

# Chicago Fed Letter

## Trends in consumer sentiment and spending

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In 2008, personal consumption expenditures represented 70% of gross domestic product, or total spending on final goods and services, according to U.S. Bureau of Economic Analysis data. This article analyzes consumer sentiment and spending data to uncover differences across income and education level groups.

**Consumer** sentiment is one of the many macroeconomic indicators tracked by policymakers (see figure 1). It is seen as an important barometer of economic activities—an indicator of the way people

plan to spend their income. During times of economic stress, we pay particularly close attention to how consumers feel about the economy.<sup>1</sup> Such interest appears to be warranted. Research has shown that consumer expectations align more closely with spending during periods of weakness in the economy, and the forecasting contributions (or predictive power) of consumer sentiment appear to be stronger when the economy is weaker.<sup>2</sup>

During times of greater

economic uncertainty, as consumers perceive greater risk, they tend to accumulate precautionary savings to insure against a sudden loss in income.<sup>3</sup> For example, even if a consumer's financial position remains unchanged, the precautionary motive for saving will affect his discretionary consumption, i.e., spending on nonessential goods and services, in the present.

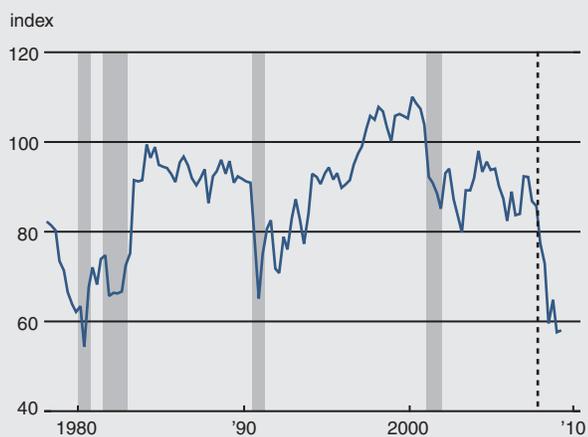
If higher uncertainty about future income is associated with lower consumption, the magnitude of the shift toward precautionary saving is dependent on the level of current assets compared with expected future labor income.<sup>4</sup> Large asset holdings among the wealthy and older consumers should significantly mitigate the effect of current income uncertainty on their consumption. By contrast, among consumers with fewer assets, income uncertainty should have a significantly larger impact on their consumption decisions.

In this *Chicago Fed Letter*, we analyze group-level consumer sentiment by demographic and income characteristics. We also examine the role that consumer sentiment plays in the consumption spending of different income groups. We find that the condition of the macroeconomy has a strong influence on consumption spending. Consistent with the implications of precautionary motives, the impact of consumer sentiment on spending decisions is stronger among those with greater constraints in income and liquidity.

### Sentiment by demographic group

There is increasing evidence that consumer sentiment varies systematically across demographic and socioeconomic groups. Souleles<sup>5</sup> suggests that differences in groups' expectations may be due to time-varying, group-level shocks (aggregate shocks may have a disproportionate

### 1. Consumer sentiment for overall population

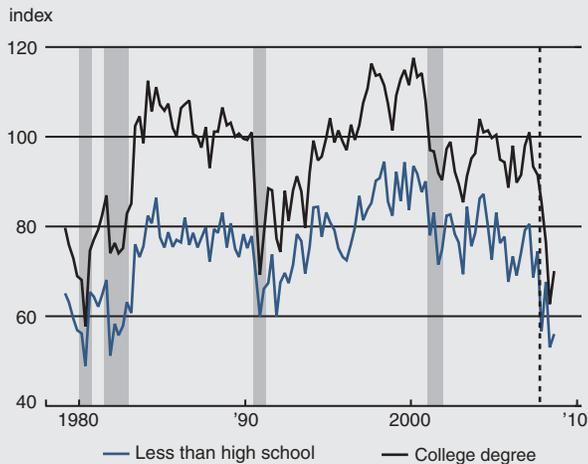


NOTES: Data from 1978:Q1 through 2009:Q1. The shaded areas indicate official periods of recession as identified by the National Bureau of Economic Research; the dashed vertical line indicates the most recent business cycle peak.

