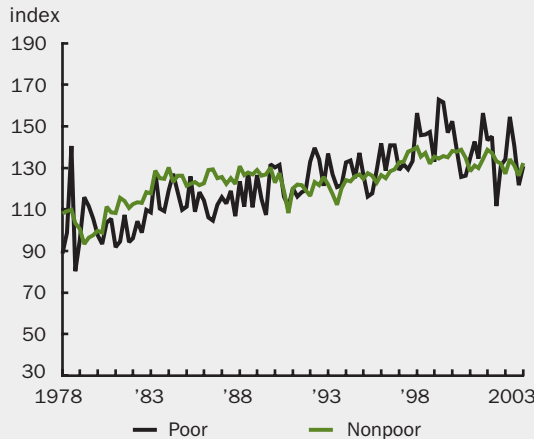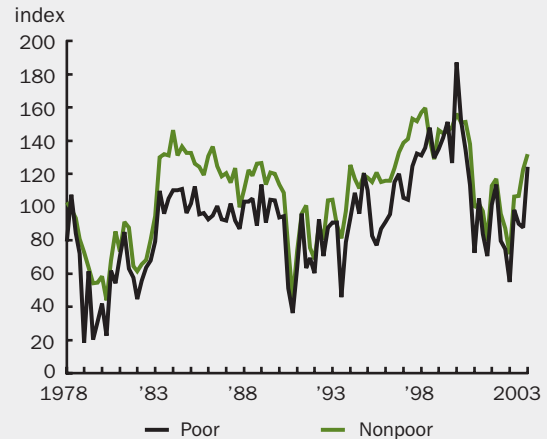**B. BUS5**
index

C. PEXP
index

D. BUS12
index

Note: See the text for definitions of the variables.
Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

having heard about business conditions, only 38 percent of individuals without a high school diploma report having heard about any such news. Similarly, 60 percent of the nonpoor report having heard news about the economy as opposed to 41 percent of the poor.

To further investigate the role of news, we divided the news into five areas—namely, employment, prices, government programs or decisions, output/GDP, and conditions in a respondent's own industry. Tabulations of news sources by group are presented in table 3. Among those who have heard news, the most common type of news pertains to the employment situation. A large number of people also have heard news about GDP, news about their own industry, and (a disproportionate

amount of bad) news about prices. The prevalence of news about the respondent's own line of work suggests that news is not necessarily objective in nature, but is filtered through a subjective lens. Furthermore, considering demographic characteristics, we found that most groups get a consistent fraction of their news on the same topics. However, there is one exception to this pattern: Information on GDP is more common among more educated and wealthier households than among those that are less educated and have lower incomes. Less than half of the individuals in the vulnerable groups we investigate report having heard any news about business conditions. This fraction becomes even smaller if we exclude individuals who have

TABLE 1

Correlation of predicted with actual unemployment

Group	Correlation with overall unemployment	Correlation with own group's unemployment
All	0.814	
Without high school diploma	0.490	0.541
College graduate	0.804	0.826
White	0.680	0.790
Black	0.676	0.808
Hispanic	0.360	0.607

Sources: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers* and U.S. Bureau of Labor Statistics.

only heard news about conditions concerning their own industries. If individuals have no exposure to news, they must be forming their assessments of the macroeconomy based on other information. This other information would likely come from their personal experiences, such as noticing prices in local stores and conversing with peers. If this is the case, the differences in expectations among the different groups are easier to explain. Their disparate experiences, as evidenced in the *PAGO* responses, translate into different expectations for the economy, especially given the relative absence of objective information from news sources within certain groups.

Empirical analysis

Previously, we have shown descriptively that the Index of Consumer Sentiment differs across demographic groups. In particular, we have shown that respondents' perceptions are less positive for those groups that we label as vulnerable based on relative income. Here, we take a closer look at the responses of the individuals who make up the groups. Specifically, we look at the microdata to gain a better measure of the contributions of each demographic attribute to each index. We base the analysis on measures of the ICS, ICC, and ICE provided in the data for each individual in the sample.[14]

We can ask how the different demographic attributes of individuals contribute to their measures in these indexes. We do this via regression analysis. We ask what the contribution of each demographic characteristic is to the different indexes, while holding the other characteristics constant. The results from a series of regressions are presented in table 4 for the ICS. The table contains three separate regressions. In the regression presented in the first column, we predict the index based only on demographic attributes and region of residence. In the second column, we add in four measures of the conditions of the macroeconomy during the month of the survey—the unemployment rate, the percent change in real personal income from one year ago, the year-over-year inflation rate, and the percent change in the real value of the Dow Jones Industrial Average from one year ago. Higher income is likely to trigger higher consumption, with accompanying stronger consumer confidence. Therefore, we expect a positive relationship between past income and confidence. An increase in the unemployment rate is likely to generate an increase in uncertainty among consumers, even though they may not themselves be unemployed. This is likely to increase precautionary

TABLE 2

Have you heard of any favorable or unfavorable changes in business conditions?

