# Consumer Confidence After September 11

*By C. Alan Garner*

The terrorist attacks on September 11 dealt a serious blow to the U.S. economy. The damage included the tragic loss of human life, massive property destruction, and disruptions to the travel and shipping industries. But immediately after the attacks, many observers also worried about the possible harm to business and consumer confidence. Although the effects on business confidence are hard to measure, regular surveys of households make it easier to assess the effects on consumer confidence. These surveys show that consumer confidence was surprisingly resilient.

Faced with this resilience, forecasters and policymakers struggled to interpret the movements in consumer confidence. Did consumers quickly return to more normal economic behavior even though they were shocked by the terrorist attacks? Or was the resilience somehow illusory? Were measures of consumer confidence actually lower than would be expected based on prevailing economic conditions? The answers to these questions might have implications about the economic outlook or the proper settings for monetary and fiscal policy.

This article examines the impact of the terrorist attacks on consumer confidence at the end of 2001. The first section describes the two major measures of consumer confidence and summarizes their recent

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behavior. The second section shows that consumer confidence indexes typically produce small improvements, at best, in forecast accuracy. The third section finds that the terrorist attacks did not cause a clear weakening of consumer confidence after September 11. As a result, the consumer confidence indexes maintained a fairly normal relationship to other economic indicators and did not contain much new information for forecasters and policymakers. The resilience of consumer confidence may have offered some assurance, however, that the worst fears about the economic outlook would not be realized.

## I. MEASURES OF CONSUMER CONFIDENCE

Analysts paid increased attention to the two major measures of consumer confidence after September 11. The Conference Board's index is named the Consumer Confidence Index, while the University of Michigan's index is the Index of Consumer Sentiment. To minimize confusion, this article will refer to these measures as the Conference Board index and the Michigan index, using the term consumer confidence in a more generic sense. This section describes these two widely cited indexes and summarizes their recent fluctuations.

### *Description of the indexes*

The two major confidence indexes are broadly similar in design but differ in many details. Both indexes reflect monthly surveys of U.S. households. The Conference Board mails its survey to 5,000 households each month, receiving about 3,500 responses, whereas the Survey Research Center at the University of Michigan conducts a telephone survey of at least 500 households. Both organizations release their full survey results near the end of the month, putting these indexes among the earliest indicators of monthly economic activity. The University of Michigan also releases a preliminary value of its index near the middle of each month, reflecting responses collected during the first part of the month.

Although both indexes focus on five main questions about current and expected conditions as described in the box, the surveys differ in how the questions are worded and the time periods for which households provide their expectations. For example, only the Conference

Board index specifically reflects household views about job availability and total family income, while only the Michigan survey inquires whether it is a good time to buy major household items.[1] The Conference Board asks questions about household expectations for the next six months, while the University of Michigan requests household views covering the next year or the next five years.

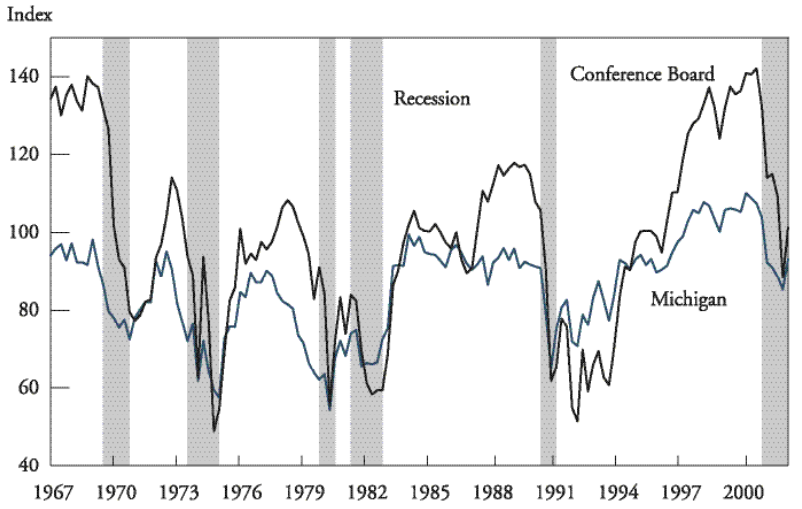
The Conference Board and the University of Michigan also produce subindexes relating to current and expected economic conditions. Both organizations combine responses to their two questions about the present situation to produce current-conditions indexes. Likewise, the organizations combine responses to their three questions about future conditions to get expectations subindexes. Many analysts follow movements in these subindexes, although the overall Conference Board and Michigan indexes still get the most attention. Moreover, the expectations subindex from the Michigan survey is a component of the composite index of leading indicators, a well-known index that may help to predict economic fluctuations.

