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Consumer sentiment and macroeconomic forecasts

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Abstract

Business cycle analysts traditionally interpret consumer sentiment data as containing information about current and future consumer behaviour. One important attraction of these survey data is that they are readily available on a monthly basis. The evidence is mixed as to whether the information content of consumer sentiment can be captured by economic and financial variables such as interest rates, unemployment, stock market indices, etc. It is striking that often reference is made to variables capturing expectations and to the uncertainty surrounding these expectations, but that this is based on ad hoc interpretations of significant coefficients of variables as unemployment or inflation. We propose a more direct measure of expected economic conditions and uncertainty. More precisely, the average or consensus growth rate and the dispersion of forecasts (standard deviation or difference between maximum and minimum forecast) are tested in regressions for the sentiment of Belgian consumers. Both variables improve the quality of the regression dramatically.

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1. Introduction

The relationship between macroeconomic variables is more complicated than textbooks pretend. For example, consumption expenditures by households have

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regularly evolved in directions and magnitude that surprised observers who based their forecasts on variables such as income, wealth, interest rates, etc. The example of the 1990–1991 recession is typical: business cycle analysts referred to the drop in consumer sentiment to ‘explain’ the collapse of consumption expenditures. Why consumer sentiment itself declined, was not really clarified. This experience renewed the interest of business cycle analysts in consumer sentiment data as a leading indicator of consumer expenditures. Consumer sentiment is meticulously watched during recessions since any significant change or lack thereof, is considered a very valuable sign of a nearby turning point or prolongation of the trough.

Admittedly, no unanimity exists as to the contribution of consumer sentiment to the reduction of the forecast errors of consumption expenditures. However, some consensus emerges from the literature that the variable could play some role in the explanation of consumption expenditures notwithstanding the fact that consumer sentiment does not belong to the variables that are considered in theoretical macroeconomic consumption models. Its role in the analysis of consumption expenditures is thus more or less ad hoc. Curiously enough, consumer sentiment itself is not well understood; its information content is to some degree a mystery. Some researchers do refer to unobserved variables as expected income or uncertainty. Understandably, other researchers are hesitant to use consumer sentiment to predict consumption expenditures. They fear that consumer sentiment is a synonym for ‘black box’ or even ‘unknown’. As a result, no gain would be made in understanding consumption expenditures. Indeed, explaining unexpected shifts in consumers expenditures by a consumer sentiment variable that is itself not well understood, could not really be described as an important progress in applied economic research. Furthermore, the link between consumer sentiment and consumption expenditures would be unstable, or, at least, limited to situations characterized by important changes in the sentiment index.

In this article we test Belgian consumer sentiment for two variables that have frequently been advanced as being key determinants of consumer sentiment, namely expected income and uncertainty surrounding this income. We quantify these variables by the average (consensus) of the forecasted growth rate in real GDP and by the dispersion in the growth forecasts. An important benefit of our approach is that the proposed variables are available or can be constructed relative easily.

We start with a discussion of the relationship between consumer sentiment and consumption. In Section 3, we discuss the data and the specification of the regression. The regression results are reported in Section 4. Section 5 concludes.

2. Consumer sentiment and consumption

2.1. The information content of consumer sentiment

Consumer expenditures are by far the most important single item of aggregate demand. Although private consumption belongs to the more stable macroeconomic variables, unexpected shifts do occur. This leads to important forecast errors in eco-

nomic growth. Business cycle analysts thus look for improvements in the quality of their consumption forecasts. One could make use of better forecasting techniques. Alternatively, forecasters can broaden the scope of variables used in their forecasting exercise by including consumer sentiment. This variable is based on survey results on questions that, in general, relate to the present and expected financial situation of households, to the present and expected general economic situation and to the advisability of making major purchases. For each question, ‘balances of opinion’ are calculated as the weighted average of answers. Consumer sentiment is the arithmetic average of these ‘balances of opinion’. We refer to Vanden Abeele (1983), Praet and Vuchelen (1984a) and Van Raaij and Gianotten (1990) for more details.

Many authors have incorporated relatively successfully consumer sentiment in a consumption function (see Katona (1975), Côté & Johnson (1998) and Eppright, Arguea, & Huth (1998), among others, for a summary). Many other authors are, however, quite critical about the usefulness of consumer sentiment to explain consumption expenditures. They argue that the explanatory power of consumer sentiment is limited once traditional economic variables are introduced (see Hymans, 1970; Acemoglu & Scott, 1994; Carroll, Fuhrer, & Wilcox, 1994; Santero & Westerlund, 1996; Fan & Wong, 1998), that the variable is only useful in exceptional instances (Garner, 1981, 1991) or that it helps only to predict a few consumption items as sales of new car and new single-family homes (Kamakura & Gessner, 1986).

The previous mixed results reflect two views on the information contents of consumer sentiment. In a first view, consumer sentiment is assumed to reflect nothing else but the answers to the survey questions. The index would then capture the opinion consumers hold on their own and on general current and future economic conditions. One can then hypothesize on the few economic and financial variables that could explain the sentiment of consumers.

