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The Forecasting Power of Consumer Attitudes for Consumer Spending

Michelle L. Barnes and Giovanni P. Olivei

Abstract:

We assess the ability of the Reuters/Michigan Surveys of Consumers to predict future changes in consumer expenditures. The information in the Surveys is summarized by means of principal components of consumer attitudes with respect to income and wealth, interest rates, and prices. These summary measures contain information that goes beyond the information captured by the Index of Consumer Sentiment from the same Surveys. The summary measures have forecasting power for aggregate consumption behavior, even when controlling for current and future economic fundamentals. These measures also help to explain a nontrivial portion of consumption and other real activity forecast errors from the Survey of Professional Forecasters and the Federal Reserve Board's Greenbook. This finding is consistent with the ability of these summary measures to predict consumption even when conditioning on a broader set of fundamentals and on forecasters' judgmental assessments of developments that are not easily quantifiable.

JEL Classifications: E21, E27, E52, E66

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This paper presents preliminary analysis and results intended to stimulate discussion and critical comment. The views expressed herein are those of the authors and do not indicate concurrence by the Federal Reserve Bank of Boston, or by the principals of the Board of Governors, or the Federal Reserve System.

This paper, which may be revised, is available on the web site of the Federal Reserve Bank of Boston at <http://www.bostonfed.org/economic/ppdp/index.htm>.

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1. Introduction

The Reuters/Michigan Index of Consumer Sentiment's ability to explain consumer expenditures has been extensively studied in the literature, and a consensus has emerged that the role of consumer sentiment in consumption is typically small from an economic standpoint, even if often statistically significant. This finding is especially true when controlling for economic fundamentals: in this case, the independent information from sentiment is limited and arises at least in part from sentiment's ability to forecast subsequent developments in income and, more generally, in aggregate demand.¹

Despite the prevalence of studies pertaining to consumer sentiment, little attention has been devoted to assessing the role that more broadly defined consumer attitudes play in consumption behavior. The widely studied Index of Consumer Sentiment, a representative measure of survey-based assessments of sentiment, is constructed from the answers to five survey questions.² These questions, however, are part of a more comprehensive survey of consumers' attitudes and expectations, the Reuters/Michigan Surveys of Consumers. In this paper, we exploit this broader set of questions to investigate which aspects of consumer attitudes matter for consumption behavior. In doing so, one challenge is devising a way to summarize the information contained in the questions from the Surveys in a manner that is economically meaningful. We propose a limited set of summary measures of various aspects of the economic environment covered by the Surveys. These measures are constructed from

¹ See Carroll, Fuhrer, and Wilcox (1994) and Fuhrer (1993). For a survey of the literature on the role of consumer sentiment in consumer spending dynamics, see Ludvigson (2004).

² The five equally weighted questions that compose the sentiment index are the following:

- (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) "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?"
- (3) "Now turning to business conditions in the country as a whole—do you think that during the next twelve months we'll have good times financially, or bad times, or what?"
- (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 unemployment or depression, or what?"
- (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?"

subsets of the questions from the Reuters/Michigan Surveys of Consumers, with each subset corresponding to a broad economic determinant of consumption—income, wealth, prices, and interest rates.

We find that a noticeable portion of the information in the broader Surveys is not being captured by the widely studied headline Index of Consumer Sentiment (or, interchangeably, “consumer sentiment”), which is constructed from the five questions detailed in footnote 2 above. More importantly, the information embedded in our summary measures has explanatory power for consumption behavior beyond that of the consumer sentiment index itself. This information in our broader summary measures pertains to consumer attitudes toward interest rates, credit availability, and prices. In particular, the informational content from responses regarding the interest rate appears to be robust across various specifications and sample periods. While the information pertaining to consumer attitudes toward income and wealth does have explanatory power for consumption, this portion of the broader survey information is well conveyed by the summary measure of consumer sentiment.

The power of the Surveys’ summary measures for forecasting consumption is robust to the inclusion of fundamentals. As with previous results in the literature concerning consumer sentiment, the improvement in forecasting power is relatively limited but, compared to the inclusion of sentiment only, is significant from a statistical standpoint and is economically relevant at times. The summary measures’ ability to forecast future consumption growth continues to hold when, instead of controlling for lagged fundamentals, we control for fundamentals that are contemporaneous with consumption growth. This result is shown in the context of an augmented Campbell and Mankiw (1990) framework, and expands on the results in Carroll, Fuhrer, and Wilcox (1994).

The summary measures’ ability to forecast future consumption growth even in the presence of fundamentals, whether lagged or contemporaneous to consumption growth, is not easily explained. The potential reasons that involve the omission of relevant determinants of consumption, such as uncertainty, are not necessarily consistent with our empirical findings. In some cases, our measured fundamentals are only a proxy for the true fundamental. For example, this issue arises for the interest rate measure we are controlling for, which is not

perfectly correlated with the actual cost of credit faced by consumers. In sum, we cannot rule out that a larger and more precisely measured set of fundamentals may overturn some of our findings.

We address this issue to some extent, however, by showing that the summary measures taken from the broader Surveys have significant explanatory power for real side forecast errors that inform the Survey of Professional Forecasters and the Federal Reserve Board's Greenbook.³ Presumably, these forecasts are conditioned on a broader set of fundamentals than those we consider in our forecasting exercises. Furthermore, these forecasts contain a judgmental component that in principle could capture animal spirits or other features of the economic environment. These features are hard to measure and could be correlated with the portion of the survey's summary measures that is orthogonal to fundamentals. Still, these measures have a sizable explanatory power for the forecast errors. This finding is true not just for the consumption growth forecast errors, but also for broader activity measures such as real GDP growth and the unemployment rate.

Our paper is related to previous work by Slacalek (2006), who used the same principal components approach we employ here to summarize the questions in the Reuters/Michigan Surveys of Consumers. To our knowledge, this is the only other paper assessing the Surveys' information content for consumption. Our approach differs from Slacalek's work in that we consider a more detailed, and hence larger, set of questions, and we form our principal components in such a way as to link them to fundamentals. Moreover, to better assess the forecasting power of the information contained in the Surveys, the principal components are constructed in real time. The scope of our exercise is also different because we assess the Surveys' ability to predict consumption in a broader context that controls for fundamentals in a variety of ways.

While in principle there are different approaches to summarizing information from a large dataset, our approach has the advantage of relating the Surveys' information to important economic determinants of consumption. This allows us to ascertain the relationship between the

³ The Greenbook forecast of the U.S. economy is produced by the research staff of the Federal Reserve Board before each FOMC meeting to support the FOMC members in their policy deliberations.

survey data and consumption dynamics in a more transparent way than by resorting to summary measures of the survey information that do not have an immediate correspondence to an economic fundamental. For example, one can speak directly to consumers' attitudes or expectations about wealth and income or interest rates in isolation, as opposed to using some indices that may confound the influence of a number of different drivers of consumption. Moreover, when controlling for fundamentals, having summary measures from the Surveys that can be linked, albeit broadly, to these fundamentals can help further elucidate what information in the Surveys might play an independent role in explaining consumption dynamics.

The rest of this paper proceeds as follows. In Section 2, we briefly describe the Reuters/Michigan Surveys of Consumers, the construction of the real-time summary measures from the Surveys', and the summary measures' relationship with the Index of Consumer Sentiment and commonly measured fundamentals. Section 3 analyzes the forecasting power of the real-time survey measures for consumption, considered both in isolation and when controlling for fundamentals. Section 4 uses a Campbell-Mankiw type of framework to show that even if the summary measures based on the Surveys' have predictive power for future fundamentals, these measures still play an independent role in consumption dynamics. In Section 5 we show that these real-time survey measures have substantial explanatory power for both Survey of Professional Forecasters and Greenbook forecast errors. Section 6 provides concluding remarks.

2. The Reuters/Michigan Surveys of Consumers

This section describes how we summarize the information from a broad range of questions in the Reuters/Michigan Surveys of Consumers (in what follows this is referred to by the abridged "Surveys of Consumers," or "Surveys," as used above), and how this information relates to commonly measured fundamentals. Based on a representative sample of households in the 48 contiguous United States, the Surveys' questions range from inquiring about an individual household's own current and expected financial situation to its assessment of the broader

economic environment in terms of unemployment, inflation, the buying conditions for a variety of products, and other topics. We select 42 questions from the Surveys of Consumers that pertain to income, wealth, prices, and interest rates. For these variables, the questions may refer to current or expected developments and to developments that are household-specific or economy-wide. The Appendix has a list of the 42 questions we draw from the Surveys.

The selected questions can be viewed as complementing and adding detail to the five survey questions used to construct the Reuters/Michigan Index of Consumer Sentiment. For example, one of the questions included in the consumer sentiment index is “Do you think now is a good or bad time for people to buy major household items?” For this question, the Surveys also ask why participants have a particular perception about buying major household items. The reasons pertain to different aspects of the current and expected economic environment, such as income and prosperity, interest rates and credit availability, and prices. Rather than just considering the answer to the higher-level summary question, our analysis includes the reasons that households provide to justify their answers to the higher-level question.

A large portion of the Surveys, however, features questions that are not directly or indirectly related to the questions upon which the consumer sentiment index is formed. Several of these questions, such as whether the respondent thinks it is a good time to buy a home or not, share the same multiple-level structure we have just illustrated. For this type of multi-layered question, we thus follow a similar procedure. Other questions, such as a household’s expectations about unemployment during the coming 12 months, do not have sub-questions delving deeper into their reasoning, and we include these directly to the extent that they can be attributed to a particular feature of the economic environment.

The questions we select from the Surveys of Consumers typically elicit a qualitative response. Consequently, these responses can be used as the basis for constructing a diffusion measure of how favorably respondents view a certain economic development. For example, with respect to the question about buying conditions for major household items, the selection of “Good Time to Buy: Interest Rates are Low” to the sub-question about why this is a good time to buy a major household item indicates the percentage of respondents who chose this particular answer from several potential selections. For this type of question, the Surveys of

Consumers also includes a mirroring question about why this is a bad time to buy a major household item, including the possible response, “Bad Time to Buy: Interest Rates are High.” Thus, from the responses, it is possible to provide a diffusion index for how important low interest rates are in the respondents’ assessment of buying conditions for major household items, which is constructed by subtracting the percentage of those who chose the “Good Time to Buy: Interest Rates Are Low” response to the first question from the percentage of respondents who chose the “Bad Time to Buy: Interest Rates Are High,” answer to the second question.⁴ For other questions, the survey does not categorize the responses to a certain economic development as either positive or negative. For example, to answer the question of whether a household is better or worse off financially relative to a year earlier, one of the possible selections is “higher prices,” but the selection “lower prices” is not available. In these circumstances, we just consider the percentage of respondents that make that particular selection.

Given the qualitative nature of the data, we do not apply any transformation to achieve stationarity—with one exception. The respondents provide a quantitative answer to the question pertaining to expectations of inflation over the next 12 months. We transform this answer by subtracting 10-year inflation expectations from the median value of the participants’ answers. The long-run measure of inflation expectations is taken from the Hoey/Philadelphia Survey of Professional Forecasters.