## *Recent developments*

The Conference Board and Michigan indexes display clear cyclical patterns over time. Chart 1 shows the two indexes from the first quarter of 1967 to the first quarter of 2002, the longest period for which both indexes are available.[2] The shaded areas are recessions as defined by the National Bureau of Economic Research.[3] The Conference Board index has fluctuated over a wider range than the Michigan index. As a rule of thumb, a one-point move in the Michigan index is roughly comparable to a two-point move in the Conference Board index (Bram and Ludvigson). The chart shows that the confidence indexes turned down sharply before or during past recessions, and the indexes rebounded near the end of the recession or early in the recovery period. However, some moderately large and persistent declines in the confidence indexes were not followed by a recession. For example, the Conference Board index decreased gradually by 16 points from the second quarter of 1984 to the fourth quarter of 1986 without a recession developing.

*Chart 1*

## CONFERENCE BOARD AND MICHIGAN INDEXES

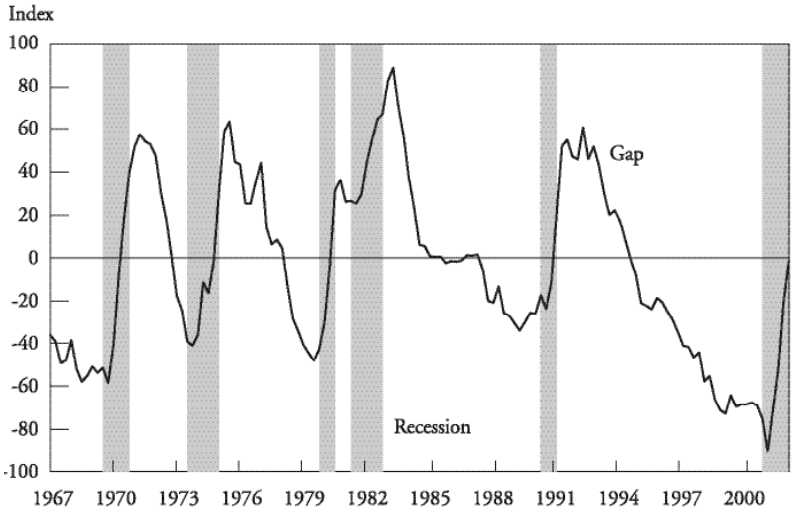



Sources: Conference Board, University of Michigan's Survey Research Center.

The recent declines in consumer confidence started from unusually high levels. Both indexes were near their historical peaks from 1997 through most of 2000. On a quarterly basis, the Conference Board index set an all-time high of 142.1 in the third quarter of 2000. The Michigan index reached a record level of 110.1 in the first quarter of 2000 and remained near that level in the third quarter of the year. Confidence began to fall sharply in the fourth quarter of 2000, well before the cyclical peak in March 2001, but the indexes stabilized at relatively high levels in the spring and summer. Because the declines in confidence started from such high levels, the indexes were above their historical averages even in the third quarter of 2001.[4]

Some observers were also concerned in early 2001 about the unusually large gap between the expectations and current-conditions indexes from the Conference Board survey. For example, the business press prominently reported this large gap and pondered its implications for the economic outlook (Ip, Morris). The gap equals the Conference Board's expectations index minus its current-conditions index. The

*Chart 2*
## CONFERENCE BOARD GAP




Note: The gap equals the Conference Board's expectations subindex minus its curent conditions subindex.