Group	Heard any news	Heard news within own industry	Heard only news within own industry and no other news
	(- *percent* -)		
All	57.63	21.17	10.11
Elderly	47.80	20.62	10.04
Non-elderly	59.55	21.30	10.13
Poor	40.77	18.13	9.47
Nonpoor	59.78	21.51	10.18
Top income quartile	68.00	20.67	8.62
Bottom income quartile	43.58	19.26	11.22
Without high school diploma	38.46	20.23	10.81
College graduate	72.19	19.22	7.80
White	59.23	21.83	10.35
Black	47.55	15.98	7.80
Hispanic	49.63	18.25	10.20

Note: See the text for further details.

Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

What types of news have people heard?					
Group	Employment	Prices	Government	GDP	Own industry
	(- *percent* -)				
All	38.01	22.89	12.14	25.56	22.07
Elderly	44.42	15.64	12.35	20.47	21.52
Non-elderly	36.81	24.23	12.11	26.75	22.20
Poor	45.80	16.94	14.10	15.61	18.81
Nonpoor	37.50	23.42	12.03	26.78	22.43
Top income quartile	36.60	21.59	13.69	35.55	21.82
Bottom income quartile	47.47	10.80	14.06	17.10	20.16
Without high school diploma	42.41	20.47	11.93	14.73	20.72
College graduate	35.13	26.92	13.29	36.21	20.17
White	37.18	23.34	11.78	26.63	22.77
Black	46.90	20.09	14.78	17.23	16.56
Hispanic	40.61	18.38	13.38	21.76	18.95

Note: See the text for further details.
Source: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*.

savings and lower consumption and confidence. We therefore expect a negative relationship between consumer confidence and unemployment. Increased inflation decreases the purchasing power of the consumer. Rising inflation can create an erosion of purchasing power that could lower consumer confidence. Greater price volatility or inflation would create more uncertainty surrounding real wage changes. Because of this, changes in inflation are expected to be negatively related to consumer sentiment. Stock market prices may affect consumer confidence in two ways: An increase in stock market prices may increase wealth and directly boost confidence, or rising stock markets may act as an indicator of higher expected labor income, which would also increase confidence.

In the third column, we replace the macroeconomic variables with a series of month-year dummies. These dummies control for any changes in the economy or overall national situation that affect all respondents in a given month.

We see a number of patterns in table 4. First, each of our attributes indicating vulnerability, in terms of relative income, has an independent, statistically significant negative effect on the index measure. The poor, females, the less educated, the elderly, blacks, and Hispanics are less optimistic about the economy.[15] Second, the condition of the macroeconomy has a strong effect on consumer sentiment. We can see this in two ways—first, through the statistically significant effect of the macroeconomic variables on the index measure and, second, through the increase in the explanatory power of the regression as a whole (as measured by the adjusted R-squared presented in the final row of the table) once these independent variables are added. At the same time, the coefficients on the

attributes change only slightly with the addition of the macroeconomic measures or the time dummies. The one exception to this is the Hispanic indicator, which goes from being positive to negative once the macroeconomic measures are included. Further investigation suggests that this is the result of the larger Hispanic population in the later years of the sample when the economy is also doing well. As a result, the Hispanic measure in the initial regressions is partly picking up the positive association between the condition of the economy and the size of the Hispanic population. We also find that most of the contribution from the time dummies is captured by the four measures of the macroeconomic situation. Although the adjusted R-squared increases when the dummies are introduced, the jump is not dramatic. If we look at the individual macroeconomic measures, we find that a respondent's sentiment is positively correlated with the increase in stock market prices and changes in disposable income and negatively correlated with the unemployment and inflation rates. All of these signs are in the direction we would anticipate because increasing income and stock market prices are indicators of economic strength and a rising unemployment rate is a sign of economic weakness. While high inflation can be a sign of rapid economic activity, it negatively affects consumer well-being. In the remainder of this article, we include our macroeconomic measures rather than the series of time dummies because the macroeconomic variables lead to more straightforward interpretations.

We ran a similar regression analysis for the ICE and the ICC.[16] The results are broadly similar to those for the ICS. Groups with relatively lower income are significantly less optimistic and have lower assessments