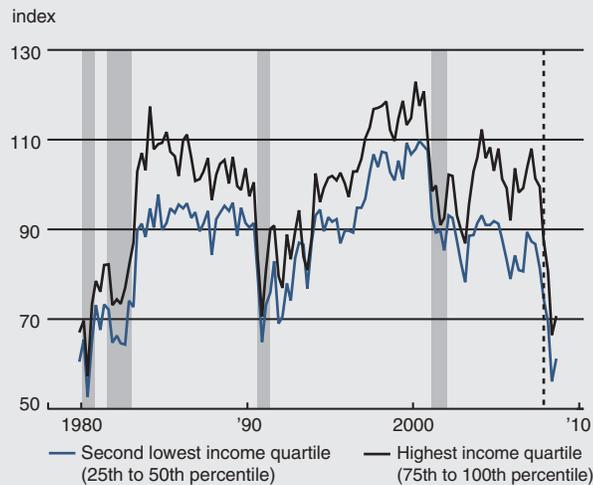
SOURCES: Reuters/University of Michigan Surveys of Consumers, Index of Consumer Sentiment; and Haver Analytics.

## 2. Consumer sentiment, by demographic group

### A. Education level



### B. Income level



NOTES: All data from 1979:Q4 through 2008:Q3. The shaded areas indicate official periods of recession as identified by the National Bureau of Economic Research; the dashed vertical line indicates the most recent business cycle peak.

SOURCE: Authors' calculations based on data from the Reuters/University of Michigan Surveys of Consumers, Index of Consumer Sentiment.

impact on particular demographic groups). For example, he noted that during economic expansions, high-income households received relatively good shocks, whereas low-income households continued to receive, on balance, negative shocks. Corroborating evidence supports the notion that people's expectations are shaped in part by their own subjective experiences.<sup>6</sup> For instance, the unemployment rates for members of a certain demographic group are correlated more strongly with their group's rate over time than with overall unemployment.<sup>7</sup>

We use quarterly data from the *Reuters/University of Michigan Surveys of Consumers* to analyze the variations in sentiment

across groups. To start, we consider the surveys' aggregate Index of Consumer Sentiment (ICS).<sup>8</sup> Figure 1 provides an overview of the ICS for the overall population for the period 1978–2009. Figure 2 provides a breakdown by selected income and education level groups over a similar span.

The relationship between the aggregated ICS and business cycles is apparent when we look at figure 1; specifically, in four of the five recessions that our analysis covers, the index began decreasing one to two quarters ahead of the recession's onset, suggestive of the predictive power of the ICS for the economy (the one exception was the 1981–82 recession, in which case the index did not fall until the recession had actually begun). Likewise, the index rises prior to all upturns. During the expansionary years of the 1990s, for instance, it climbed to historically

high levels, before the trend eventually reversed prior to the 2001 recession.

Figure 2, which plots the ICS for selected groups, shows that the less educated and those with lower income—i.e., those groups traditionally termed as “vulnerable”—are generally less optimistic than their respective counterparts. Differences in sentiment, based on education level and income level, tend to persist and remain constant over time, although the gap in attitudes tends to diminish during recessionary periods. An interesting exception was the 1981–82 recession. The decline in sentiment in this period was much more pronounced among the vulnerable populations, suggesting

that they may have been disproportionately affected by this recession.<sup>9</sup>

### Factors influencing consumption spending

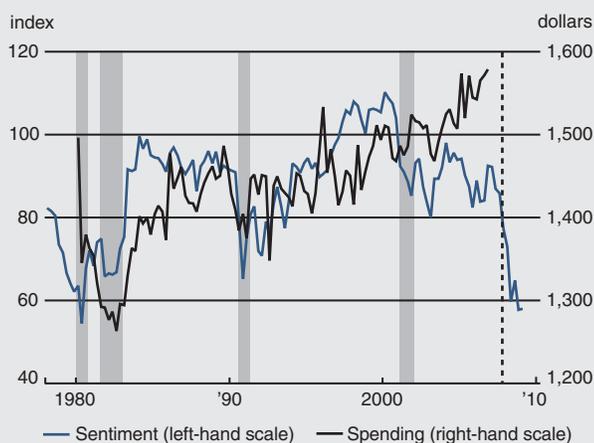
A large body of research suggests that measures that indicate a consumer's “ability” to pay strongly predict consumer spending.<sup>10</sup> These include measures of income; wealth; and macroeconomic indicators, such as the unemployment rate, changes in the stock market, and inflation. An increase in the unemployment rate or a recession period is likely to generate an increase in uncertainty among consumers, even among those who may not themselves be unemployed. This is likely to increase precautionary savings and decrease confidence and consumption. As such, one can expect a negative relationship between unemployment and consumer confidence—i.e., the higher the unemployment rate, the lower sentiment and consumption are likely to be.