Source: Conference Board

Conference Board's expectations index dropped much more sharply than the current-conditions component, creating a record divergence between the two components in the first quarter of 2001 (Chart 2). The gap narrowed over the last three quarters of 2001 but remained large by historical standards. However, the Conference Board gap essentially closed in the first quarter of 2002. In contrast, the gap between the expectations and current-conditions indexes from the Michigan survey was never unusually large in 2001.[5]

The consumer confidence indexes fell below their historical averages in the fall of 2001 because of a deteriorating economic situation and the terrorist attacks on September 11. The Conference Board's index plunged 17.0 points from August to September, the largest drop since 1990, while the Michigan index fell 9.7 points. Although the events of September 11 may have lowered consumer confidence, the indexes probably would have declined substantially even without the terrorist

attacks. The University of Michigan reported that the mid-September value of its index declined by nearly 8 points even though it included only responses collected before the attacks. Apparently, weaker economic indicators, such as a large increase in the unemployment rate in August, also reduced consumer confidence in September.

Even though anthrax-contaminated mail and the military actions in Afghanistan kept fears of terrorism alive, consumer confidence proved to be resilient. Both indexes of consumer confidence began to recover before the end of 2001. Although the fourth-quarter average for the Michigan index was well below its third-quarter value because of the sharp decline in September, monthly values for the Michigan index actually rose slightly for each month in the final quarter of 2001. The Conference Board index declined further in October and November, but turned upward in December.[6] As *The New York Times* later observed, Americans "emerged from the nation's recent turmoil far more optimistic than after any other economic downturn in a generation (Leonhardt)."

## II. CONSUMER CONFIDENCE AND ECONOMIC FORECASTS

Consumer confidence is a natural indicator for analysts and policymakers to monitor in times of turbulence. With consumer spending equal to roughly two-thirds of real GDP, confidence-related shifts in consumption could outweigh the more direct economic losses from September 11. But do fluctuations in consumer confidence really help to predict economic variables of interest, such as real GDP or consumption? One way to gauge the predictive value of consumer confidence measures is to examine whether the indexes were able to improve economic forecasts in the past. This section briefly surveys previous research and then presents some additional evidence for 1995–2001.

### *Previous research*

Previous studies have often found that consumer confidence indexes produced, at best, small improvements in forecast accuracy.[7] For example, in the early 1990s, Leeper argued that researchers should assess the information content of consumer confidence measures relative to readily

available financial market indicators, such as stock prices or interest rates. He focused on whether these variables helped predict two monthly measures, industrial output and the unemployment rate. When financial market indicators were included in the information set, Leeper found "the empirical grounds for viewing attitudes as having an important independent influence appear to be somewhat barren." Fuhrer reached a slightly more favorable conclusion, finding that consumer confidence produced only small improvements in forecast accuracy but the predictive power was "statistically significant and thus reliable."

A more recent study by Bram and Ludvigson compared the forecasting power of the Conference Board and Michigan indexes. Previous studies focused mostly on the Michigan index, which is the oldest index of this type and provides the longest history for researchers to study. Bram and Ludvigson found that the Conference Board's measures had "economically and statistically significant explanatory power for several spending categories," but the Michigan measures had much weaker forecasting power.

Most recently, Howrey examined the value of the Michigan index in forecasting the probability of a recession and predicting personal consumption expenditures. Howrey concluded that the Michigan index produced a discernible improvement in accuracy when forecasting the probability of recession. However, the index produced only a small improvement in forecast accuracy for quarterly consumption expenditures. Moreover, once the values of personal consumption and disposable income were known for the first month of the quarter, the statistical significance of the Michigan index disappeared. An important limitation of Howrey's study is that the conclusions were based primarily on a statistical method that used more information than actual forecasters would have had available.[8] In forecasting exercises that make more realistic assumptions about the available information, confidence indexes are sometimes found to produce smaller improvements in forecast accuracy or even to worsen forecasting performance.

### *Additional evidence*

Forecasting exercises for 1995–2001 provide additional empirical evidence that consumer confidence indexes have limited value in predicting economic fluctuations. These results reflect more recent economic observations, which were not available for previous studies of consumer confidence. Consistent with many of the previous studies, however, these results show that the improvement in forecast accuracy is small, at best, if other readily available macroeconomic information is already taken into account.