TABLE 4

Determinants of the Index of Consumer Sentiment

	Demographic characteristics	Add macroeconomic measures	Add month-year dummies
Poor	–6.447*** (0.346)	–7.340*** (0.337)	–7.986*** (0.336)
Resides in Northeast	–1.859*** (0.263)	–1.307*** (0.248)	–1.304*** (0.245)
Resides in South	2.024*** (0.230)	1.954*** (0.218)	1.956*** (0.216)
Resides in West	–0.172 (0.264)	0.286 (0.251)	0.314 (0.248)
Female	–8.694*** (0.180)	–8.652*** (0.171)	–8.737*** (0.169)
Without high school diploma	–17.516*** (0.307)	–12.918*** (0.298)	–12.868*** (0.297)
High school graduate	–8.380*** (0.225)	–6.341*** (0.214)	–6.363*** (0.212)
Some college	–3.296*** (0.247)	–1.959*** (0.233)	–1.983*** (0.230)
Black	–5.457*** (0.326)	–6.141*** (0.307)	–6.121*** (0.305)
Hispanic	1.822*** (0.452)	–1.898*** (0.436)	–1.818*** (0.434)
Other race (nonwhite)	–0.608 (0.597)	–2.786*** (0.574)	–2.773*** (0.563)
Elderly	–7.731*** (0.263)	–9.072*** (0.254)	–9.043*** (0.251)
Family size	0.192*** (0.072)	0.434*** (0.068)	0.469*** (0.067)
Married	–1.080*** (0.204)	–1.152*** (0.193)	–1.134*** (0.191)
Unemployment rate		–3.439*** (0.060)	
Percent change in real disposable income (year over year)		2.594*** (0.046)	
Inflation rate (year over year)		–1.280*** (0.034)	
Percent change in real Dow Jones Industrial Average (year over year)		0.205*** (0.006)	
Constant	100.782*** (0.305)	119.720*** (0.493)	105.505*** (1.869)
Observations	167,507	167,507	167,507
Adjusted R-squared	0.06	0.16	0.18

*Significant at the 10 percent level.
**Significant at the 5 percent level.
***Significant at the 1 percent level.
Notes: Robust standard errors are in parentheses. See the text for further details.
Sources: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; and Yahoo! Finance.

of the current state of the economy than their complements. For these other measures we also observe the same pattern for Hispanic respondents—positive coefficients that reverse sign once the macroeconomic measures or dummies are added in.

If we compare the results across the three indexes, we find that being poor lowers the ICC by 12, ICE by 5, and ICS by 7 index points relative to being nonpoor. It is not surprising that the poor differ most from the nonpoor in their assessments of current economic conditions because being poor is partly the result of current financial distress. For individuals without a high school diploma, we find that their ICC, ICE, and ICS are all lower by a similar amount—between 12 and 13 index points—relative to those of college graduates (the omitted category). Because low education affects both current and future employment prospects, this similarity across results is also not surprising. For females, we find that relative to males their ICC is lower by 6, their ICE by 10, and their ICS by 9 index points—a pattern that suggests greater pessimism on the part of women, despite their comparable assessment of the current economic conditions. This is consistent with other research that has found women to have lower consumer confidence (Bryan and Venkatu, 2001a).

The effects of macroeconomic variables remain similar to the effects found for the ICS as discussed previously. We find that the coefficient on the unemployment rate is larger in absolute value in the ICC regression than in the ICE regression. In contrast, the coefficients on the three other macroeconomic variables—disposable income, inflation, and stock markets—are larger in absolute value in the ICE regression than in the ICC regression. By design, the ICS coefficients lie between those of the other two indexes.

To gain a better understanding of the pattern of these responses and the rationale for them, we turn to an investigation of the five questions from which the three indexes are calculated. As argued previously, in addition to giving us further insight into the rationale behind the differences across the indexes, investigating the responses themselves allows us to move away from the arbitrary nature of the index calculations. In the regressions presented in table 4 and the results for ICC and ICE, we are explaining continuous index calculations, but those calculations are based on discrete answers to a series of five questions. We now look at the discrete answers to the questions with respect to the ICS.

Table 5 presents the results from a series of ordered logit regressions where the dependent variable indicates whether the respondent is positive, neutral, or negative about the question being asked. For instance,

for the *PAGO* question, the respondents are separated into individuals who are better off than a year ago, the same as a year ago, and worse off than a year ago. For *BUS12* and *BUS5*, respondents can say that they expect good times, good times with qualification, mixed experiences, bad times with qualifications, and bad times. For these regressions, we group the two positive and two negative responses together, in order to be more consistent with the other questions. These responses are also grouped in the calculation of the ICS. Using the ordered logit framework, we are able to include individuals who are neutral or the same. These individuals are omitted from the calculation of the published indexes.[17]

For ease of interpretation, we present odds ratios and z-statistics rather than coefficients and standard errors in table 5. The odds ratios indicate how being in the underlying group contributes to the probability of responding more positively to the question relative to the probability of responding more negatively. A coefficient less than one indicates that belonging to the group leads to more negative responses relative to being in the omitted category. The asterisks indicate whether the odds ratio is significantly different from one, which is equivalent to asking whether the estimated coefficient is different from zero.

If we look at the first column of table 5 (the predictors of the responses to the *PAGO* question), we see that the poor, females, the less educated, blacks, and the elderly are all more likely to be negative than positive about their previous year relative to individuals in the omitted categories (nonpoor, males, college graduates, whites, and the non-elderly). The coefficients on the education categories are monotonically increasing with education level. The smallest coefficients (those furthest from one) are on the groups we know from other sources to have poor earnings potential—the poor, those without a high school diploma, and the elderly. The effects of the macroeconomic variables remain very similar to the effects found in the continuous regressions presented earlier. The *PAGO* question is subjective—that is, it asks individuals about their own economic experiences. Given that members of groups have different economic experiences, it is not surprising that we find differences across groups.