We use monthly data from the 42 survey questions to construct the summary measures, which we describe in more detail below. Simple averaging then converts the monthly summary measures to quarterly frequency. To construct the summary measures, we use a “real-time” approach, such that at any point in time, t , in our sample, we consider only the information from the Surveys available up to time t . Specifically, we use an expanding window that has 1978:M1 as the starting date, and 1986:M1 as the first “real-time” observation. The last

⁴ The diffusion measure can be indexed to 100 by adding 100 to the difference. This transformation, however, is immaterial for the analysis in the text. For some of the questions, such as those pertaining to news about favorable or unfavorable changes in business conditions, the survey does not provide a diffusion measure. In these instances, we treat the favorable and unfavorable answers as distinct, rather than netting them. However, our empirical findings are not affected by this choice.

observation is 2013:M12. The sample choice is constrained by the fact that for several of the questions we are considering, the data start only in 1978. Moreover, we need a reasonably-sized estimation sample to construct the summary measures from the Surveys' questions, and we take nine years as our shortest sample window. As a result, the sample for our real-time summary measures spans the period from 1986 to 2013, and, as already noted, these measures have been converted to a quarterly frequency. It is important to remember this relatively small sample size when interpreting the empirical findings in the next sections, but at the same time it should be noted that since our analysis is mostly reduced-form in nature, stability is a potential concern. In this respect, focusing on a sample that starts in the second half of the 1980s may be more palatable, as financial innovation in the mid-1980s has often been mentioned as generating a structural break in the availability of credit to consumers.⁵

We summarize the information obtained from the Surveys of Consumers by constructing principal components from the 42 chosen questions. One drawback of this kind of analysis is that the economic interpretation of the principal components is not always transparent. We address this concern below, but one result that is worth mentioning upfront is shown in Figure 1. This depicts the first real-time principal component obtained from the entire set of 42 questions that we consider in our analysis against the index of consumer sentiment. The two series closely track each other, implying that the Index of Consumer Sentiment summarizes some of the information captured by these 42 questions. However, for the entire sample period that we consider, the first principal component explains roughly 45 percent of the variance in the survey data we use. Consequently, there is scope for the data from the Surveys of Consumers to potentially capture features of consumers' attitudes not already embedded in the Index of Consumer Sentiment.

The issue we turn to now is how to summarize the information contained in the 42 survey questions. To this end, we group the questions separately according to the economic determinants (income, wealth, prices, or interest rates) to which the questions refer. We then consider the real-time first principal component computed for each of the four groupings. In this way, our summary measures are constructed to retain a reference to specific fundamental

⁵ See, for example, Gerardi, Rosen, and Willen (2010), and Duca, Muellbauer, and Murphy (2012).

determinants of consumption. This approach may prove useful if there is information in the survey that can explain consumption, as then it will be possible to provide a somewhat more precise economic interpretation of consumers' attitudes.

The preliminary analysis reveals that the first principal component for the survey questions referring to income and the first principal component for the survey questions referring to wealth tend to be highly correlated with each other. To preserve degrees of freedom in the analysis that follows, we jointly consider the survey questions referring to income and those referring to wealth. This complete set comprises 25 survey questions, and the relationship between the first principal component from these questions and a simple average of the changes in real household income and wealth is depicted in Figure 2. From this figure it is apparent that the real-time evolution of the principal component from the questions concerning income and wealth captures some of the actual dynamics of households' real income and wealth. Another notable feature of this principal component is that it tracks consumer sentiment fairly closely. This relationship is shown in Figure 3, which plots the principal component against consumer sentiment, implying that consumer sentiment captures most of the elements of the survey questions that broadly refer to income and wealth.

The first principal component is computed in real time for the eight survey questions concerning prices, which we refer to as the prices component, and is plotted in Figure 4 against the log real price of oil.⁶ This summary measure exhibits some co-movement with energy prices.⁷ Additionally, it can be shown that the price component is correlated with the income and wealth component we have just described, and thus with consumer sentiment. It is well known that short-term fluctuations in sentiment can be driven by fluctuations in energy prices. Given the high correlation of consumer sentiment with our real time income and wealth component, the effect of energy prices on sentiment is presumably working via a real income effect. However, a significant fraction of the variation in the price component is orthogonal to

⁶ The real price of oil is defined as the domestic crude spot oil price (West Texas intermediate) divided by the core CPI price index.

⁷ Fluctuations in the real price of food provide marginal additional explanatory power to the component.

the income and wealth component.⁸ In the next sections we evaluate whether the portion orthogonal to the income and wealth summary measure provides additional explanatory power for consumption behavior.

Figure 5 shows the real-time first principal component from the survey questions that pertain to interest rates.⁹ This interest rate summary measure is plotted against the five-year real Treasury yield.¹⁰ The two series track each other fairly well except during the most recent period, when the decline in the real interest rate is associated with relatively little response in the interest rates summary measure. This development could reflect the fact that some consumers were excluded from credit markets despite the low riskless interest rates. For example, households with negative home equity have been unable to take advantage of low mortgage rates. The interest rate summary measure is uncorrelated with the income and wealth summary measure—and thus with consumer sentiment—over the period we consider. As such, it is a potential candidate for adding explanatory power to consumption behavior above and beyond the developments in income and wealth captured by the Surveys of Consumers.¹¹

The figures discussed above are meant to show that the groupings used to compute the principal components bear some relationship with the intended economic fundamental. At the same time, the goal of the exercise is not to obtain a perfect correlation between our summary measures and the respective fundamentals. Indeed, if this were the case, there would be little point to conducting the analysis that follows. To the extent that there is a deviation from the fundamental, the question is whether this independent variation has explanatory power for consumption. The next two sections show two different ways to approach this issue. Section 3

⁸ When considering the 42 survey questions together, the fourth principal component explains slightly more than 50 percent of the variation in the price component over the full sample. The first principal component (which closely tracks consumer sentiment) and the fourth together explain 95 percent of the variation in the price component.

⁹ We compute the first principal component from nine questions pertaining to interest rates, and four questions concerning the prices of vehicles and large appliances. We include price questions because the price and financing dimension are interrelated in the purchasing decision for autos and large appliances.

¹⁰ This real interest rate measure is constructed by subtracting long-run inflation expectations from the nominal five-year Treasury yield.

¹¹ When considering the 42 survey questions together, the second principal component explains about 80 percent of the variation in the interest rate component. Therefore, it is not unreasonable to interpret fluctuations in the second principal component computed on the entire set of 42 questions as capturing consumers' perceptions about interest rates.

analyzes the usefulness of the summary measures for predicting future consumption, at the same time controlling for lagged fundamentals, while section 4 performs a Campbell-Mankiw type exercise where the usefulness of these measures to predict future consumption is gauged in a context where we explicitly control for future fundamentals.

3. Forecasting Consumption Using the Surveys of Consumers

We now turn to examining the forecasting power of our three real-time summary components for the dynamics of consumption growth. There is an extensive literature on the predictive power of sentiment for consumption growth, but so far there is little work on the predictive power of the information available in the broader Surveys of Consumers. We consider the period from 1986:Q3 to 2013:Q4, and also examine the subsample that ends in 2007:Q4, before the onset of the last recession. We predict the growth in consumption over the next quarter and over the next four quarters. For the regressions involving four-quarter consumption growth, it is important to keep in mind that the number of independent observations is limited.

We begin by assessing the explanatory power of our real-time summary measures from the Surveys of Consumers in isolation and compare this performance with using consumer sentiment in a real-time prediction exercise. The top panel of Table 1A shows the adjusted R^2 in regressions forecasting one-quarter-ahead personal consumption expenditures growth with two lags of each of the three real-time measures based on the Surveys of Consumers that we consider. The summary measure for prices is included as a first difference, since such a restriction is not rejected by the data. The first column in the table reports the regression fit when consumption is predicted by consumer sentiment alone, replicating and updating findings in the extant literature. The second column shows the forecasting power of the three summary measures from the survey—the income and wealth component, the price component, and the interest rate component. The third column provides the regression results when both consumer sentiment and the three summary measures from the Surveys of Consumers are used as predictors. The bottom panel of the table performs the same exercise as used for the results shown in the top panel, but the dependent variable is now the growth in real private

consumption expenditures measured over the next four quarters. Table 1A reports the results for the whole sample whereas Table 1B reports the same results for the pre-2008 sample.¹²

The main message from the two tables is that there is information in the broader Surveys that can be used to forecast consumption in real time above and beyond the information captured by the Index of Consumer Sentiment. The adjusted R^2 s in the regressions where the three real-time survey summary measures are included (the second column) rises noticeably compared to the benchmark regressions where consumer sentiment is the only predictor for consumption (the first column). It is also the case that when the summary measures are used as predictors, including consumer sentiment as an additional predictor (the third column) does not improve the predictability of consumption when growth is measured on a one-quarter basis. There is some improvement in fit when consumption growth is measured on a four-quarter basis in the shorter sample period, but these results could be affected by the small sample. As already shown, the income and wealth summary measure and consumer sentiment are highly correlated, and thus the lack of consistent improvement in fit when sentiment is added as a predictor is not surprising. What is important in the present context is that the price and the interest rate components both add significant explanatory power when predicting consumption growth, regardless of the time horizon over which consumption growth is being measured.

While the analysis has been carried out on total consumption, the results in the previous table also hold when considering the decomposition of consumption into expenditures on durables, nondurables, and services. Table 2 reports the results for these consumption categories over the full sample with the dependent variables expressed in terms of one-quarter-ahead growth rates. Table 3 reports the results from performing the same exercise with the dependent variables expressed in terms of four-quarter-ahead growth rates. It is apparent that there is some improvement in fit when considering the real-time survey summary measures relative to the forecasts generated with the information just contained in consumer sentiment alone. Similar findings (not reported) hold for the pre-2008 sample.

¹² A similar analysis is performed in a related exercise by Barnes and Olivei (2013), except that the analysis is not performed in real time.

Having established that the summary measures from the Surveys of Consumers contain information that is useful for forecasting consumption, we now turn to assessing how much of the predictive content is preserved when controlling for standard consumption fundamentals. This determination is especially important in the current context, as we constructed the summary measures from the Surveys of Consumers with reference to broad economic categories representing different drivers of consumption behavior. It is possible that when controlling explicitly for these predictors, our summary measures become redundant. On the other hand, the measures could still capture features, such as animal spirits and the subjective perceptions of economic outcomes, which help to explain consumer behavior above and beyond the observed economic fundamentals.

Table 4 reports the adjusted R^2 s for regressions that forecast the growth in total consumption expenditures while controlling for fundamentals and shows the improvement in fit when either lags of consumer sentiment or lags of the three real-time summary measures are added to the regressions. The fundamentals we include are two lags each of the quarterly growth rate in consumption, real labor income as defined in Carroll, Fuhrer and Wilcox (1994),¹³ households' real net worth, real oil price inflation, the level of the real interest rate (measured as the five-year nominal Treasury yield less long-run inflation expectations), and banks' willingness to make consumer installment loans, a measure obtained from the Federal Reserve Board's Senior Loan Officer Opinion Survey on Banking Lending Practices. Controlling for the discrepancy between the level of consumption and the level predicted from income and net worth—a cointegrating error that captures deviations from the long-run relationship between consumption and fundamentals—does not alter the results. The table's first column shows the adjusted R^2 s with only the standard fundamentals just described. The second column reports the goodness of fit when these fundamentals are augmented by the inclusion of two lags of consumer sentiment. The third column reports the results when these fundamentals are

¹³ Real labor income is defined to be real wages, salaries, and transfers less personal contributions for social insurance. This measure differs from disposable income in that it excludes other labor income such as employer contributions for pension and benefit plans in addition to interest, dividend, rental, and proprietor's income. It also does not deduct personal tax and nontax payments. As argued in Carroll, Fuhrer, and Wilcox (1994), the tax data can be dominated by changes in payments largely available to, and used by, higher-income households.

augmented with the three summary components from the Surveys, where each component is entered with two lags. When controlling for these components, we do not include sentiment as an additional explanatory variable, as sentiment and the income and wealth component essentially convey the same information. The exercise is also repeated for the pre-2008 sample (not shown).

Comparing the fit between the first and second columns shows, similar to previous results in the literature, that once the fundamentals are controlled for, the role of consumer sentiment in predicting consumption is marginal at best. Instead, there is a significant improvement in fit when the Surveys' summary measures are added to the fundamentals. As shown in the bottom panel of Table 4, these findings also hold when consumption growth is measured over a four-quarter-ahead horizon. The same pattern of findings (not reported) emerges when evaluating the different components of consumption. Overall, there appears to be explanatory power in the real-time components from the Surveys of Consumers that goes beyond the observed fundamentals. The relative statistical significance of the three summary measures can vary according to the set of fundamentals included in the forecasting regressions. However, the interest rate component is typically an important contributor to the improvement in fit.