The forecasting exercises follow Leeper's approach in examining whether confidence helps predict broader fluctuations in economic activity. Thus, this analysis predicts real GDP growth and the unemployment rate. Although Leeper examined industrial production, real GDP growth is a more natural output measure when working with quarterly statistics. In addition, the analysis considers forecasts of growth in consumer spending on durable goods, such as autos and appliances, because there seems to be a natural link between consumer confidence and consumer spending. However, these results are not reported here because the confidence measures did not improve forecasts of consumer durables spending for 1995–2001.

The remainder of this section evaluates the confidence measures by comparing the predictive accuracy of simple statistical models with and without the consumer confidence indexes. For example, the analysis produced forecasts of real GDP growth based on past real GDP growth, past changes in the Standard and Poor's 500 stock price index, and past CPI inflation. Additional forecasts were then made including past values of the Michigan index, the Conference Board index, or one of their major subindexes with the other explanatory variables. Given the recent attention to the gap between the expectations and current-conditions subindexes from the Conference Board survey, this measure and a comparable "gap" from the Michigan survey were also used as possible explanatory variables. The models used quarterly data and included four lagged values of each explanatory variable.

The forecasting exercises followed a "recursive" procedure in which the statistical models were updated as new economic information became available. This approach simulated the situation that would

have faced actual economic forecasters.[9] For example, forecasters at the beginning of 1995 would not have been able to use observations for 1995 to 2001 to estimate their models. As a result, this exercise estimated the statistical models over the period from 1967 to 1994. Forecasts were then generated for the first quarter of 1995, and the actual values for that quarter were used to calculate the forecast errors. To generate a forecast for the second quarter of 1995, the models were re-estimated with the actual values for the first quarter of 1995 added to the sample. New one-period-ahead forecasts were then generated for the second quarter of 1995, with and without the confidence measures, and a new set of forecast errors was computed.

The predictive accuracy of the different models was compared using the root mean squared errors of their forecasts from the first quarter of 1995 to the fourth of 2001. To compute the root mean squared error, the forecast errors in each period were squared to keep negative errors from canceling out positive errors and to weight large forecasting errors more heavily than small ones. The average of these errors for a given forecast horizon was computed over 1995–2001, and then the square root of this average was taken. A larger root mean squared error implies the model is doing a worse job, on average, of predicting the given economic variable.

Table 1 presents the root mean squared errors for the forecasts of real GDP growth and the unemployment rate. The first line gives the root mean squared forecast errors for models with no confidence index. The remaining lines give results for models including the Conference Board and Michigan indexes, as well as their major subindexes and the gaps between the expectations and current-conditions components. When including a confidence measure reduced the forecast error, Table 1 shows the corresponding root mean squared error in bold type. For example, adding the Conference Board's current-conditions index to the model of real GDP growth reduced the forecast error to 2.1951 from 2.2760 in the model without a confidence index.

Both the Conference Board and Michigan measures sometimes improved forecasts of real GDP growth and the unemployment rate, but the reductions in forecast errors generally seem small.[10] This finding is true not only for the overall indexes but also for the expectations and current-conditions subindexes. These results also provide some support

*Table 1*

ROOT MEAN SQUARE ERRORS

*(1-quarter-ahead forecasts)*

| Confidence measure | GDP | Unemployment |
|---|---|---|
| *None* | 2.2760 | .1773 |
| ***Conference Board*** | | |
| Index | 2.3101 | .1796 |
| Current | ***2.1951*** | ***.1745*** |
| Expectations | ***2.2248*** | ***.1746*** |
| Gap | ***1.9824*** | .1832 |
| ***Michigan*** | | |
| Index | ***2.1624*** | .1789 |
| Current | ***2.1304*** | ***.1698*** |
| Expectations | 2.2560 | ***.1781*** |
| Gap | 2.2977 | ***.1719*** |

Note: Numbers are root mean square errors for predictions over 1995–2001.
Bold type indicates that including the consumer confidence measure reduced the forecast error.

for the practice of monitoring the gaps between the expectations and current-conditions subindexes. In particular, the Conference Board gap produced the biggest improvement of any confidence measure for the real GDP growth forecasts. Although the Michigan gap did not improve real GDP forecasts, this measure did slightly reduce average errors in forecasting the unemployment rate.