The other subjective question is *PEXP*, which asks individuals to anticipate whether they will be financially better off in a year. These results are quite different from those found with *PAGO*. The poor do not have responses significantly different from the nonpoor. Hispanics and blacks are both more optimistic than whites. However, the less educated, females,

TABLE 5

Determinants of component questions of the Index of Consumer Sentiment

	1 PAGO	2 DUR	3 PEXP	4 BUS12	5 BUS5
Poor	0.649*** (23.56)	0.742*** (13.72)	0.998 (0.13)	0.805*** (9.96)	0.756*** (13.25)
Resides in Northeast	0.904*** (7.46)	0.961** (2.32)	0.98 (1.39)	0.937*** (4.16)	1.002 (0.12)
Resides in South	1.079*** (6.36)	0.982 (1.21)	1.163*** (12.14)	1.088*** (6.09)	1.049*** (3.68)
Resides in West	0.983 (1.24)	0.970* (1.76)	1.177*** (11.35)	0.994 (0.37)	0.978 (1.50)
Female	0.848*** (17.68)	0.771*** (22.20)	0.835*** (18.56)	0.680*** (35.67)	0.620*** (47.24)
Without high school diploma	0.587*** (33.42)	0.739*** (15.58)	0.571*** (32.83)	0.766*** (13.95)	0.557*** (31.96)
High school graduate	0.722*** (27.66)	0.98 (1.33)	0.742*** (24.51)	0.907*** (7.25)	0.719*** (26.18)
Some college	0.825*** (14.80)	1.039** (2.37)	0.946*** (4.18)	1.015 (0.98)	0.908*** (7.05)
Black	0.854*** (9.28)	0.841*** (8.45)	1.221*** (11.16)	0.709*** (17.60)	0.588*** (27.57)
Hispanic	0.978 (0.93)	0.823*** (6.62)	1.170*** (6.25)	0.958 (1.55)	0.846*** (6.39)
Other race (nonwhite)	0.908*** (3.05)	0.819*** (5.16)	0.978 (0.68)	0.905*** (2.75)	0.945* (1.66)
Elderly	0.600*** (38.29)	0.814*** (11.93)	0.365*** (67.86)	0.953*** (2.83)	1.075*** (4.59)
Family size	1.031*** (7.96)	1.005 (1.10)	1.029*** (7.42)	1.015*** (3.50)	0.997 (0.81)
Married	0.975** (2.35)	0.962*** (2.94)	0.812*** (18.78)	0.993 (0.57)	1.014 (1.21)
Unemployment rate	0.904*** (30.66)	0.804*** (54.67)	0.976*** (6.94)	0.874*** (35.40)	0.906*** (27.63)
Percent change in real disposable income (year over year)	1.067*** (25.61)	1.080*** (24.69)	1.028*** (10.69)	1.195*** (61.15)	1.082*** (28.85)
Inflation rate (year over year)	0.981*** (10.20)	0.963*** (17.31)	0.941*** (31.25)	0.943*** (27.15)	0.940*** (30.04)
Percent change in real Dow Jones Industrial Average (year over year)	1.004*** (14.11)	1.009*** (23.56)	1.001*** (4.46)	1.016*** (43.57)	1.004*** (11.48)
Observations	167,012	158,277	163,085	152,227	155,809

*Significant at the 10 percent level.
**Significant at the 5 percent level.
***Significant at the 1 percent level.
Note: The absolute value of z-statistics are in parentheses. See the text for definitions of the variables and for further details.
Sources: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*;
U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; and Yahoo! Finance.

and the elderly remain more negative than the relevant omitted categories. The odds ratio for the elderly is especially low, 0.365. This indicates that the elderly are nearly three times as likely to anticipate being worse off as being better off in the coming year. This probably results from the limited scope for financial improvement among the elderly, many of whom are on fixed incomes and out of the labor force. The results for blacks and Hispanics are more difficult to explain. Looking at the raw data, we observe that the relative optimism of both groups arises from a higher likelihood of being positive and a lower likelihood of being neutral, not from a difference in pessimism. Given that blacks and Hispanics, on average, have lower incomes than whites, this finding may demonstrate that they anticipate a forthcoming improvement to their current relative income status. In other words, they expect their future financial experience to conform more closely to the overall population average. However, the response to the *PAGO* question indicates that this anticipation is misplaced. One year later a sample representing the same population is more likely than whites to report being worse off financially.

While the *PAGO* and *PEXP* questions are subjective and directed toward individual experiences, the remainder of the questions are more objective and ask respondents about their perceptions of the overall macroeconomic climate. The effect of demographic attributes on these perceptions is very consistent across the three responses. For all three outcomes, the poor, females, the less educated, and the nonwhite are all more pessimistic or negative. The magnitude of the odds ratios on these attributes is also consistent across the three outcomes. The results for the elderly are less consistent. Elderly respondents are more pessimistic about purchasing durable goods, slightly more pessimistic about the coming year, and slightly more optimistic about the next five years.