The stock market index 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 and hence consumption spending.

Increased inflation decreases the purchasing power of the consumer, possibly lowering consumer confidence. Greater price volatility also creates more uncertainty surrounding real wage changes. Therefore, we would expect increases in inflation to be negatively related to consumer sentiment and spending.

Once we account for the various macroeconomic indicators of a consumer's “ability” to pay, his “willingness” to pay, as conveyed by his attitude, could add to the predictive strength of models of consumer spending. While most macroeconomic measures reflect what has already occurred, consumer indexes incorporate consumers' expectations regarding the future of the economy and their own personal finances, and may therefore contain useful information not yet captured by other indicators. Such information might be particularly relevant for the intervening period between the announcement of a

### 3. Consumer sentiment and real per capita spending



NOTES: Sentiment data from 1978:Q1 through 2009:Q1; spending data from 1980:Q1 through 2006:Q4. Monthly per capita spending is expressed in real dollars (base year: 1982–84 average) and is seasonally adjusted. The shaded areas indicate official periods of recession as identified by the National Bureau of Economic Research; the dashed vertical line indicates the most recent business cycle peak.

SOURCES: Authors' calculations based on data from the Reuters/University of Michigan Surveys of Consumers, Index of Consumer Sentiment; and U.S. Bureau of Labor Statistics, Consumer Expenditure Survey.

policy shift and the time it is implemented. For example, suppose that following an election, a change in administration leads households to expect an improvement in the economy. We would expect this (positive) sentiment to have an impact on consumers' current and projected future spending patterns. Moreover, consumer attitudes also incorporate households' estimates of the impact of rare or unique shocks—e.g., an event such as Hurricane Katrina—that cannot be systematically built into models but affect the economy in significant ways.

#### Analysis

We conduct our analysis of consumption spending using quarterly data from the U.S. Bureau of Labor Statistics' *Consumer Expenditure Survey* for the period 1980–2006.<sup>11</sup> We consider total consumption expenditure per capita (converted in real terms and seasonally adjusted) for all consumers and then by selected demographic group, based on poverty status<sup>12</sup> and education level. As expected, we find that consumption spending differs by groups along income and education lines. Specifically, average real per capita consumption expenditure of all households was \$1,442 per month. However, for the poor this figure was \$760 (for the nonpoor, it was \$1,580); for those with less than a high education, it was

\$851 (for those with a college degree, it was \$1,995).

Figure 3 graphs a consumer sentiment measure and monthly real per capita spending over time for the overall population. (Results by poverty status and education level show a similar pattern.)

We focus the remainder of our analysis on the relationship between spending and the DUR component of the ICS, i.e., that component of sentiment that summarizes households' response to the following survey question:

Generally speaking, do you think now is a good or bad time for people to buy major household items? We use regression analysis to gain a better understanding of the potential relationship between DUR (confidence) and consumption expenditures. We also analyze the impact of other specific macroeconomic factors, including inflation, the stock market index, real disposable income, and whether there is a recession on consumption expenditures. The technique allows us to ask whether there is a statistically significant association between each explanatory factor and total consumption spending growth while holding the other factors constant.<sup>13</sup>

We also compute *elasticities* to assess by how much (in percentage terms) consumption spending growth changes for every 1 percentage point change in an explanatory factor.<sup>14</sup>

In summary, we find that in regressions that include all households, increases in consumer confidence are associated with statistically significant increases in consumption spending. Specifically, a 1 percentage point increase in the year-over-year percent change in the DUR corresponds to a 0.38 percentage point increase in consumption spending growth. Furthermore, differences exist by income group. We compare households that make up the second lowest income quartile

(25th to 50th percentile) with households that make up the highest income quartile (75th to 100th percentile). For households in the second lowest income quartile, a 1 percentage point decrease in the DUR corresponds to a 0.25 percentage point decrease in consumption spending growth, while the corresponding decrease in consumption spending growth for households in the highest income quartile is 0.19 percentage points. The fact that consumption expenditure appears to be more responsive to sentiment for the lower income group is consistent with the assumption that precautionary motives influence spending more among those with fewer assets and potentially greater uncertainty in income.