## DID ECONOMIC CONDITIONS OR TERRORISM LOWER CONFIDENCE AFTER SEPTEMBER 11?

The small improvements in forecast accuracy from the confidence variables suggest that these indexes normally contain relatively little information that is not available from other indicators. There might, however, be special circumstances when confidence indexes contain unique information that is not readily available from other sources. Were the months immediately after September 11 such a period? This section shows that the consumer confidence indexes maintained a fairly

normal relationship to other economic indicators after the terrorist attacks. As a result, the indexes do not seem to have contained unique information related to the September 11 attacks.

### *Relation to economic indicators*

Previous research showed that simple statistical models explain a large part of the variation in the consumer confidence indexes (Fuhrer, Lovell, Throop). These studies did not, however, produce complete agreement about the most relevant explanatory variables or the proper form for the statistical model. Given the large set of indicators that might affect consumer confidence and the loose links between the confidence measures and conventional economic theory, discovering the best model of consumer confidence is beyond the scope of this article.

Nevertheless, the decline in consumer confidence before the terrorist attacks appears to have been consistent with changes in major macroeconomic indicators. For example, weaker labor market conditions probably contributed somewhat to the decline in consumer confidence. Although unemployment remained low by past standards, the civilian unemployment rate rose slightly from 4.0 percent in 2000 to 4.4 percent in the first half of 2001. Moreover, the unexpectedly large rise in the unemployment rate from 4.4 percent in July 2001 to 4.9 percent in August preceded the sharp decline in consumer confidence in the first part of September.

Higher consumer price inflation may also have contributed to the decline in confidence. Consumer price inflation rose from 1.5 percent in 1999 to roughly 3.5 percent annually in 2000 and the first half of 2001. The major cause of the higher inflation was rising energy prices. Cold winter weather, low natural gas inventories, and reduced OPEC production of crude oil caused large spikes in energy prices. Core CPI inflation, which excludes the more volatile food and energy prices, was also slightly higher at the end of 2000.[11]

Sharp drops in stock prices were another economically important and highly publicized factor that may have lowered consumer confidence. Large-company stock prices, measured by the Standard and Poor's 500 stock price index, peaked in the third quarter of 2000, while the technology-heavy NASDAQ index peaked in the first quarter of

2000. Lower stock prices directly decreased household wealth, reducing the resources available to finance future consumption. Lower wealth may have made households more pessimistic about their future financial situations, a question asked directly by the Michigan survey.[12] In addition, lower stock prices may have made households more pessimistic about future business and employment conditions, affecting their responses to questions in both surveys.

Simple empirical models incorporating these indicators explain a large part of the variation in the consumer confidence indexes. Both the Conference Board index and the Michigan index are explained fairly well by four lagged values of the unemployment rate, four lagged values of CPI inflation, and four lagged values of the percentage change in the Standard and Poor's 500 stock price index (appendix). Even more of the variation in the confidence indexes can be explained by including four lagged values of the confidence measure itself to capture the effect of other economic indicators that were omitted from the equations but may have influenced consumer confidence historically.[13] Such models can explain nearly 90 percent of the variation in the Conference Board and Michigan indexes over time.

### *The role of unique events*

Although these simple models explain most of the variation in consumer confidence from 1967 to 2001, some fluctuations remain unexplained. More sophisticated models with additional macroeconomic indicators might explain even more of the variation, but some of the fluctuations in confidence may also have been due to unique and largely unexpected events. According to Richard Curtin, director of the University of Michigan's consumer survey, "the sharpest changes in consumer expectations have been associated with the rapid development of unexpected events whose implications are difficult to assess." Curtin notes that such rapid changes may produce a "disabling sense of uncertainty and disengagement."