4. Consumption Behavior and the Surveys of Consumers: An Augmented Campbell-Mankiw Framework

An important issue is to what extent our summary measures from the Surveys have predictive power for consumption growth because these measures can forecast future developments in household income, household net worth, and credit availability. In the simple version of the permanent income hypothesis, changes in consumption are solely a function of innovations to permanent income. However, if a portion of households follow a rule of thumb whereby every period they consume a certain fraction of their income (Campbell and Mankiw 1989, 1990), or if a portion of consumers are credit constrained, then contemporaneous changes in consumption can be associated with contemporaneous changes in income, household net worth, and credit availability. It is thus relevant to assess whether the summary measures'

ability to predict consumption arises from their forecasting power for these fundamentals, or from another independent channel.

The first step in testing this hypothesis is to check the extent to which the summary measures have forecasting power for household income, net worth, and credit availability. If the summary measures are uncorrelated with these fundamentals, then the previous section's assessment of the ability of the summary measures to forecast consumption would be unbiased. Table 5 reports the results of forecasting regressions where the dependent variables are labor income,¹⁴ household stock market wealth, household wealth excluding stock market wealth, and credit conditions. The sample period is 1986:Q3 to 2013:Q4. The first three variables are expressed in growth rates, while the credit conditions variable is taken from the Senior Loan Officer Opinion Survey, which measures banks' willingness to make consumer installment loans relative to three months earlier. Given that this variable is already defined as a change, no transformation is needed.

The table compares the adjusted R^2 statistics once the simple autoregressive forecasting regressions are augmented with lags of the summary measures. The baseline forecasting regressions include two lags of the dependent variable. In the augmented regressions, we use two lags of each of the summary measures, with the price measure constrained to enter as a first difference. The values in parenthesis are p -values from a Wald test on the joint significance of the summary measures in the augmented specification. Introducing the summary measures increases the adjusted R^2 only when the dependent variable is either labor income or credit availability. In those two cases, the increment in the adjusted R^2 is near 7 percent. The Wald test indicates the hypothesis that the summary measures have no forecasting power can be rejected at the 2 percent level or less. For the household wealth variables, represented either by stock market wealth or non-stock market wealth, the summary measures provide no additional forecasting power over the sample we consider.

Given these findings, in what follows we consider a consumption specification that controls only for contemporaneous changes in labor income and credit conditions. In particular, by

¹⁴ The labor income variable is defined as in the previous section and according to Carroll, Fuhrer, and Wilcox (1994). For the definition and a motivation for how the variable is constructed, see footnote 12.

expanding on the specification of Carroll, Fuhrer, and Wilcox (1994), we estimate the following relationship:

$$(1) \quad \Delta C_t = \lambda \Delta Y_t + \gamma FWILL_t + \boldsymbol{\beta}' \mathbf{X}_{t-1} + v_t - \rho v_{t-1},$$

where C is real total consumption expenditures, Y is labor income, and $FWILL$ is banks' willingness to make consumer installment loans in the current period relative to three months earlier. The operator Δ computes the quarterly annualized percentage change for the variable to which it is applied. The vector of variables \mathbf{X} contains the lagged summary measures from the Surveys of Consumers. In this exercise, we do not include lagged consumer sentiment—the focus of the Carroll, Fuhrer, and Wilcox analysis—as we have shown that sentiment is highly correlated with our income and wealth summary measure. Our setup augments the Campbell-Mankiw framework by allowing changes in consumption to be affected not just by rule-of-thumb behavior, but also by the presence of credit-dependent households whose consumption can vary according to changes in credit availability. The specification explicitly features an MA(1) error term to account for time aggregation in the measurement of consumption (Christiano, Eichenbaum, and Marshall, 1991).

Since Y and $FWILL$ enter the regression contemporaneously, the endogeneity issue is addressed by means of instrumental variable estimation. Moreover, the explicit estimation of the MA(1) error term in the regression implies that instruments dated $t-1$ and earlier are permissible. The set of instruments is comprised of a constant and three lags each of the ΔC , ΔY , $FWILL$, the unemployment rate, the real interest rate, the risk premium, and inflation. The real interest rate, as in the previous section, is given by the difference between the five-year Treasury nominal yield and an estimate of long-run inflation expectations.¹⁵ The risk premium is defined as the difference between the yield on BAA-rated corporate bonds and the 10-year Treasury yield, while inflation is the quarterly annualized percentage change in the PCE deflator.

The estimation results are reported in Table 6 for the same sample period, 1986:Q3 to 2013:Q4. Column (1) provides estimates of equation (2) without including \mathbf{X} , the lagged

¹⁵ The long-run measure of inflation expectations is taken from the Hoey/Philadelphia Survey of Professional Forecasters.

summary measures. The estimate for the rule-of-thumb parameter λ is insignificant, while the credit availability measure is highly significant and economically meaningful. A 10 percentage point increase in *FWILL* raises consumption by roughly seven-tenths of a percentage point at an annual rate.¹⁶ This insignificance of the rule-of-thumb parameter contrasts with estimates obtained in previous studies on earlier sample periods. However, the estimated responsiveness of consumption to income changes when the first lag of the change in income is included as an additional regressor. These results are shown in column (2), where now both the contemporaneous and the lagged change in income are significant. The sum of these coefficients is estimated at 0.50. One interpretation of this finding is that rule-of-thumb consumers respond to contemporaneous *and* lagged income. Another interpretation, which is that lagged income growth is proxying for consumption habits, does not find support over this specific sample period. The estimation results in column (3) show that the inclusion of lagged consumption growth neither adds explanatory power nor materially alters the previous finding about the relevance of lagged income growth.

In Table 6, Column (4) shows the regression results obtained from augmenting the specification in the second column by including the three summary measures from the Surveys of Consumers. We include two lags of these measures, with the prices component constrained to enter the relationship in first differences. The column also reports test results for the sum of the estimated coefficients for current and lagged income growth, and for the sum of the coefficients for the two lags, respectively, of the income and wealth and the interest rate components. With respect to the income and credit availability fundamentals, controlling for the summary measures does not alter the economic significance of current and lagged changes in income, but slightly weakens the significance of the change in current credit conditions.

Comparing the estimated coefficients for the summary measures with those from column (5), where we consider only the summary measures as explanatory variables, reveals the degree to which the predictive ability of the summary measures is independent of their ability to predict the fundamentals that matter for future consumption growth. Relative to the estimates in

¹⁶ The variable *FWILL* measures the net percentage of bank respondents who are willing to increase consumer installment loans relative to three months earlier.

column (5), the test of the sum of the coefficients on the income and wealth component yields a sum that is roughly half the size of that in the regression that does not control for fundamentals, and it is less precisely estimated. In addition, the economic and statistical significance of the first difference of the prices component diminishes somewhat. In contrast, the sum of the coefficients on the interest rate component becomes both more economically significant and more precisely estimated when controlling for income and credit fundamentals. Still, the overall implication of these findings is that while the summary measures predict future consumption growth partly because of their ability to predict real income growth and credit conditions, they retain an independent predictive power. These findings are along the lines of the results in Carroll, Fuhrer, and Wilcox (1994) for consumer sentiment, though our focus is broader as some of the informational content from the Surveys of Consumers that we consider is orthogonal to consumer sentiment. This is especially true for the interest rate component, which contributes significantly to the Surveys' independent explanatory power for future consumption growth.

The results in this and in the previous section illustrate that there is information in the Surveys of Consumers that helps to predict consumption growth above and beyond fundamentals. Yet these findings could still be driven by the omission of relevant economic developments. For this reason, in the next section we consider the extent to which the survey information is incorporated efficiently into professional forecasts of economic activity, which are likely conditioned on a broader set of fundamentals than the one we have considered here. Moreover, these professional forecasts contain a judgmental component that could capture animal spirits or other features of the economic environment. These features are hard to measure and could be correlated with the portion of the Surveys' summary measures that is orthogonal to fundamentals.

5. The Informational Content of the Surveys of Consumers for Professional Forecasters

In this section, we consider whether the summary measures we derive from the Surveys of Consumers can explain errors in the Survey of Professional Forecasters' (SPF) and the Federal Reserve Board's Greenbook forecasts of real consumption growth. We also present results pertaining to forecast errors in real GDP growth and in the level of the unemployment rate in

order to assess the importance of the summary measures for forecasting broader economic developments, as well as to explore channels other than consumption through which this information may be relevant.

For current-quarter forecasts, we consider the SPF and Greenbook forecast errors in the context of the following specification:

$$(2) \quad X_t - X_t^{E,t} = a_0 + a_1 X_t^{E,t} + \sum_{k=1}^2 b_{Yk} PY_{t-k} + \sum_{k=1}^2 b_{Rk} PR_{t-k} + \sum_{k=1}^2 b_{Pk} PP_{t-k} + e_t.$$

In this equation, X denotes the variable that is being forecast (real consumption growth, real GDP growth, or the unemployment rate). The superscript E,t indicates the time t forecast of variable X with the forecast being either from the SPF or the Greenbook. The variable PY denotes the summary measure for income and wealth, while PR and PP denote the summary measures for interest rates and prices, respectively. The forecasters that comprise the SPF are surveyed in the middle-month of the quarter, and we use the median forecast. For the Greenbook forecasts, which were made eight times a year over the period we consider, we convert to a quarterly frequency in order to align the forecasts as closely as possible with those of the SPF. This typically means keeping the January, March, August and October Greenbook forecasts; that is, the forecast made early in the given quarter. For year-out forecasts of real consumption and GDP growth, the previous equation is modified as follows:

$$(3) \quad X_{4,t+3} - X_{4,t+3}^{E,t} = a_0 + a_1 X_{4,t+3}^{E,t} + \sum_{k=1}^2 b_{Yk} PY_{t-k} + \sum_{k=1}^2 b_{Rk} PR_{t-k} + \sum_{k=1}^2 b_{Pk} PP_{t-k} + e_t,$$

where $X_{4,t+3}$ is defined as $X_{4,t+3} \equiv 0.25 * \sum_{i=0}^3 X_{t+i}$. In other words, $X_{4,t+3}$ is the four-quarter change

of the variable in question over the period $t-1$ to $t+3$. The forecast of $X_{4,t+3}$ is similarly defined

as $X_{4,t+3}^{E,t} \equiv 0.25 * \sum_{i=0}^3 X_{t+i}^{E,t}$. For the level of the unemployment rate, the year-out specification

instead becomes:

$$(3') \quad X_{t+3} - X_{t+3}^{E,t} = a_0 + a_1 X_{t+3}^{E,t} + \sum_{k=1}^2 b_{Yk} PY_{t-k} + \sum_{k=1}^2 b_{Rk} PR_{t-k} + \sum_{k=1}^2 b_{Pk} PP_{t-k} + e_t.$$

In all of the specifications we consider, the actual value for real consumption and GDP growth is taken to be the value measured by the Bureau of Economic Analysis (BEA) eight quarters after the BEA's third (or final) release. Equivalently, this is the prevailing "actual" value nine quarters after the forecast is made. We have chosen such a definition for actual values as a compromise between more "real-time" estimates, which are incomplete and can undergo substantial revisions, and more distant estimates, which can encompass methodological changes that a forecaster would not take into consideration when predicting real activity.¹⁷ For the unemployment rate, we simply take the most recent vintage of the data because the unemployment rate—aside from minor seasonal adjustments—is not being revised. The specifications describe the forecast errors as a function of a constant, the forecast itself, and two lags of each summary measure from the Surveys of Consumers. The forecast is included as an explanatory variable to account for the possibility that it is correlated with the summary measures and that it is inefficient when explicitly controlling for the survey information.

The regression sample begins in 1987:Q1. The sample ends in 2008:Q4 for the Greenbook forecasts, since the Greenbook information is publicly released with a five-year lag. For the SPF forecasts, we use information up to 2013:Q4. Given that the actual values are defined as the values prevailing nine quarters after the forecast is being made, the current-quarter forecast error regressions stop in 2011:Q3, while the year-out forecast error regressions stop in 2010:Q3. When considering the year-out forecasts, the estimation takes into account the moving-average nature of the error term.¹⁸

Tables 7 to 9 show that for all of the different forecasting errors considered (current quarter, year-ahead; SPF or Greenbook; real consumption growth, real GDP growth, or the unemployment rate), roughly 20 to 40 percent of the variation in the forecasting errors can be explained by including the three summary measures from the Surveys of Consumers. In order to illustrate the similarity of the results for both the Greenbook and SPF forecasts for the same

¹⁷ The results provided in this section are qualitatively similar when other data release "vintages" are considered, in that the additional information provided by the summary measures always yields a significant increase in the percent variation explained of the forecast error, regardless which "vintage" of the data series are taken to be the actuals.