It is challenging to explain why different groups would have such different impressions about the prospects for the macroeconomy. For these objective questions all the different individuals are being asked about the same phenomenon—namely, their perception of the prospects for, or condition of, the general economy. In fact, the coefficients of the *DUR*, *BUS12*, and *BUS5* regressions are not all that different from the coefficients of the *PAGO* regressions.

This led us to ask from where individuals are getting their expectations for the macroeconomy. If respondents are basing their expectations on their own experiences, then we would expect their different economic realities to translate into different expecta-

tions, as we find. On the other hand, if respondents are getting their information from a common source, such as the national news media, it is more difficult to explain this pattern in which demographic attributes affect expectations of the macroeconomy. Here, we look at this issue econometrically and ask how *PAGO* responses and news exposure translate into *BUS12*. In doing so, we are inquiring about the source of the *BUS12* response. The results for the determinants of *BUS12* are presented in table 6.

As before, we estimate an ordered logit model. We group the two positive and two negative responses together, and present odds ratios in the tables. The first column of table 6 investigates how good and bad changes in personal economic experiences over the past year translate into expectations for the national economy in the coming year, controlling for the macroeconomic climate. We find that individuals who are better off than a year ago are more optimistic about the coming year than those who are the same (the omitted category), and we find that those who are worse off are more pessimistic. This tells us that national expectations are partly driven by recent individual experiences. The macroeconomic variables have the expected magnitudes. In the second column, we add indicators of whether individuals have heard any good or bad news about business conditions. Individuals who have heard good news are more than twice as likely to report being optimistic as being pessimistic about economic prospects relative to those who have heard no news (the omitted category), while individuals who have heard bad news are only half as likely to be optimistic as pessimistic. The addition of these variables only changes the odds ratios on other variables by a small amount. In the third column of the table, we add interactions between hearing no news and recent past experience. We are inquiring whether individuals with no exposure to news place more weight on their own recent experience. We find that hearing no news and having a good past year render respondents more optimistic, while hearing no news and having a bad year render respondents more pessimistic. In other words, in the absence of external sources of information, individuals place more importance on their own experiences.

In the fourth column of the table, we add in the demographic characteristics. For the sake of comparison, we include the coefficients from the regression estimating *BUS12* from table 5 in the final column of table 6. We find that even when controlling for past experiences and news exposure, the demographic characteristics matter. In fact, comparing the fourth and fifth columns of table 6, we find that the

	TABLE 6				
	Determinants of BUS12				
	1	**2**	**3**	**4** **Add**	**5** **Original**
	PAGO response	**Add news**	**Add news × PAGO**	**demographic characteristics**	**demographic characteristics**
Better off than a year ago	1.488*** (32.38)	1.430*** (28.00)	1.371*** (19.62)	1.338*** (16.81)	
Worse off than a year ago	0.575*** (41.28)	0.585*** (38.49)	0.635*** (25.51)	0.651*** (22.71)	
Unemployment rate	0.889*** (32.53)	0.869*** (36.80)	0.869*** (36.77)	0.873*** (33.57)	0.874*** (35.40)

Percent change in real
  disposable income
  (year over year)
	1.179***
	(58.97)
		1.144***
		(45.77)
			1.144***
			(45.88)
				1.150***
				(44.98)
					1.195***
					(61.15)

Inflation rate (year over year)	0.946*** (27.12)	0.938*** (29.70)	0.938*** (29.56)	0.937*** (27.89)	0.943*** (27.15)

Percent change in real
  Dow Jones Industrial
  Average (year over year)
	1.015***
	(41.97)
		1.011***
		(29.72)
			1.011***
			(29.72)
				1.012***
				(29.57)
					1.016***
					(43.57)

Heard good economic news		2.201*** (60.00)	2.187*** (48.90)	2.070*** (42.65)	
Heard bad economic news		0.454*** (72.09)	0.450*** (51.75)	0.431*** (50.91)	
Heard no news × better off than a year ago			1.108*** (4.58)	1.124*** (4.93)	
Heard no news × worse off than a year ago			0.829*** (7.52)	0.855*** (5.92)	
Poor				0.862*** (6.46)	0.805*** (9.96)
Female				0.713*** (29.66)	0.680*** (35.67)
Without high school diploma				0.791*** (11.46)	0.766*** (13.95)
High school graduate				0.917*** (5.98)	0.907*** (7.25)
Some college				1.029* (1.82)	1.015 (0.98)
Black				0.716*** (16.12)	0.709*** (17.60)
Hispanic				0.932** (2.39)	0.958 (1.55)
Elderly				1.065*** (3.48)	0.953*** (2.83)
Family size				0.999 (0.18)	1.015*** (3.50)
Observations	167,622	164,501	164,501	149,142	152,227