History provides some perspective on the possible effects of the September 11 attacks. Although there is no exact historical precedent for September 11, a somewhat similar situation was the Persian Gulf War, which started when Iraq invaded Kuwait in August 1990 and ended

with a cease-fire agreement in March 1991. Previous research found that the decline in confidence associated with the Persian Gulf War helped predict subsequent weakness in consumer spending (Garner, Throop). Because many other macroeconomic indicators did not immediately reflect the Gulf War, consumer confidence may have been useful to forecasters at the time. The Persian Gulf crisis differed from the recent attacks in several respects, however. For example, the Persian Gulf crisis interrupted world oil production and sharply raised the energy prices facing U.S. households, while the terrorist attacks were followed initially by declining world oil prices. Also, unlike September 11, the Persian Gulf War involved no direct attacks on the U.S. homeland.[14]

Other recent terrorist attacks on U.S. soil resulted in less loss of life and much smaller economic disruptions than the attacks on September 11. Although the bombing of the World Trade Center in February 1993 tragically killed six people, the losses were not great enough to have noticeable macroeconomic effects. The bombing of the Murrah Federal Building in Oklahoma City in April 1995 produced a large loss of human life, but the bomb blast did not greatly disrupt economic activity outside of Oklahoma City, and the quick capture of the perpetrators lowered fears of additional attacks. In contrast, the attacks on September 11 caused massive human and economic losses, and the interruptions to transportation and communication damaged the travel industry and interfered with a wide range of other business activities nationally and internationally. Moreover, the recent attacks have produced lingering concerns about future terrorist acts.

The effects of these events can be evaluated empirically by extending the simple regression models from the previous subsection. Those models related consumer confidence to lagged values of the unemployment rate, CPI inflation, stock prices and the confidence index. Special "dummy" variables are added to the models to represent possible temporary influences from the Persian Gulf War, the World Trade Center bombing, the Oklahoma City bombing, and the September 11 attacks.

Only the Persian Gulf War had a clear effect on consumer confidence after controlling for the macroeconomic indicators. Table 2 reports whether the dummy variables representing these events were statistically significant in the regression equations for the Conference Board and Michigan indexes. The numbers in the table are marginal

*Table 2*
EFFECTS OF PAST UNIQUE EVENTS ON CONFIDENCE

| Event | Conference Board | Michigan |
|---|---|---|
| 1993 World Trade Center bombing | .39 | .46 |
| Oklahoma City bombing | .72 | .95 |
| Persian Gulf War | .01 | .01 |
| September 11 | .13 | .57 |

Note: The table reports marginal significance levels for the dummy variables representing these events. Values lower than 0.05 indicate statistical significance.

significance levels, which are usually interpreted as indicating statistical significance when the number is less than 0.05. The World Trade Center and Oklahoma City bombings do not approach statistical significance, suggesting that households did not view these events as having widespread economic significance despite their political and human impacts. The Persian Gulf War, however, had a statistically significant effect, lowering the consumer confidence indexes from the third quarter of 1990 through the first quarter of 1991. Based on coefficient estimates reported in the appendix, the Persian Gulf War reduced the Conference Board index by about 14 points and the Michigan index by about 8 points.

The last line of Table 2 confirms the surprising resilience of consumers after the September 11 attacks. For both indexes, a dummy variable for the fourth quarter of 2001 is not statistically significant, although the marginal significance level of 0.13 for the Conference Board index is small enough that many analysts would not completely dismiss the view that the terrorist attacks lowered consumer confidence. But the fourth-quarter decline in consumer confidence can largely be attributed to worsening economic conditions in the third quarter and earlier. The fourth-quarter movements of the confidence indexes apparently did not contain much information on the economic impact of September 11.

The fact that consumer confidence measures maintained a fairly normal relationship with macroeconomic indicators should, however, have been somewhat reassuring to economic analysts and policymakers. Had confidence declined more sharply than the historical relationship implied, it might have suggested a more severe economic contraction than actually occurred. In this sense, the resilience of consumer confidence indexes may have contained useful information for economists and policymakers. As a result, economists should track movements in consumer confidence relative to the predictions of a simple statistical model to better judge the impact of unique events, such as wars or terrorist acts.