¹⁸ Specifically, we are correcting the standard errors of the estimated parameters to account for a moving average structure of order three in the residuals.

sample, the tables also include the SPF results for the shorter Greenbook sample. The signs of the estimated coefficients for the summary measures have some economic rationale as well, in that improvements in the component capturing the income and wealth effect, as well as the component measuring improved credit conditions and lower interest rates, are associated with actual real activity values above those forecasted, whereas the component for prices is associated with lower activity than forecasted, perhaps due to the effect of inflation on disposable income. Still, there is no obvious pattern to the particular summary measures that contribute most to explaining the variation in forecast errors. For example, the income and wealth summary measure tends to matter for explaining unemployment rate forecast errors, but it matters less for the two other real activity measures, for which the interest or prices summary measures have relatively more explanatory power. From the tables, it is also apparent that once controlling for the summary measures, the estimate for the coefficient a_1 on the forecast often becomes significantly negative. This finding implies that forecasts do not efficiently incorporate the information from the Surveys of Consumers' summary measures.¹⁹ Therefore, a more efficient forecast will down-weight the Greenbook or the SPF forecast and will combine its predictions with the summary measures.

Figures 6 to 11 visually illustrate the benefit of using information from the Surveys of Consumers to adjust the Greenbook and SPF forecasts at the one-year horizon for the three activity variables that we consider. For the SPF forecasts, the sample runs through 2014:Q1, since the adjusted and unadjusted forecasts are not reliant upon the existence of the actual value (which for real consumption and GDP growth is the value prevailing nine quarters after the forecast is made). From these figures, it is apparent that the adjusted forecasts track the actual values better than the unadjusted forecasts do near turning points, which are notoriously hard to predict.

¹⁹ When one cannot reject the hypothesis that the coefficient a_1 is zero even after controlling for the summary measures, the implication is that the information in the summary measures, while explaining variation in the forecast error, is not significantly correlated with the forecast. This case, however, does not occur for the year-out forecasts, where the forecasts and the information in the summary measures exhibit correlation. In contrast, for the current-quarter forecasts, the correlation tends to be much less pronounced.

As discussed, for real consumption and GDP growth, we have chosen actual values in the forecast error regressions that, being two years removed from the third BEA release, allow for some revisions to the data. The issue then turns to what extent the information contained in the Surveys of Consumers' summary measures do improve professional forecasts—whether simply through an ability to predict data revisions or because the informational content goes beyond this predictability. It can be shown that the summary measures have some predictive power for data revisions—when the revisions are defined as the difference between the value that prevails two years after the third BEA release, and the third release. This is especially true for real consumption growth, whereas for real GDP growth the summary measures' predictive power is marginal.²⁰ We thus augment the previous forecast error regressions by controlling for the two-years-out revision to the third release, meaning $X_t^{REV} \equiv X_t - X_t^{RT}$, where we keep the previous notation for X_t as representing the actual value for variable X (either real consumption or GDP growth) that prevails at time t as measured and released by the BEA two years after the third release, X_t^{RT} . As already mentioned, this exercise is not necessary for the unemployment rate, which does not get revised.

Tables 10 and 11 report the estimation results for the forecast error regressions when controlling for X_t^{REV} . Overall, the findings are qualitatively similar to those shown in the previous tables. The summary measures from the Surveys of Consumers continue to have predictive power for forecast errors, with the signs of the estimated coefficients maintaining a sensible economic interpretation. While forecasters do not have the benefit of knowing future data revisions at the time they make their forecasts, the findings are consistent with the idea that the summary measures contain information useful for improving forecasts of real economic activity above and beyond their ability to predict revisions to the data being forecasted.

6. Conclusions

²⁰ These results are available from the authors upon request; this result also holds for the one- and three-years-out revisions of the third BEA release.

We have shown that the Reuters/Michigan Surveys of Consumers contain information about future aggregate consumption behavior that is not embedded in standard economic determinants of consumer spending. This information goes beyond the predictive power of consumer sentiment for consumption growth, which already has been widely documented in the literature. Considering information in the survey orthogonal to consumer sentiment provides additional explanatory power when forecasting aggregate real consumption growth, even when controlling for standard consumption fundamentals. The forecasting power from the survey still remains when considering a rule-of-thumb specification of consumption behavior or credit-dependent consumers.

While it is possible that we have not adequately captured the relevant measures of economic fundamentals—for example, in some exercises we control for a risk-free real interest rate which is only correlated with the relevant cost of credit faced by consumers—we have also shown that the information in the Surveys of Consumers helps to reduce errors in the Survey of Professional Forecasters and in the Greenbook forecasts of real consumption and other measures of real economic activity. Presumably, such forecasts control for a broader set of fundamentals than we have considered, and yet the reduction in the forecast errors that come from including the summary information from the Surveys can be noticeable. Still, the possibility of not including or mismeasuring a relevant fundamental cannot be ruled out entirely, as the forecasts are not always factoring in the relevant fundamentals in an efficient manner. For example, it has been shown that over much of the sample period we consider, the Survey of Professional Forecasters and the Greenbook forecasts were not efficiently incorporating information on economic activity related to credit availability as gauged by the Senior Loan Officer Opinion Survey (Barnes 2014).

It is often argued that deviations of consumer attitudes from fundamental determinants of consumption may reflect uncertainty surrounding the economic environment. Still, recasting the findings in terms of uncertainty as providing the “missing” fundamental is not straightforward, as already pointed out in the literature (Carroll, Fuhrer, and Wilcox 1994). If, for example, our summary measure for consumers’ current attitudes toward income and wealth is low due to an uncertain environment, consumption growth should be higher in the future as

this uncertainty dissipates. This situation would generate a negative relationship between future consumption growth and our summary measure, rather than the positive relationship found in the data.

While the explanation for why consumer attitudes help forecast consumption remains unclear, this study offers some understanding in terms of the type of consumer attitudes that provide the forecasting power. Consumer attitudes that broadly relate to income and wealth developments matter. These attitudes are also captured by the consumer sentiment index, and in this respect the forecasting power for consumption is, therefore, not too surprising. However, consumer attitudes regarding interest rates and credit availability, which over the period we consider provide information that is largely orthogonal to consumer sentiment, also have forecasting power. This is also the case for consumer attitudes towards prices, whose relevance for forecasting consumption while controlling for consumers' attitudes toward income and wealth could reflect the low short-run price elasticity of certain items, such as energy-related goods and services. Further distinguishing between attitudes towards present conditions and expectations about future conditions is a potential extension of this analysis.

The information from the Surveys that is summarized by our principal components is generally significant from a statistical standpoint, but its economic relevance is apparent only occasionally. With the inclusion of these summary measures, a sizable portion of the variation in consumption growth still remains unexplained even if the summary measures' explanatory power is noticeably larger than that of consumer sentiment. Yet a consideration of some of these measures appears to be of consequence in certain episodes. For example, our analysis of forecast errors in the previous section illustrates how efficiently incorporating the information from the Surveys could have appreciably lowered the forecast errors during the second half of the 1990s and during the Great Recession. Information from the Surveys could also prove useful at the current juncture. With the waning of the restraining effects of fiscal policy on households' income and a sizable appreciation in net worth, real consumption growth is expected to accelerate over the course of 2014. The extent of such acceleration, however, can be affected by credit conditions. In this respect, the Surveys of Consumers provide a somewhat more

pessimistic assessment of credit conditions than simple readings of the level of the real interest rate, which remains very low by historical standards.

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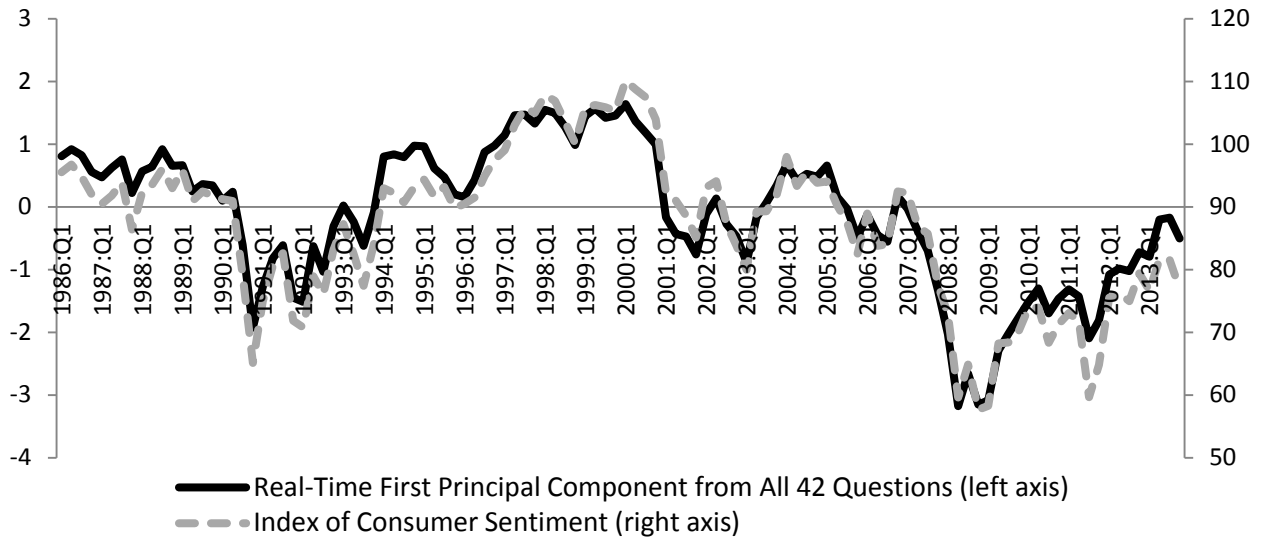
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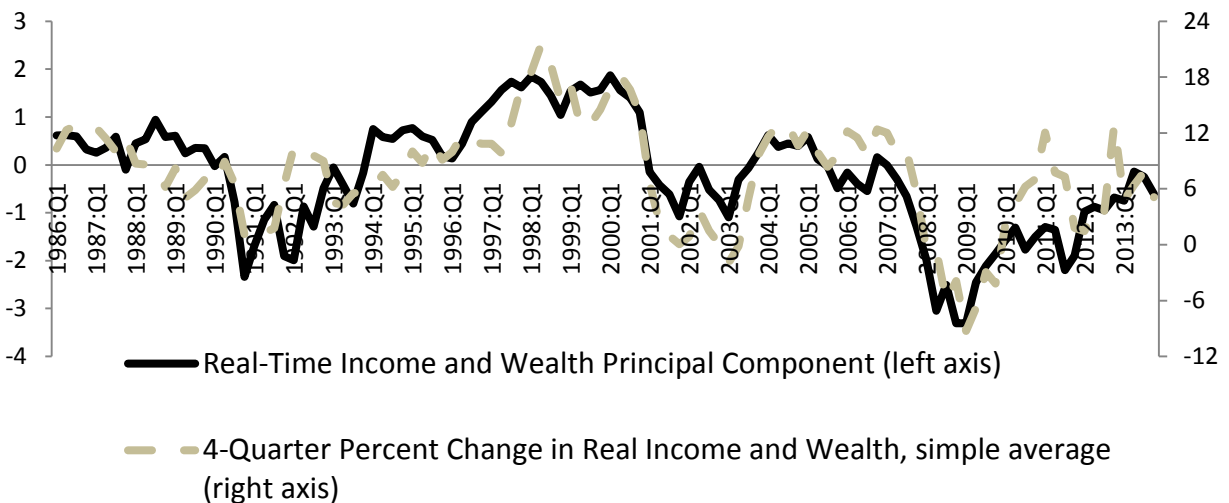
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Figure 1: The Real-Time First Principal Component from All 42 Questions and the Index of Consumer Sentiment