  *Significant at the 10 percent level.
 **Significant at the 5 percent level.
***Significant at the 1 percent level.
Notes: The absolute value of z-statistics are in parentheses. Region of residence, marital status, and other races are controlled for, but not reported. See the text for definitions of the variables and for further details.
Sources: Authors' calculations based on data from the University of Michigan, Survey Research Center, *Surveys of Consumers*; U.S. Bureau of Economic Analysis; U.S. Bureau of Labor Statistics; and Yahoo! Finance.

magnitudes of the odds ratios are little changed from the earlier regressions. Most of the odds ratios are closer to one (indicating that the underlying coefficients are closer to zero), but the differences are not large. This indicates that the *PAGO* and news variables can explain a small part of the contribution of demographics to expectations. Individual experiences may play a larger role in influencing expectations, but these experiences are not fully captured in the *PAGO* variable.[18]

Conclusion

Policy decisions that are made using aggregate data are often ultimately aimed at particular income and demographic groups. Therefore, it might be useful to have an alternative measure of macroeconomic situations from the perspective of lower-income populations. We investigate this possibility with an analysis of group differences in consumer sentiment. Our findings suggest that index disaggregation by group matters because sentiment varies systematically by group attributes. In addition, demographic characteristics are found to influence responses to all five of the component questions that contribute to the index measure of the ICS. That is, the importance of demographic characteristics holds for both subjective and objective questions. Individuals' attributes not only influence perceptions of their own experiences, but

also their expectations of the economy more generally. Further investigation into this result shows that individuals form their expectations based on both their individual experiences and their exposure to news. However, many individuals in the sample report that they have heard no news, leaving them dependent on their idiosyncratic experiences and perceptions.

Future research might test whether consumer sentiment forecasts the behavior of households actually surveyed (as opposed to merely capturing broad aggregate economic trends). It might also be interesting to determine whether differences in consumer sentiment might explain or predict groups' differences not only in consumption but also in savings and investment behavior. Future research using household microdata might test whether accounting for the distribution of sentiment across different groups might provide additional information to forecasts of macro-level models. For instance, the current aggregate consumer sentiment index, the ICS, is an equally weighted average of the sentiment of the survey respondents, which ignores the scale of the differences in consumption across respondents. Future research might construct a new sentiment series by taking into account the distribution in sentiment across groups. For instance, a new index could use group-level consumption-to-weight sentiment. Such a series could potentially assist in the forecasting of consumption.

NOTES

[1]We are grateful to Richard Curtin, director of the University of Michigan's *Surveys of Consumers*, for providing us with the data.

[2]A short review of papers that use micro-level data is provided in Souleles (2004). The papers include Leeper (1992); Matsusaka and Sbordone (1995); Berg and Bergstrom (1996); Batchelor and Dua (1998); Bram and Ludvigson (1998); Acemoglu and Scott (1994); and Carroll, Fuhrer, and Wilcox (1994).

[3]Carroll, Fuhrer, and Wilcox (1994) and Bram and Ludvigson (1998) find no correlation between sentiment and future spending, which is inconsistent with the precautionary savings motive assumption. However, Souleles (2004) analyzes micro-level data of consumer sentiment and finds that higher confidence is correlated with lower consumption growth or more savings, which are consistent with precautionary motives. Aggregate indexes sum up responses of individuals that have different sentiments. These authors attribute the discrepancy in the results with previous studies to potential "aggregation bias" in the macro-level analysis approach of other studies. The aggregation bias stems from the fact that it is possible that the differences may not aggregate up.

[4]The idea is that the kinds of information that come from the manufacturing sector may be better known to the population that is geographically closer to its source. For example, layoffs may be more visible and may have a bigger impact on the population's region. These consumers may have an earlier signal of change on which to base their assessments of future economic trends.

[5]The University of Michigan, Survey Research Center's ICS was first introduced in 1952. In 1976 the index's baseline was set at the 1966 level of 100, which is a level generally considered to represent a high level of optimism.

The survey population now consists of 500 nationally representative individuals in the coterminous United States (prior to 1976, in the earlier years of the survey, two to three times as many individuals were interviewed). This cross-sectional sample is constructed using a stratified system that assures proportional representation of different states, geographic regions, and metropolitan areas of varying sizes. (The survey also employs a rotating-panel design in which respondents are reinterviewed six months after the initial questioning, resulting in a monthly sample that is, on average, 40 percent first-time respondents and 60 percent second-time respondents.)