## IV. CONCLUSION

Although the terrorist attacks on September 11 inflicted severe human and economic losses, the American consumer proved to be surprisingly resilient. Both the Conference Board and Michigan indexes of consumer confidence started to recover by the end of 2001. These indexes seem to have maintained a fairly normal relationship to other economic indicators. Thus, the decline of consumer confidence in the fourth quarter of 2001 was due mostly to weaker economic conditions in the previous quarters and not to the September 11 attacks. Under the circumstances, consumer confidence did not contain much new information for economic analysts and policymakers and could be expected to improve their forecasts only slightly. But the resilience of consumer confidence after September 11 did offer some reassurance that the terrorist attacks would not have devastating economic consequences.

## SURVEY QUESTIONS

The five main questions in the consumer confidence surveys are presented below. For additional methodological details, see the Conference Board and Survey Research Center websites in the references.

### Conference Board survey questions

*Present situation*

1. How would you rate present general business conditions in your area? [good/normal/bad]
2. What would you say about available jobs in your area right now? [plentiful/not so many/hard to get]

*Expectations*

3. Six months from now, do you think business conditions in your area will be [better/same/worse]
4. Six months from now, do you think there will be [more/same/fewer] jobs available in your area?
5. How would you guess your total family income to be six months from now? [higher/same/lower]

### University of Michigan survey questions

*Present situation*

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?
2. 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?

*Expectations*

3. 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?
4. 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?
5. 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 unemployment or depression, or what?

## APPENDIX
## STATISTICAL MODELS OF CONSUMER CONFIDENCE

To examine the effect of economic indicators and unique events on the consumer confidence indexes, regression equations were estimated relating the confidence index in period *t* to a constant term and lagged values of consumer price inflation, the civilian unemployment rate, changes in the Standard and Poor's 500 stock price index, and lagged values of the confidence index. The lagged variables were for periods *t-1* to *t-4*. The unemployment rate was not always statistically significant in these regressions but was retained in the reported results because past studies have often found a relationship between unemployment and consumer confidence.

Dummy variables were included for the unique events. The dummy variable for 1993 World Trade Center bombing took the value 1 for the first quarter of 1993 and 0 for all other dates. Likewise, the dummy for the Oklahoma City bombing equaled 1 for the second quarter of 1995 and 0 for all other dates. The Persian Gulf War variable equaled 1 from the third quarter of 1990 through the first quarter of 1991 and 0 otherwise, and the September 11 dummy variable equaled 1 for the fourth quarter of 2001 and 0 otherwise. This definition of the September 11 dummy variable seems reasonable at this writing, but future researchers may wish to examine whether the September 11 attacks had longer lasting effects.

Table A1 presents some results for the equations with the Persian Gulf War dummy variable included. As reported in Table 2, the Persian Gulf War variable was the only dummy variable to be statistically significant. The equations were estimated over the period from the first quarter of 1968 to the fourth quarter of 2001. The sample starts in 1968 to allow for the four lagged quarterly values of confidence. The sum of the four lagged CPI inflation variables is reported rather than the coefficients on each lag, and the same is true for the unemployment rate, the change in stock prices, and the lagged consumer confidence index. Marginal significance levels are given below the estimated coefficients.

*Appendix Table*

| Explanatory variable | Conference Board | Michigan |
|---|---|---|
| Constant | 10.55 | 14.08 |
| | (.34) | (.15) |
| CPI inflation | -.50 | -.60 |
| | (.12) | (.02) |
| Unemployment rate | .24 | .50 |
| | (.79) | (.23) |
| Stock prices | .13 | .08 |
| | (.03) | (.03) |
| Lagged confidence | .89 | .83 |
| | (.00) | (.00) |
| Persian Gulf War | -14.19 | -7.81 |
| | (.01) | (.01) |
| $R^2$ | .89 | .88 |

## ENDNOTES

[1] The Michigan survey does ask about household expectations for unemployment and family income over the next 12 months, but responses to these questions are not used in computing the Michigan index.