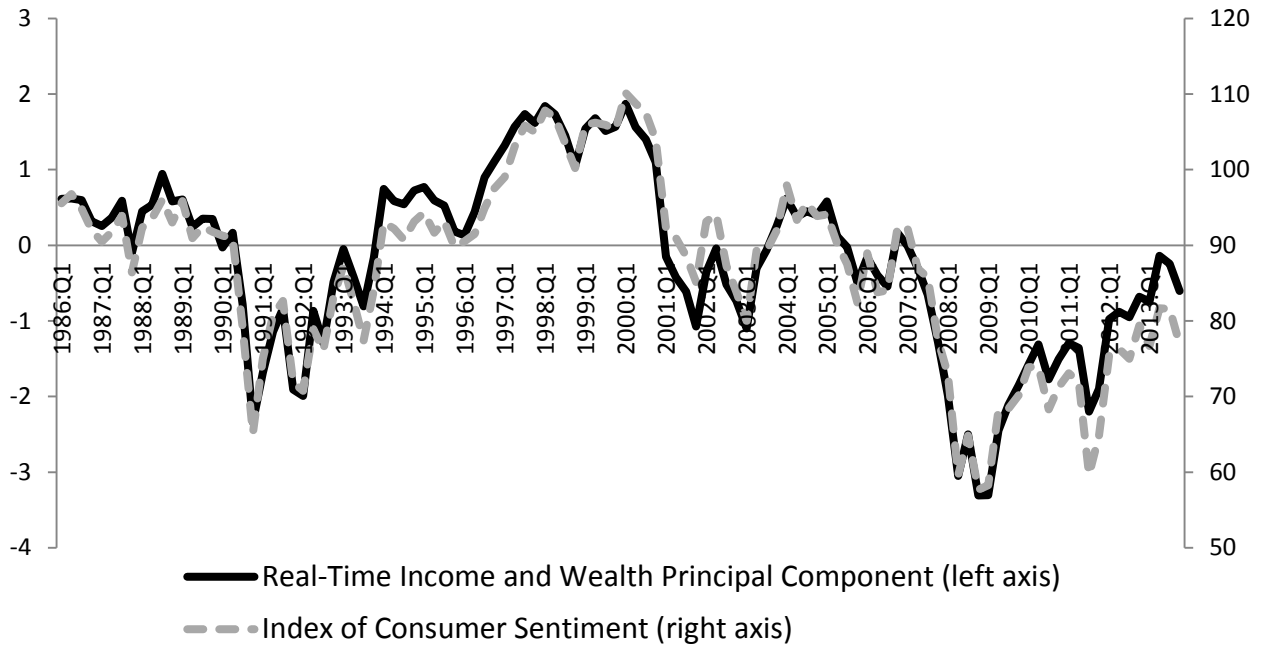
Sources: Thompson Reuters/University of Michigan Surveys of Consumers and authors' calculations.

Figure 2: The Real-Time Income and Wealth First Principal Component and the Four-Quarter Percent Change in Real Income and Wealth



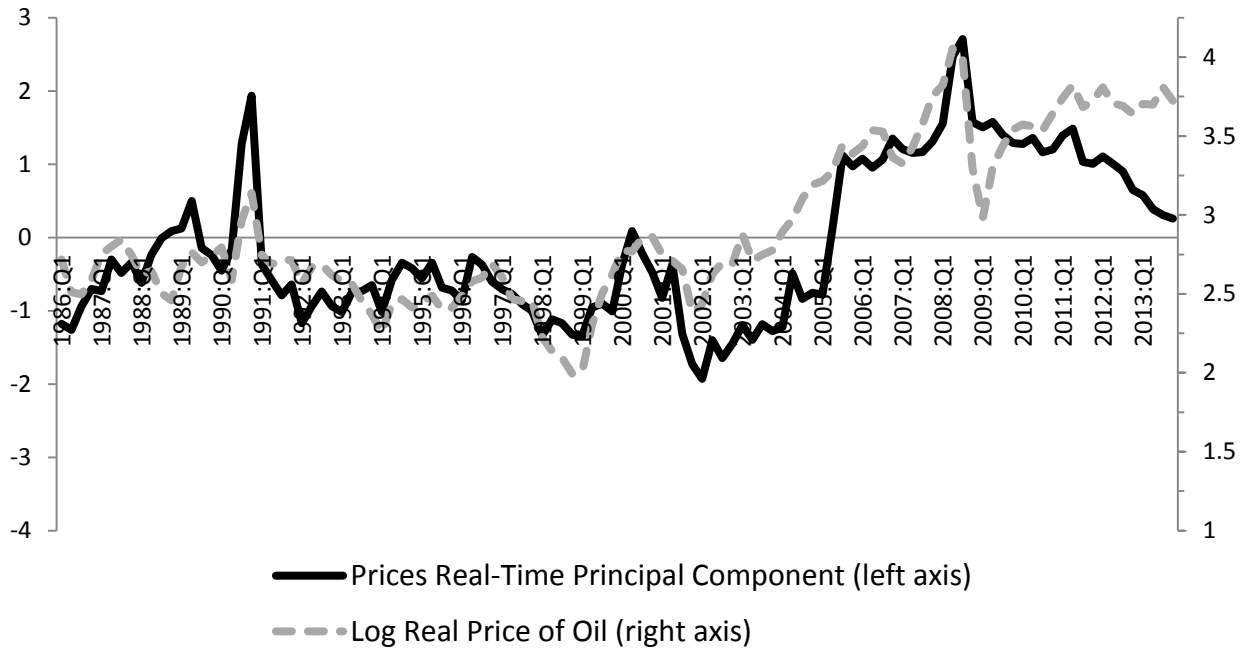
Sources: Thompson Reuters/University of Michigan Surveys of Consumers, Bureau of Economic Analysis, Flow of Funds and authors' calculations. The principal component is the first principal component.

Figure 3: The Real-Time Income and Wealth First Principal Component and the Index of Consumer Sentiment



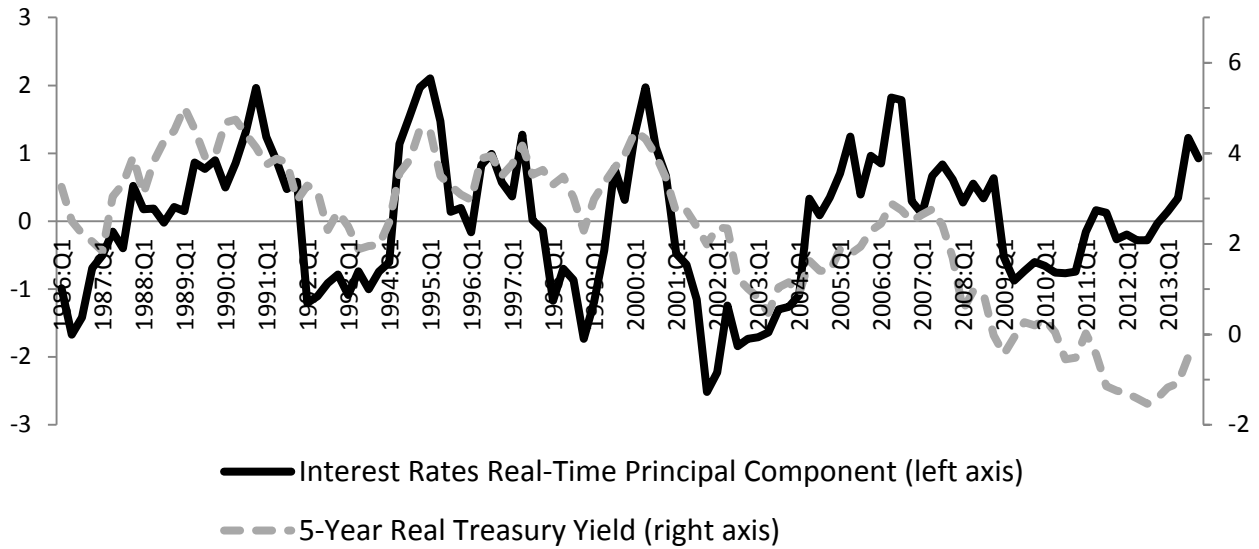
Sources: Thompson Reuters/University of Michigan Surveys of Consumers. The principal component is the first principal component.

Figure 4: The Real-Time Price First Principal Component and the Log Real Price of Oil



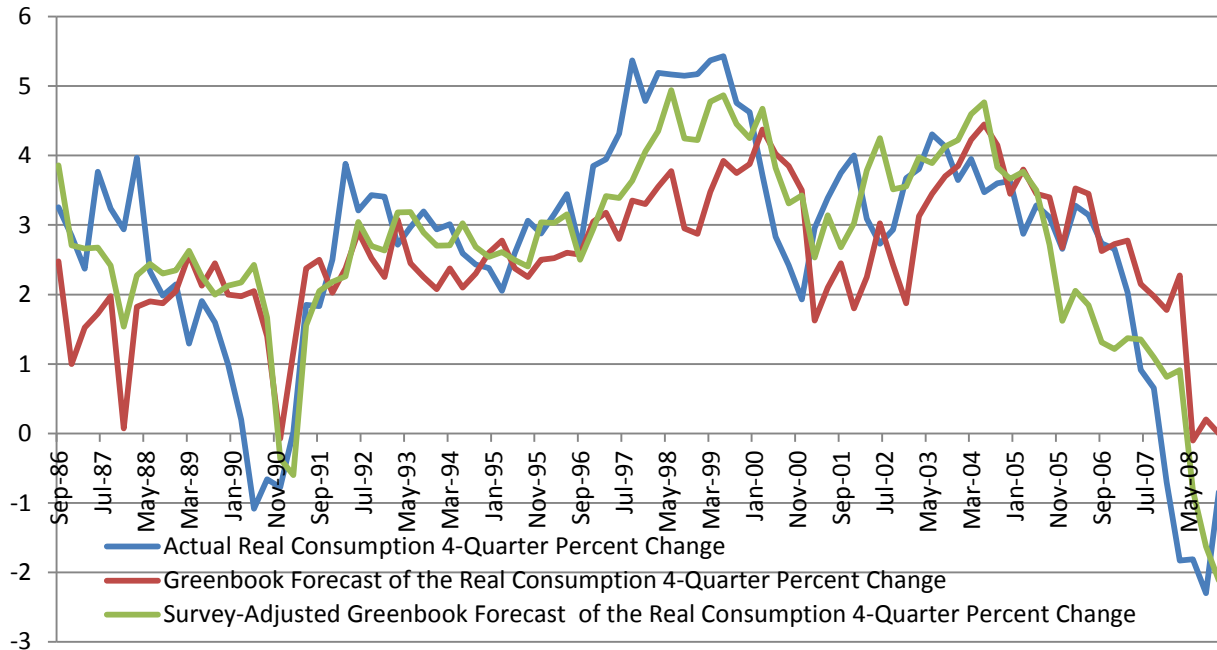
Sources: Thompson Reuters/University of Michigan Surveys of Consumers, Energy Information Administration, Bureau of Labor Statistics, and authors' calculations. The principal component is the first principal component.