[6]More specifically, to generate the index number, a "score" for each question is created. The score is equal to the difference between the percent of respondents giving unfavorable (pessimistic) responses to each question and the percent of respondents giving favorable (optimistic) responses to each question, plus 100. For example, if 55 percent of interviewees expect to be better off next year, 30 percent expect to be worse off, and 15 percent expect no change, the score for question two is 125 (= 55 – 30 + 100). The SRC adds the scores of the five questions together and divides that sum by 6.7558, a constant which makes the index relative to the 1966 base score of 100. Finally, the number 2.0 is added to the index in order to "correct for sample design changes from the 1950s" (prior to December 1981, $n = 2.7$). This process is represented in the formula:

$ICS = (PAGO + PEXP + BUS12 + BUS5 + DUR + n) / 6.7558.$

The Index of Consumer Expectations (ICE) and the Index of Current Economic Conditions (ICC) are calculated as follows:

$ICC = (PAGO + DUR + n)/2.6424$ and $ICE = (PEXP + BUS12 + BUS5 + n)/ 4.1134.$

[7]The sampling error is an important consideration in correctly interpreting the ICS. With a monthly sample size of 500 and a quarterly sample size of 1,500, small shifts in the index may not be significant. Specifically, the 95 percent confidence interval for the monthly ICS is +/– 3.29 points (Curtin, 2002). The 95 percent confidence interval for the quarterly data is +/–1.91 points.

[8]See, for example, Carroll, Fuhrer, and Wilcox (1994) and Bram and Ludvingson (1998).

[9]The Survey Research Center at the University of Michigan weights responses in order to generate a representative sample of all U.S. households (or all individual adults, depending on which set of weights is used). The weights correct for undersampling of certain populations, such as the poor. After weights are applied, most subpopulations seem to be well represented in the 2000 *Surveys of Consumers*, compared with population data from the 2000 Census. However, it does appear that undersampling of the Hispanic population is not corrected when weights are applied. Additionally, the population without a high school diploma is underrepresented in the year 2000, although over all years of the SRC survey, 15.96 percent of respondents have less than a high school education (after weighting).

[10]In particular, the number of negative responses given to the underlying questions is subtracted from the positive responses. This number is divided by the number of questions asked. Then 100 is added to this number which is then multiplied by two and divided by a scaling factor that depends on which index is being calculated. Two is then added to this number after 1982 and 2.7 before 1982.

[11]We calculated the index of individuals based on their regions of residence. There is no noticeably strong difference in the consumer sentiment across respondents living in different regions. We therefore do not report these results, but they are available from the authors upon request.

[12]We use the annual poverty thresholds calculated by the U.S. Census Bureau. The thresholds differ based on family composition and the ages of household members. A household is considered poor if household income falls below the threshold.

[13]Respondents' expectations of the unemployment rate over the 12 months following the survey are based in part on what has happened to unemployment over the previous six to 12 months. They also predict, to some degree, unemployment over the subsequent six to 12 months. We measure change in actual unemployment as a four-quarter moving average of the one-year change in the unemployment rate. For example, the change in actual unemployment in 1990:Q1 is recorded as the average of the difference between the unemployment rates between: 1) 1990:Q1 and 1989:Q1; 2) 1989:Q4 and 1988:Q4; 3) 1989:Q3 and 1988:Q3; and 4) 1989:Q2 and 1988:Q2. In other words, "change in actual unemployment" actually reflects the way the unemployment rate changed over the previous year *relative to the year before it*. Therefore we can interpret the two-quarter lagged correlation between expectation and actual unemployment as the relationship between expectations of unemployment over the coming year and actual changes in unemployment during the six-month periods immediately preceding and following the survey.

[14]Please refer to note 10 for more details.

[15]Some studies have found that, at the local level, demographic characteristics explain variation in consumer confidence. We run these regressions separately by region and find that the effects of demographic characteristics are still significant in explaining differences in the indexes.

[16]Due to space constraints, the results for the ICE and the ICC are not given in tables. They are available upon request.

[17]We ran these regressions using different specifications of the dependent variables, including omitting neutral individuals, separating the two positive and two negative *BUS5* and *BUS12* responses, and measuring the net number of positive reasons given for the *PAGO* question. These other specifications provided substantively

similar results. The only difference was for the elderly—when we dropped individuals who were the same, the odds ratio moved farther from one. Because the individuals who are the same are better off than those who are worse off, and because more elderly report that they are worse off than that they are better off, including individuals who are the same, this leads to an increase in the odds ratio among the elderly.

[18]We perform a parallel set of analyses with the *BUS5* variable. The results are substantively similar to the *BUS12* results except for the odds ratio for the interaction between a good past year and hearing no news. It is less than one and insignificant for *BUS5*, while this odds ratio was greater than one and statistically significant for *BUS12*.

REFERENCES

Acemoglu, D., and A. Scott, 1994, "Consumer confidence and rational expectations: Are agents' belief consistent with the theory?," *Economic Journal*, Vol. 104, No. 422, pp. 1–19.

Alessie, R., and A. Lusardi, 1997, "Saving and income smoothing: Evidence from panel data," *European Economic Review*, Vol. 41, No. 7, pp. 1251–1279.

Batchelor, R., and P. Dua, 1998, "Improving macro-economic forecasts: The role of consumer confidence," *International Journal of Forecasting*, Vol. 14, No. 1, pp. 71–81.

Becker, G. S., 1976, *The Economic Approach to Human Behavior*, Chicago and London: University of Chicago Press.