[2] The Conference Board index is not available before 1967. The Conference Board survey was conducted bimonthly from 1967 to the second quarter of 1977. Linear interpolation was used to fill the missing months for the Conference Board index, and the monthly data were then averaged to produce a quarterly series.

[3] The National Bureau of Economic Research determined that the U.S. economy reached a cyclical peak in March 2001. The NBER defines a recession as "a period of significant decline in total output, income, employment, and trade, usually lasting from six months to a year, and marked by widespread contractions in many sectors of the economy." That is, the NBER does not define a recession as two or more consecutive quarters of decline in real GDP. As of this writing, the NBER had not determined the date for the latest cyclical trough. The shading in the charts assumes the recession continued through the first quarter of 2002. For more information on the NBER dating procedure and the dates of past cyclical turning points, see the NBER website in the references.

[4] The Conference Board index stood at 109.1 in the third quarter of 2001, still above its historical average of 98.8 since 1967. The Michigan index was 88.6 in the third quarter of 2001, slightly above its average of 86.2 over the same period.

[5] The Conference Board gap was –90.6 in the first quarter of 2001, far below the average of –5.5. In contrast, the Michigan gap was –21.9 compared with an average of –16.5 for 1967-2001. Although the Conference Board gap narrowed in 2001, it remained well below its historical average at year's end.

[6] In the fourth quarter of 2001, the Michigan index slipped to 85.1 from the third-quarter value of 88.6, while the Conference Board index fell to 88.0 from a previous value of 109.1.

[7] These studies focused on measures of consumer confidence for the United States. Santero and Westerlund examined the predictive usefulness of business and consumer surveys for a broader set of countries, finding that the relationship varies considerably from country to country. For the United States, this study concluded that consumer confidence helped predict real GDP and industrial production but not real private consumption.

Studies of predictive usefulness have relied almost entirely on macroeconomic statistics. Souleles, however, examined the predictive usefulness of the Michigan survey at the household level. Although he found that households are biased and make inefficient use of available information, consumer confidence did help to forecast future household consumption even after controlling for lagged consumption and macroeconomic indicators.

[8] In particular, many of the conclusions are based on "within-sample" forecasting exercises, which assume that the forecaster used observations for the entire sample period to estimate the coefficients of the statistical model. In practice, a forecaster at a particular date within that period would not have had any observations after that date to use in estimating a model. The alternative is "out-of-sam-

ple" forecasting in which the coefficients are estimated with observations up to a certain date and those coefficients are then used to produce forecasts for subsequent periods that are not yet observed.

[9] This procedure does not exactly recreate the way that actual forecasters would have made predictions in the past, however. For example, this study used revised data for real GDP. Croushore and Stark argued that use of "real-time" data, meaning the actual data from statistical releases available to forecasters at the time, can sometimes change the empirical results. For the unemployment rate, revisions are so trivial that the real-time data issue should not be a concern.

[10] Tests of equal forecast accuracy find that some of the reductions in forecast errors are statistically significant and some are not.

[11] However, ten-year inflation expectations were essentially steady at a 2.50 percent rate from 2000 through the first quarter of 2002 according to the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters*.

[12] The Conference Board survey also asks households about their expectations for total family income six months in the future. It is unclear whether survey respondents would view a change in stock market wealth as affecting their "total family income" since they might associate this term mostly with wages and salaries.

[13] The lagged confidence values also may represent the gradual adjustment of household beliefs to incoming economic information. George Katona, the creator of the Michigan index, believed that consumer expectations follow a slow social learning process. As a result, "when a trend of changed expectations is established, it will be reversed only slowly and gradually—unless major unexpected developments take place (Katona, p. 82)."

[14] Another natural historical comparison might be the Cuban missile crisis in 1962, which occurred near U.S. shores and involved potential use of nuclear weapons. However, the Conference Board survey did not exist in 1962, and the Michigan survey was conducted on a quarterly basis at the time. The Michigan index is available for August and November of 1962, making it difficult to detect any effects from a crisis that took place largely in the last half of October 1962.

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