Figure 5: The Real-Time Interest Rates First Principal Component and the Five-Year Real Treasury Yield



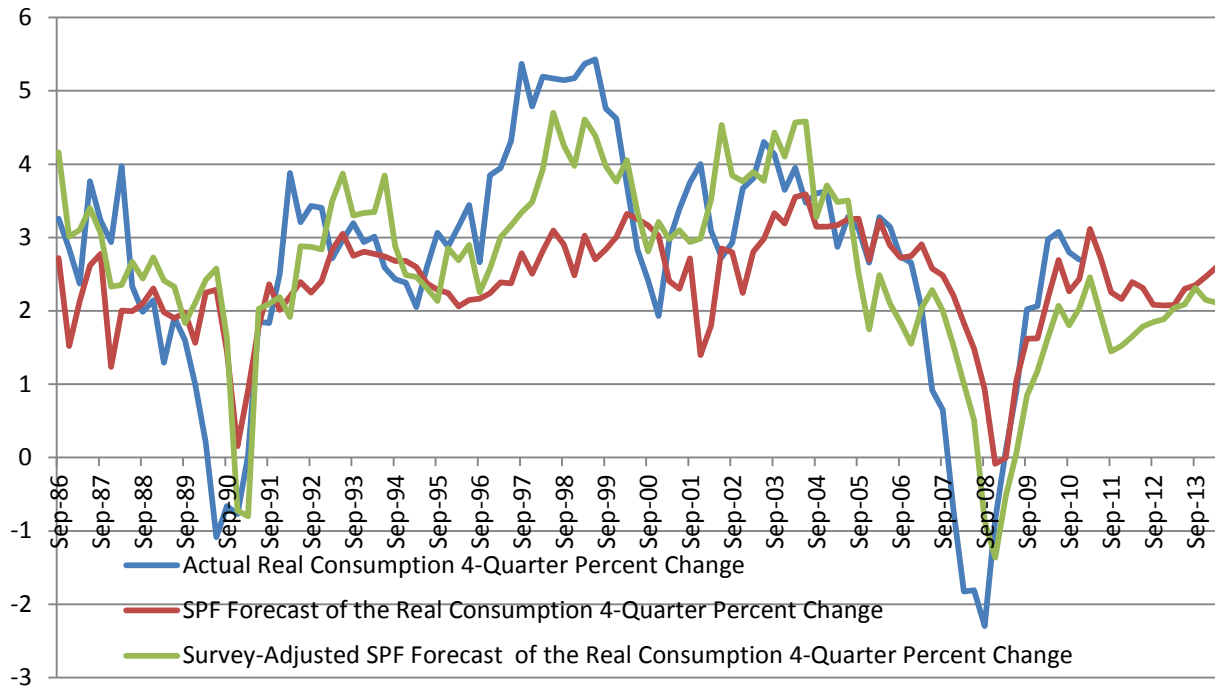
Sources: Thompson Reuters/University of Michigan Surveys of Consumers, Board of Governors of the Federal Reserve System, and authors' calculations. The principal component is the first principal component.

Figure 6: Year-Out Real Consumption Growth: Actual, Greenbook Forecast and Survey-Adjusted Greenbook Forecast, 1986: Q3–2008 Q4



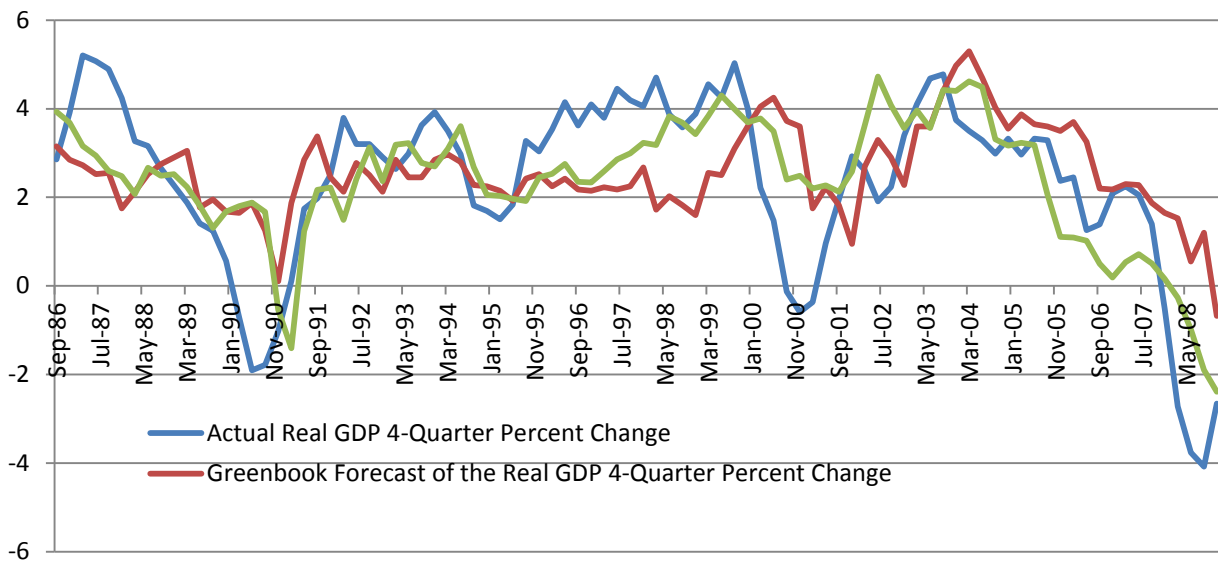
Sources: Board of Governors of the Federal Reserve System, Bureau of Economic Analysis and authors' calculations.

Figure 7: Year-Out Real Consumption Growth: Actual, SPF Forecast and Survey-Adjusted SPF Forecast. 1986: Q3–2014: Q1



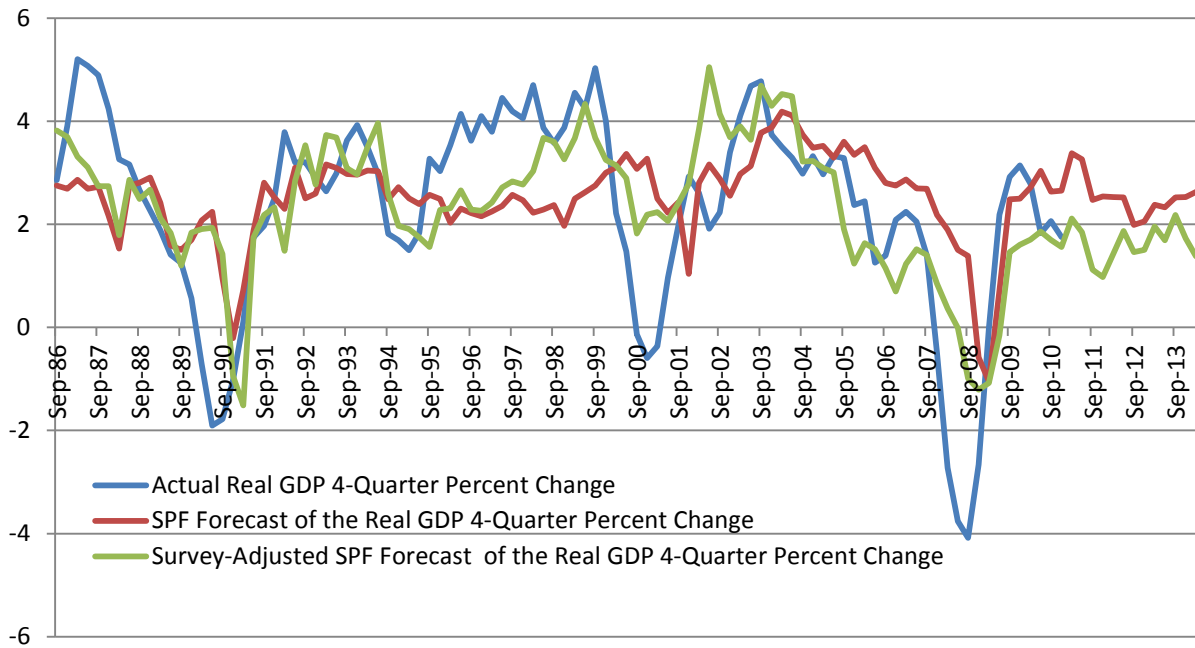
Sources: Survey of Professional Forecasters/Federal Reserve Bank of Philadelphia, Bureau of Economic Analysis and authors' calculations.

Figure 8: Year-Out Real GDP Growth: Actual, Greenbook Forecast and Survey-Adjusted SPF Forecast. Sample: 1986: Q3–2008:Q4



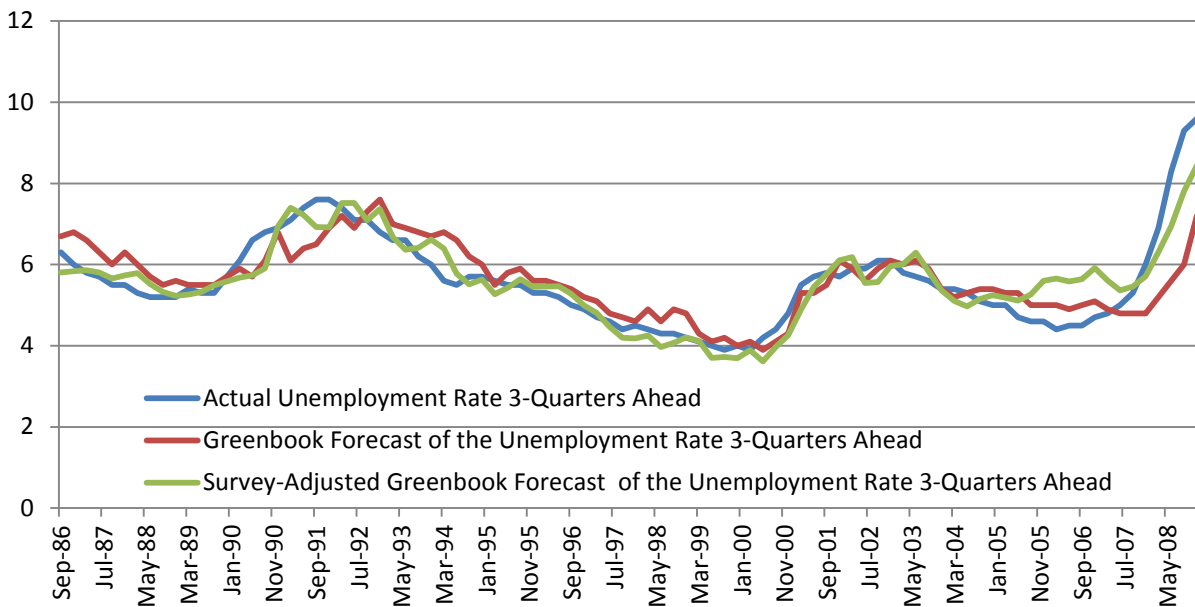
Sources: Board of Governors of the Federal Reserve System, Bureau of Economic Analysis and authors' calculations.

Figure 9: Year-Out GDP Growth: Actual, SPF Forecast and Survey-Adjusted SPF Forecast. 1986:Q3–2014: Q1



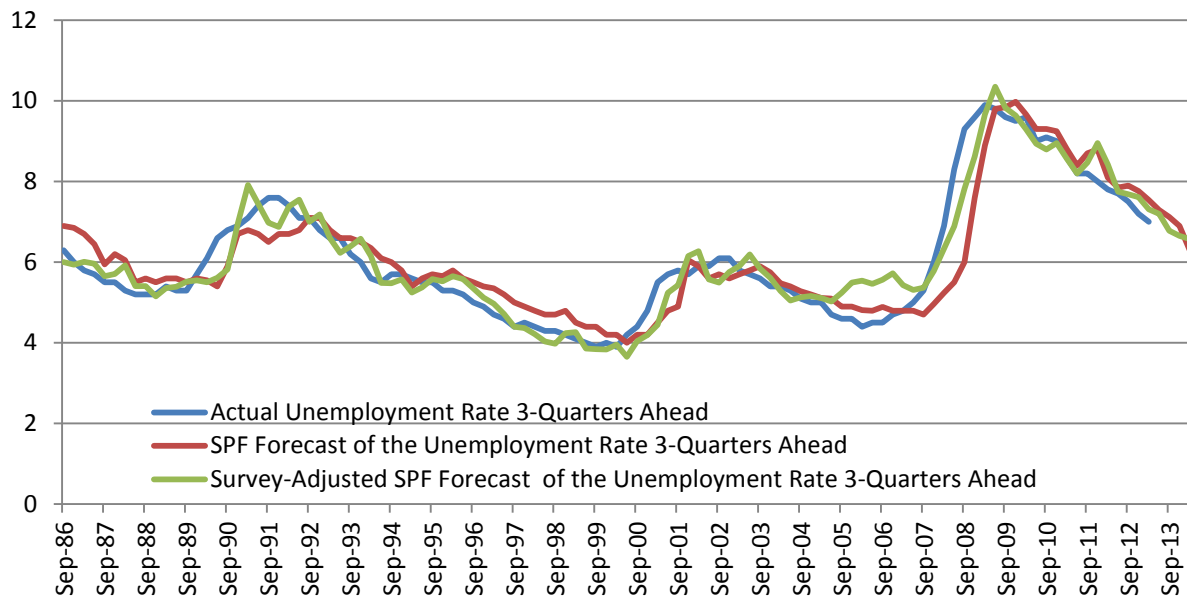
Sources: Survey of Professional Forecasters/Federal Reserve Bank of Philadelphia, Bureau of Economic Analysis and authors' calculations.