Berg, L., and R. Bergstrom, 1996, "Consumer confidence and consumption in Sweden," University of Uppsala, Department of Economics, working paper, No. 1996:7.

Bram, J., and S. Ludvigson, 1998, "Does consumer confidence forecast household expenditure? A sentiment index horse race," *Economic Policy Review*, Federal Reserve Bank of New York, Vol. 4, No. 2, June, pp. 59–78.

Bryan M. F., and G. Venkatu, 2001a, "The curiously different inflation perspectives of men and women," *Economic Commentary*, Federal Reserve Bank of Cleveland, November 1.

_____, 2001b, "The demographics of inflation opinion surveys," *Economic Commentary*, Federal Reserve Bank of Cleveland, October 14.

Campbell, J. Y., and N. G. Mankiw, 1990, "Permanent income, current income, and consumption," *Journal of Business and Economic Statistics*, Vol. 8, No. 3, pp. 265–279.

Carlson J. A., and N. T. Valev, 1999, "Sources of dispersion in inflation forecasts," Purdue University, Center for International Business Education and Research, working paper, No. 99-002.

Carroll, C. D., J. C. Fuhrer, and D. W. Wilcox, 1994, "Does consumer sentiment forecast household spending? If so, why?," *American Economic Review*, Vol. 84, No. 5, pp. 1397–1408.

Curtin, R. T. (director), 2002, *Surveys of Consumers*, University of Michigan, Survey Research Center.

Dominitz J., and C. F. Manski, 2004, "How should we measure consumer confidence?," *Journal of Economic Perspectives*, Vol. 18, No. 2, Spring, pp. 51–66.

Doms, M., and N. Morin, 2004, "Consumer sentiment, the economy, and the news media," Federal Reserve Bank of San Francisco, working paper, No. 2004-09.

Dunn, L. F., and I. A. Mirzaie, 2004, "Turns in consumer confidence: An information advantage linked to manufacturing," Ohio State University, working paper, No. 04-03, August.

Flavin, M., 1991, "The joint consumption/assets demand decision: A case study in robust estimation," National Bureau of Economic Research, working paper, No. 3802, August.

Friedman, M., 1957, *A Theory of the Consumption Function*, Princeton, N.J.: Princeton University Press.

Gul, F., and W. Pesendorfer, 2002, "Self control, revealed preference, and consumption choice," Princeton University, working paper, November.

Hall, R., 1978, "The stochastic implications of the life cycle–permanent income hypothesis: Theory and evidence," *Journal of Political Economy*, Vol. 86, December, pp. 971–987.

Katona, G., 1975, *Psychological Economics*, Amsterdam: Elsevier Science.

Keynes, J. M., 1936, *The General Theory of Employment, Interest, and Money,* London: McMillan Books.

Leeper, E. M., 1992, "Consumer attitudes: King for a day," *Economic Review*, Federal Reserve Bank of Atlanta, July, pp. 1–15.

Lombardelli, C. and J. Saleheen, 2003, "Public expectations of UK inflation," *Quarterly Bulletin*, Bank of England, Autumn.

Matsusaka, J. G., and A. M. Sbordone, 1995, "Consumer confidence and economic fluctuations," *Economic Inquiry*, Vol. 33, No. 2, April, pp. 296–318.

McGranahan, L., and A. L. Paulson, 2005, "The incidence of inflation: Inflation experiences by demographic group: 1981–2004," Federal Reserve Bank of Chicago, working paper, No. WP-2005-20.

Michael, R., 1979, "Variation across households in the rate of inflation," *Journal of Money, Credit, and Banking*, Vol. 11, No. 1, February, pp. 32–46.

Otoo, M. W., 1999, "Consumer sentiment and the stock market," Board of Governors of the Federal Reserve System, Finance and Economics Discussion Series, working paper, No. 1999-60, November.

Palmqvist, S., and L. Strömberg, 2004, "Households' inflation opinions—A tale of two surveys," *Economic Review*, Sveriges Riksbank (Bank of Sweden), No. 4, pp. 23–41.

Ranchhod, S., 2003, "The relationship between inflation expectations survey data and inflation," *Bulletin*, Reserve Bank of New Zealand, Vol. 66, No. 4, December, pp. 50–65.

Shea, J., 1995, "Union contracts and the life-cycle/permanent-income hypothesis," *American Economic Review*, Vol. 85, No. 1, pp. 186–200.

Sims, C., 2003, "Implications of rational inattention," *Journal of Monetary Economics*, Vol. 50, No. 3, pp. 665–690.

Souleles, N. S., 2004, "Expectations, heterogeneous forecast errors, and consumption: Micro evidence from the Michigan Consumer Sentiment Surveys," *Journal of Money, Credit, and Banking*, Vol. 36, No. 1, February, pp. 39–72.

Wall, H. J., 2003, "Recessions, expansions, and black employment," *Regional Economist*, Federal Reserve Bank of St. Louis, October.