The consumption of households in the second lowest income quartile is particularly affected by periods of recession (during such periods, their spending growth is more than 3 percentage points lower than during nonrecessionary periods). These households in the second lowest income quartile also appear to be more sensitive to changes in real disposable income. A 1 percentage point increase in disposable income growth corresponds to a 2.4 percentage point increase in consumption spending growth. By contrast, for those in the highest income quartile, a 1 percentage point

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increase in disposable income growth corresponds to a 0.25 percentage point increase in their consumption growth. (Part of this difference in the income responsiveness reflects the fact that the level of consumption spending for those in the top income quartile is already much higher.) Consumer spending is fairly sensitive to associated changes in inflation regardless of income status. A 1 percentage point increase in the inflation rate corresponds to a greater than 1 percentage point decrease in consumption spending growth among households in

both the second lowest income quartile and the highest income quartile. Higher-income consumers are more sensitive to associated changes in the stock market, as reflected in the Standard and Poor's (S&P) 500 Index; a 1 percentage point increase in the index is associated with a 0.43 percentage point increase in consumption spending for this group.

### Conclusion

Policies that are designed using aggregate data are often aimed at particular

demographic and income groups. Therefore, it might be useful for policymakers to understand the differences in the macroeconomic indicators for different groups. We show that disaggregated consumer sentiment data are useful in highlighting differences by group attributes. Further, our findings suggest that disaggregation by group matters when measuring consumption spending growth; and sentiment is particularly informative with regard to consumption spending in a context of greater uncertainty in income.

<sup>1</sup> See, e.g., Shobhana Chandra and Alex Tanzi, 2009, "U.S. will escape recession, economists say in survey (update 1)," Bloomberg, January 9, available at [www.bloomberg.com/apps/news?pid=20601087&sid=aEX73qWiBrb4&](http://www.bloomberg.com/apps/news?pid=20601087&sid=aEX73qWiBrb4&).

<sup>2</sup> James A. Wilcox, 2008, "Consumer sentiment and consumer spending," *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, No. 2008-19, June 27.

<sup>3</sup> Martin Browning and Annamaria Lusardi, 1996, "Household saving: Micro theories and micro facts," *Journal of Economic Literature*, Vol. 34, No. 4, December, pp. 1797-1855.

<sup>4</sup> Richard T. Curtin, 2003, "Unemployment expectations: The impact of private information on income uncertainty," *Review of Income and Wealth*, Vol. 49, No. 4, December, pp. 539-554.

<sup>5</sup> Nicholas S. Souleles, 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.

<sup>6</sup> Maude Toussaint-Comeau and Leslie McGranahan, 2006, "Variations in consumer sentiment across demographic groups," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 30, No. 1, First Quarter, pp. 19-38.

<sup>7</sup> Group-based differences in unemployment levels over time are sharp and persistent. For example, according to our calculations based on data from the U.S. Bureau of Labor Statistics, less educated workers experience higher levels of unemployment, with rates that are typically 1.6 times higher than the overall unemployment rate over the past 15 years.

<sup>8</sup> The ICS is based on a formula that takes into account respondents' opinions about: 1) how they have fared financially during the past year; 2) how they expect to fare financially during the coming year; 3) how they expect the economy to perform in next 12 months; 4) how they expect the economy to perform in the next five years; and 5) whether they think it is a good or bad time for people to buy major household items. For details on how the index is generated, go to [www.sca.isr.umich.edu](http://www.sca.isr.umich.edu).

<sup>9</sup> Howard J. Wall, 2003, "Recessions, expansions, and black employment," *Regional Economist*, Federal Reserve Bank of St. Louis, October, p. 19.

<sup>10</sup> Roy Batchelor and Pami Dua, 1998, "Improving macroeconomic forecasts: The role of consumer confidence," *International Journal of Forecasting*, Vol. 14, No. 1, March, pp. 71-81.

<sup>11</sup> For more information on the *Consumer Expenditure Survey*, see [www.bls.gov/cex/](http://www.bls.gov/cex/).

<sup>12</sup> 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.

<sup>13</sup> Note that the regression analysis does not allow us to infer a causal relationship, merely a correlation.

<sup>14</sup> The results of the regressions and elasticities are available at [www.chicagofed.org/economic\\_research\\_and\\_data/files/toussaint-comeau\\_cfl2009\\_regression\\_elasticities\\_results.xls](http://www.chicagofed.org/economic_research_and_data/files/toussaint-comeau_cfl2009_regression_elasticities_results.xls).