Figure 10: Year-Out Unemployment Rate: Actual, Greenbook Forecast and Survey-Adjusted SPF Forecast. Sample: 1986:Q3–2008:Q4



Sources: Board of Governors of the Federal Reserve System, Bureau of Labor Studies and authors' calculations.

Figure 11: Year-Out Unemployment Rate: Actual, SPF Forecast and Survey-Adjusted SPF Forecast. Sample: 1986 Q3–2014:Q1



Sources: Survey of Professional Forecasters/Federal Reserve Bank of Philadelphia, Bureau of Labor Studies and authors' calculations.

Table 1A: Consumption Growth Forecasts for 1987:Q1 to 2013:Q4 in Which the Dependent Variable is One- or Four-Quarter-Ahead Private Consumption Expenditures Growth

One-Quarter Private Consumption Expenditures Growth

	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.252	0.363	0.371
[P-value]	[0.000]	[0.000]	[0.188]

Four-Quarter Private Consumption Expenditures Growth

	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.291	0.458	0.499
[P-value]	[0.000]	[0.000]	[0.005]

Note: Consumer sentiment is the University of Michigan's Consumer Sentiment Index. The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the sentiment variables are jointly zero for the first and last columns, and that the summary measure variables are jointly zero in the second column.

Table 1B: Consumption Growth Forecasts for 1987:Q1 to 2007:Q4 in Which the Dependent Variable is One- or Four-Quarter-Ahead Private Consumption Expenditures Growth

One-Quarter Private Consumption Expenditures Growth

	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.106	0.202	0.211
[P-value]	[0.002]	[0.000]	[0.231]

Four-Quarter Private Consumption Expenditures Growth

	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.130	0.291	0.373
[P-value]	[0.001]	[0.000]	[0.002]

Note: Consumer sentiment is the University of Michigan's Consumer Sentiment Index. The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the sentiment variables are jointly zero for the first and last columns, and that the summary measure variables are jointly zero in the second column.

Table 2: Consumption Growth Forecasts for 1987:Q1 to 2013:Q4 in Which the Dependent Variable is the One-Quarter-Ahead Growth Rate for Different Categories of Consumption

	DURABLE GOODS CONSUMPTION		
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.029	0.112	0.107
[P-value]	[0.072]	[0.002]	[0.498]
	NONDURABLE GOODS CONSUMPTION		
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.091	0.157	0.187
[P-value]	[0.002]	[0.000]	[0.052]
	SERVICES CONSUMPTION		
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.359	0.392	0.391
[P-value]	[0.000]	[0.000]	[0.421]

Note: Consumer sentiment is the University of Michigan's Consumer Sentiment Index. The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the sentiment variables are jointly zero for the first and last columns, and that the summary measure variables are jointly zero in the second column.

Table 3: Consumption Growth Forecasts for 1987:Q1 to 2013:Q4 in Which the Dependent Variable is the Four-Quarter-Ahead Growth Rate for Different Categories of Consumption

DURABLE GOODS CONSUMPTION			
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.078	0.223	0.266
[P-value]	[0.004]	[0.000]	[0.019]
NONDURABLE GOODS CONSUMPTION			
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.177	0.364	0.412
[P-value]	[0.000]	[0.000]	[0.006]
SERVICES CONSUMPTION			
	Consumer Sentiment	Summary Components	Summary Components and Consumer Sentiment
Adjusted R^2	0.373	0.471	0.488
[P-value]	[0.000]	[0.000]	[0.066]

Note: Consumer sentiment is the University of Michigan's Consumer Sentiment Index. The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the sentiment variables are jointly zero for the first and last columns, and that the summary measure variables are jointly zero in the second column.

Table 4: Consumption Growth Forecasts for 1987:Q1 to 2013:Q4 in Which the Dependent Variable is One- or Four-Quarter-Ahead Private Consumption Expenditures Growth

One-Quarter Private Consumption Expenditures Growth

	Fundamentals	Consumer Sentiment and Fundamentals	Summary Components and Fundamentals
Adjusted R^2	0.368	0.383	0.438
[P-value]	[0.000]	[0.115]	[0.005]

Four-Quarter Private Consumption Expenditures Growth

	Fundamentals	Consumer Sentiment and Fundamentals	Summary Components and Fundamentals
Adjusted R^2	0.448	0.441	0.525
[P-value]	[0.000]	[0.676]	[0.001]

Note: Consumer sentiment is the University of Michigan's Consumer Sentiment Index. The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the fundamentals variables are jointly zero for the first column, that the sentiment variables are jointly zero for the second column, and that the summary measure variables are jointly zero in the last column.

Table 5: Forecasting Regressions of Consumption Fundamentals With and Without Summary Measures

	Labor Income	Household Stock Market Wealth	Household Property Wealth Ex Stock Market Wealth	Credit Conditions
Adj. R ² Without Summary Measures	0.026	-0.016	0.594	0.654
Adj. R ² With Summary Measures [P-Value]	0.097 [0.020]	-0.053 [0.935]	0.592 [0.482]	0.715 [0.000]
<i>Note:</i> The three summary components from the Surveys of Consumers are the income and wealth component, the price component, and the interest rate component. The p-value is for the Wald test that the summary components variables are jointly zero.				

Table 6: Campbell-Mankiw Model With and Without Lags of the Summary Components from the Surveys of Consumers for 1987:Q1 to 2013:Q4 and Where the Dependent Variable is ΔC_t

Augmented Campbell-Mankiw Regressions					
<i>Regressors</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
FWILL	0.09 [.000]	0.07 [.000]	0.07 [.000]	0.06 [.000]	
ΔY_t	0.14 [.228]	0.31 [.002]	0.32 [.009]	0.28 [.006]	
ΔY_{t-1}		0.19 [.001]	0.19 [.002]	0.21 [.001]	
ΔC_{t-1}			-0.02 [.933]		
PY₋₁				-0.08 [.828]	0.59 [.138]
PY₋₂				0.34 [.342]	-0.02 [.963]
PR_{t-1}				0.35 [.551]	0.92 [.160]
PR_{t-2}				-1.33 [.029]	-1.76 [.006]
ΔPP_{t-1}				-0.93 [.018]	-1.23 [.005]
Constant	-0.62 [.002]	-0.47 [.005]	-0.48 [.021]	-1.03 [.000]	-0.43 [.244]
ϑ	0.03 [.801]	0.17 [.080]	0.16 [.439]	0.25 [.048]	-0.15 [.159]
LogLikelihood	-208.92	-203.82	-203.82	-197.03	-212.48
$\Sigma \Delta Y$		0.50 [.000]	0.51 [.002]	0.48 [.001]	
ΣPY				0.26 [.022]	0.57 [.001]
ΣPR				-0.98 [.001]	-0.84 [.044]

P-values in brackets. MA(1) error term explicitly estimated. Two-stage IV estimation. Instruments include a constant and three lags each of ΔC , ΔY , RRATE, FWILL, RP and ΔP .

Table 7: Forecast Error Regressions for Real Consumption Growth

Dependent Variables: Year-Out and Current-Quarter Real Consumption Growth Forecast Errors*												
Indep. Variable	Year-Out**						Current-Quarter ***					
	GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2010: Q4		GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2011: Q3	
Constant	-0.06 [.938]	0.56 [.365]	-0.89 [.286]	0.51 [.472]	-0.68 [.305]	0.25 [.690]	0.93 [.005]	0.33 [.443]	0.23 [.501]	-0.07 [.879]	0.27 [.361]	-0.18 [.646]
Forecast	0.09 [.724]	-0.41 [.044]	0.48 [.103]	-0.34 [.210]	0.41 [.087]	-0.27 [.201]	-0.24 [.033]	-0.38 [.001]	0.12 [.363]	-0.11 [.462]	0.08 [.467]	-0.09 [.498]
$\Sigma PY(-1,-2)$		0.35 [.021]		0.39 [.027]		0.33 [.083]		0.34 [.093]		0.28 [.164]		0.27 [.142]
$\Sigma PR(-1,-2)$		-0.45 [.189]		-0.32 [.385]		-0.79 [.031]		-0.91 [.036]		-0.82 [.052]		-1.05 [.004]
$\Sigma PP(-1,-2)$		-0.71 [.015]		-0.78 [.013]		-0.39 [.176]		-0.62 [.026]		-0.44 [.107]		-0.26 [.228]
Adjusted R ²	-0.01	0.38	0.04	0.42	0.04	0.32	0.04	0.37	0.00	0.24	0.00	0.26
Nobs	90	90	90	90	98	98	90	90	90	90	101	101

* P-values in brackets []. ** Errors corrected for MA(3). *** OLS estimation.

Table 8: Forecast Error Regressions for Real GDP Growth

Dependent Variables: Year-Out and Current-Quarter Real GDP Growth Forecast Errors*												
Indep. Variable	Year-Out**						Current-Quarter***					
	GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2010: Q4		GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2011: Q3	
Constant	-0.01	0.70	-0.76	0.37	-0.32	0.41	0.29	-0.02	-0.05	-0.29	0.07	-0.33
	[.992]	[.373]	[.472]	[.646]	[.701]	[.561]	[.442]	[.973]	[.904]	[.562]	[.831]	[.458]
Forecast	-0.06	-0.66	0.23	-0.53	0.07	-0.57	-0.07	-0.26	0.10	-0.13	0.03	-0.11
	[.861]	[.009]	[.499]	[.049]	[.791]	[.009]	[.634]	[.086]	[.526]	[.448]	[.828]	[.444]
Σ PY(-1,-2)		0.34		0.32		0.20		0.34		0.32		0.24
		[.141]		[.158]		[.323]		[.173]		[.193]		[.302]
Σ PR(-1,-2)		-0.60		-0.56		-0.97		-0.76		-0.79		-0.88
		[.236]		[.248]		[.014]		[.151]		[.131]		[.057]
Σ PP(-1,-2)		-0.90		-0.90		-0.56		-0.49		-0.41		-0.32
		[.018]		[.013]		[.046]		[.156]		[.222]		[.237]
Adjusted R ²	-0.01	0.34	0.01	0.33	-0.01	0.26	-0.01	0.23	-0.01	0.22	-0.01	0.20
Observations	90	90	90	90	98	98	90	90	90	90	101	101

* P-values in brackets []. ** Errors corrected for MA(3). *** OLS estimation.

Table 9: Forecast Error Regressions for the Unemployment Rate

Dependent Variables: Year-Out and Current-Quarter Unemployment Rate Forecast Errors.*												
Indep. Variable	Year-Out**						Current-Quarter***					
	GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2010: Q4		GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2011: Q3	
Constant	0.00	2.47	-0.29	2.40	0.02	2.34	-0.10	0.15	-0.11	0.19	-0.04	0.23
	[.997]	[.001]	[.710]	[.005]	[.965]	[.003]	[.352]	[.403]	[.196]	[.119]	[.558]	[.004]
Forecast	-0.01	-0.41	0.05	-0.39	0.00	-0.38	0.01	-0.02	0.02	-0.03	0.00	-0.03
	[.962]	[.001]	[.705]	[.004]	[.991]	[.003]	[.691]	[.475]	[.308]	[.223]	[.840]	[.023]
$\Sigma PY(-1,-2)$		-0.55		-0.58		-0.56		-0.07		-0.09		-0.10
		[.000]		[.000]		[.000]		[.050]		[.000]		[.000]
$\Sigma PR(-1,-2)$		0.12		0.19		0.15		0.13		0.10		0.10
		[.492]		[.273]		[.272]		[.009]		[.002]		[.004]
$\Sigma PP(-1,-2)$		0.12		0.05		0.08		-0.05		-0.04		-0.03
		[.489]		[.744]		[.570]		[.154]		[.125]		[.091]
Adjusted R ²	-0.01	0.48	-0.01	0.49	-0.01	0.49	-0.01	0.06	0.00	0.30	-0.01	0.30
Observations	90	90	90	90	98	98	90	90	90	90	101	101

* P-values in brackets []. ** Errors corrected for MA(3). *** OLS Estimation.

Table 10: Forecast Error Regressions for Real Consumption Growth Controlling for Data Revisions

Dependent Variables: Year-Out and Current-Quarter Real Consumption Growth Forecast Errors.*												
Control : Eight Quarter Data Revision of Real Consumption Growth (RCON_REV2).												
	Year-Out**						Current-Quarter***					
Indep. Variable	GB Forecast Error		SPF Forecast Error		SPF Forecast Error		GB Forecast Error		SPF Forecast Error		SPF Forecast Error	
	1986: Q3-2008: Q4		1986: Q3-2008: Q4		1986: Q3 - 2010: Q4		1986: Q3-2008: Q4		1986: Q3-2008: Q4		1986: Q3 - 2011: Q3	
Constant	-0.16	0.49	-1.01	0.38	-0.62	0.19	0.83	0.32	0.16	-0.09	0.28	-0.17
	[.813]	[.416]	[.194]	[.568]	[.320]	[.741]	[.011]	[.464]	[.629]	[.842]	[.341]	[.666]
Forecast	0.15	-0.33	0.55	-0.23	0.40	-0.20	-0.18	-0.36	0.16	-0.07	0.09	-0.07
	[.520]	[.094]	[.057]	[.367]	[.081]	[.311]	[.114]	[.003]	[.206]	[.642]	[.410]	[.609]
RCON_REV2	0.47	0.26	0.44	0.24	0.39	0.19	0.40	0.12	0.33	0.12	0.26	0.10
	[.003]	[.023]	[.002]	[.027]	[.002]	[.067]	[.026]	[.463]	[.041]	[.433]	[.085]	[.475]
$\Sigma PY (-1,-2)$		0.34		0.38		0.31		0.33		0.26		0.26
		[.018]		[.030]		[.097]		[.110]		[.191]		[.166]
$\Sigma PR(-1,-2)$		-0.34		-0.21		-0.70		-0.87		-0.77		1.00
		[.317]		[.585]		[.063]		[.047]		[.072]		[.007]
$\Sigma PP(-1,-2)$		-0.66		-0.74		-0.35		-0.61		-0.42		-0.25
		[.013]		[.011]		[.197]		[.030]		[.128]		[.245]
Adjusted R ²	0.13	0.42	0.15	0.44	0.12	0.34	0.08	0.36	0.03	0.24	0.02	0.25
Nobs	90	90	90	90	98	98	90	90	90	90	101	101

* P-values in brackets []. ** Errors corrected for MA(3). *** OLS estimation.

Table 11: Forecast Error Regressions for Real GDP Growth Controlling for Data Revisions

Dependent Variables: Year-Out and Current-Quarter Real GDP Growth Forecast Errors*												
Control: Eight Quarter Data Revision of Real GDP Growth (ROUTPT_REV2)												
Indep. Variable	Year-Out**						Current-Quarter***					
	GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3 to 2010: Q4		GB Forecast Error 1986: Q3 to 2008: Q4		SPF Forecast Error 1986: Q3to 2008: Q4		SPF Forecast Error 1986: Q3 to 2011: Q3	
Constant	0.46 [.587]	0.93 [.159]	-0.15 [.852]	0.67 [.315]	0.09 [.883]	0.66 [.254]	0.66 [.057]	0.28 [.544]	0.30 [.393]	-0.04 [.931]	0.31 [.295]	-0.10 [.808]
Forecast	-0.16 [.575]	-0.65 [.002]	0.08 [.772]	-0.55 [.014]	-0.02 [.940]	-0.57 [.001]	-0.11 [.359]	-0.26 [.065]	0.06 [.650]	-0.10 [.526]	0.03 [.802]	-0.07 [.568]
ROUTPT_REV2	0.69 [.000]	0.55 [.000]	0.66 [.000]	0.54 [.000]	0.64 [.000]	0.51 [.000]	0.80 [.000]	0.66 [.000]	0.83 [.000]	0.69 [.000]	0.79 [.000]	0.66 [.000]
$\Sigma PY(-1,-2)$		0.36 [.049]		0.34 [.056]		0.23 [.179]		0.36 [.108]		0.33 [.129]		0.25 [.231]
$\Sigma PR(-1,-2)$		-0.51 [.248]		-0.48 [.257]		-0.88 [.018]		-0.65 [.178]		-0.67 [.152]		-0.74 [.079]
$\Sigma PP(-1,-2)$		-0.81 [.012]		-0.83 [.008]		-0.50 [.042]		-0.38 [.225]		-0.30 [.334]		-0.25 [.321]
Adjusted R ²	0.19	0.45	0.19	0.44	0.17	0.36	0.21	0.35	0.24	0.37	0.22	0.34
Observations	90	90	90	90	98	98	90	90	90	90	101	101

* P-values in brackets []. ** Errors corrected for MA(3). *** OLS estimation.

Appendix

Here we provide the list of variables from the Michigan Surveys of Consumers used in the analysis. The survey data can be found at <http://www.sca.isr.umich.edu>. We use the Surveys' mnemonics, which can be found in the Surveys of Consumers Time Series Codebook at <http://www.sca.isr.umich.edu/subset/codebook.php>. The series used in the analysis are grouped into three categories, which are used to construct the three principal components described in the main text.

- PAGORN_NY *"We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better or worse off financially than you were a year ago? Why do you say so?"* HIGHER INCOME - LOWER INCOME
- PTRD_R *"Annual Trend in Past and Expected Household Financial Situation"* BETTER - WORSE
- NEWSRN_NE *"During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?"* FAVORABLE NEWS: EMPLOYMENT - UNFAVORABLE NEWS: UNEMPLOYMENT
- BAGO_R *"Would you say that at the present time business conditions are better or worse than they were a year ago?"* BETTER - WORSE
- BTRD_R *"Trend in Past and Expected Changes in Business Conditions"* BETTER - WORSE
- DURRN_NT *"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 a bad time for people to buy major household items? Why would you say so?"* GOOD TIME TO BUY: TIMES ARE GOOD; PROSPERITY - BAD TIME TO BUY: TIMES ARE BAD; CAN'T AFFORD TO BUY - BAD TIME TO BUY: BAD TIMES AHEAD; UNCERTAIN FUTURE
- HOMRN_NT *"Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?"* GOOD TIME TO BUY: TIMES ARE GOOD; PROSPERITY - BAD TIME TO BUY: TIMES ARE BAD; CAN'T AFFORD TO BUY - BAD TIME TO BUY: BAD TIMES AHEAD; UNCERTAIN FUTURE
- VEHRN_GT *"Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?"* GOOD TIME TO BUY: TIMES ARE GOOD; PROSPERITY
- VEHRN_TB *"Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle?"*

Why do you say so?" BAD TIME TO BUY: TIMES ARE BAD; CAN'T AFFORD TO BUY

VEHRN_FB *"Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?"* BAD TIME TO BUY: BAD TIMES AHEAD, UNCERTAIN FUTURE

NEWSRN_F_DEM *"During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?"* FAVORABLE NEWS: HIGHER CONSUMER DEMAND

NEWSRN_U_DEM *"During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?"* UNFAVORABLE NEWS: LOWER CONSUMER DEMAND

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

INEX_R *"During the next 12 months, do you expect your (family) income to be higher or lower than during the past year?"* RELATIVE SCORE

RINC_R *"During the next year or two, do you expect that your (family) income will go up more than prices will go up, about the same, or less than prices will go up?"* MORE - LESS

BEXP_R *"And how about a year from now, do you expect that in the country as a whole business conditions will be better, or worse than they are at present, or just about the same?"* BETTER - WORSE

BUS12_R *"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?"* GOOD - BAD

BUS5_R *"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 5 years or so, or that we will have periods of widespread unemployment or depression, or what?"* GOOD - BAD

UMEX_R *"How about people out of work during the coming 12 months -- do you think that there will be more unemployment than now, about the same, or less?"* LESS - MORE

PAGORN_NAD *"We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better or worse off financially than you were a year ago? Why do you say so?"* HIGHER ASSETS + LOWER DEBTS - LOWER ASSETS - HIGHER DEBTS

NEWSRN_F_STK *“During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?”* FAVORABLE NEWS: STOCK MARKET

NEWSRN_U_STK *“During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?”* UNFAVORABLE NEWS: STOCK MARKET

HOMRN_NP *“Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?”* GOOD TIME TO BUY: PRICES ARE LOW; GOOD BUYS AVAILABLE - BAD TIME TO BUY: PRICES HIGH

HOMRN_NI *“Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?”* GOOD TIME TO BUY: GOOD INVESTMENT - BAD TIME TO BUY: BAD INVESTMENT

HOMRN_BIAP *“Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?”* GOOD TIME TO BUY: PRICES WON’T COME DOWN; ARE GOING HIGHER

PAGORN_HP *“We are interested in how people are getting along financially these days. Would you say that you (and your family living there) are better or worse off financially than you were a year ago? Why do you say so?”* HIGHER PRICES

NEWSRN_NP *“During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?”* FAVORABLE NEWS: LOWER PRICES - UNFAVORABLE NEWS: HIGHER PRICES

DURRN_NP *“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 a bad time for people to buy major household items? Why would you say so?”* GOOD TIME TO BUY: PRICES ARE LOW; GOOD BUYS AVAILABLE - BAD TIME TO BUY: PRICES ARE HIGH

VEHRN_NP *“Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?”* GOOD TIME TO BUY: PRICES ARE LOW; GOOD BUYS AVAILABLE - BAD TIME TO BUY: PRICES ARE HIGH

PX1_MED *“During the next 12 months, do you think that prices in general will go up, or go down, or stay where they are now? By what percent do you expect prices to go up, on the average, during the next 12 months?”* MEDIAN

DURRN_BIAP *“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 a bad time for people to buy major household items? Why would you say so?”* GOOD TIME TO BUY: PRICES WON'T COME DOWN; ARE GOING HIGHER

VEHRN_BIAP *“Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?”* GOOD TIME TO BUY: PRICES WON'T COME DOWN; ARE GOING HIGHER

VEHRN_GAS *“Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?”* BAD TIME TO BUY: PRICE OF GAS

NEWSRN_F_CRED *“During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?”* FAVORABLE NEWS: EASIER CREDIT

NEWSRN_U_CRED *“During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear?”* UNFAVORABLE NEWS: TIGHTER CREDIT

DURRN_NR *“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 a bad time for people to buy major household items? Why would you say so?”* GOOD TIME TO BUY: INTEREST RATES ARE LOW - BAD TIME TO BUY: INTEREST RATES ARE HIGH; CREDIT IS TIGHT

VEHRN_NR *“Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?”* GOOD TIME TO BUY: INTEREST RATES ARE LOW - BAD TIME TO BUY: INTEREST RATES ARE HIGH; CREDIT IS TIGHT

HOMRN_NR *“Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?”* GOOD TIME TO BUY: INTEREST RATES ARE LOW - BAD TIME TO BUY: INTEREST RATES ARE HIGH; CREDIT IS TIGHT

RATEX_R *“No one can say for sure, but what do you think will happen to interest rates for borrowing money during the next 12 months -- will they go up, stay the same, or go down?”* DOWN - UP

DURRN_BIAR *“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 a*

bad time for people to buy major household items? Why would you say so?" GOOD TIME TO BUY: BORROW IN ADVANCE OF RISING INTEREST RATES

VEHRN_BIAR *"Speaking now of the automobile market -- do you think the next 12 months or so will be a good time or a bad time to buy a vehicle, such as a car, pickup, van, or sport utility vehicle? Why do you say so?"* GOOD TIME TO BUY: BORROW IN ADVANCE OF RISING INTEREST RATES

HOMRN_BIAR *"Generally speaking, do you think now is a good time or a bad time to buy a house? Why do you say so?"* GOOD TIME TO BUY: BORROW IN ADVANCE OF RISING INTEREST RATES