A second view, pioneered by Katona (1951, 1975), holds that consumer sentiment reflects not only economic conditions but, more broadly, the ‘subjective’ state of mind of consumers. Consumer sentiment is considered here an intermediary variable between the numerous pieces of information consumers digest, the stimuli, and the expenditure decision. Due to the complexity of the human mind, it would then be very difficult to explain consumer sentiment by only a few economic and financial variables. Consumer sentiment would thus also contain information that cannot be deduced from economic and financial variables.

One can theorize on the economic and financial information that consumers process. No guarantee exists, however, that consumers will systematically use the same variables or proceed them in a similar way. If, as Katona (1975) believes, consumer sentiment reflects the ‘mood’ of consumers, the link between information and sentiment could potentially be very variable and unpredictable. This should, however, not necessarily be so: Katona (1975) stressed the importance of mass media information and interpersonal communication processes to explain the relative stability of consumer sentiment (see also Van Raaij, 1989). This importance of mass media is also indicated by Van Veldhoven and Keder (1988), Zullow (1981) and Mosley (1982). Van Veldhoven and Keder, state that a negative correlation exists between the number of economic news items and consumer sentiment. Zullow claims that pessimism

in the lyrics of pop songs predicts, with a lag, consumer pessimism. Mosley (reported in Webley, Burgoyne, Lea, & Young, 2001, p. 101) showed that popular newspapers attached more importance to general macroeconomic variables as unemployment and inflation when these are deteriorating.

This evidence supports the view that consumers are informed about economic and financial variables through mass media. We should thus not be surprised when these variables and consumer sentiment are correlated. The studies, at least, do not reject the restrictive view on the information content of consumer sentiment. In this view, consumer sentiment does not contain original information so its inclusion in a consumption regression should not increase the quality of the fit if income, unemployment, etc. are also explanatory variables. For economists then, consumer sentiment surveys are superfluous. A broader interpretation of the information content implies that consumer sentiment also contains original information: substituting this variable by macroeconomic variables in consumption functions would then, potentially, lead to a specification error.

Whether a restrictive or a broader view on the information content of consumer sentiment should be taken, is to a certain degree, an empirical matter. Drawing conclusions from the literature is, however, difficult since the methodology, the time period studied and the explanatory variables differ enormously between the studies. Numerous econometric studies (among others, Hymans, 1970; Juster & Wachtel, 1972a, 1972b; Shapiro, 1972; Lovell, 1975; Garner, 1981; Fuhrer, 1993; Eppright et al., 1998; Otoo, 1999; Lovell & Tien, 1999 for the United States and Vanden Abeele, 1983; Praet, 1985; Djerf & Takala, 1997 for some European countries) find that economic and financial variables, in different forms, such as income, the stock market index, interest rates (short, long and real rates), consumption expenditures, inflation, house prices, unemployment and leading indicators explain consumer sentiment. Only Praet and Vuchelen (1989) introduce variables that capture international financial and economic conditions. They report significant coefficients for the dollar exchange rate, the change in the oil price and in the US stock market in regressions explaining consumer sentiment in four European countries. Vuchelen (1995) adds Belgian political event variables (dummies that captures elections and government changes) to the previous list.

The conclusion from these empirical studies is that economic and financial variables are important determinants of consumer sentiment. The list of intervening variables is, however, long so that no general conclusion can be derived about the 'type' of variables consumers consider. Furthermore, frequently the lagged dependent variable is an explanatory variable indicating that consumer sentiment is highly autoregressive. When the dependent variable is specified as the change in consumer sentiment, the explained part of total variation is certainly not impressive. This, at least, leaves room for additional explanatory variables, if not, supports the broader view on the information content of consumer sentiment that other variables, besides economic and financial ones, influence consumer sentiment. The regressions in any case show that a stable relationship exists between economic and financial variables and consumer sentiment. If consumer sentiment thus also captures 'the mood' of consumers, this does not seem to distort the relationship with economic variables.

2.2. Consumer sentiment, expectations and uncertainty

Researchers have concluded from regression results that consumer sentiment is sensitive to changes in expected income and uncertainty. One important shortcoming of the existing studies, however, is the ad hoc treatment and interpretation of variables that are supposed to capture these effects. To illustrate this point in an extreme way, consider a high value for consumer sentiment. Most researchers would argue that this indicates a high actual and/or expected level of income combined with a low level of uncertainty. This is supposed to stimulate current and future consumption expenditures. Acemoglu and Scott (1994), however, conclude from a consumption equation that incorporates precautionary behaviour, that a high level of consumer confidence suggests more and not less uncertainty about future consumption. The authors rationalize their result by arguing that more optimism about the future lead consumers to expect a larger variance for their forecast errors.

The previous somewhat contradictory explanations derive directly from the absence of an acceptable quantification of expected income growth and of uncertainty. Most of the time, econometricians assume that consumers extrapolate current values. Although such an expectation formation can be rationalized as economically efficient since, for most consumers, the benefits of more accurate expectations will not outweigh the information costs. The weak point in this reasoning is that no alternatives are tested. We concede that this is difficult since expectation data have to be constructed (see Webley et al., 2001, Chapter 5 for a discussion of expectations). But why not use available macroeconomic forecasts since, as indicated, consumers are informed by mass media about general economic conditions? More specifically, we propose the average (consensus) of real growth forecasts as a quantification for future economic conditions as perceived by consumers. Note that most forecasts are point forecasts so the average can be readily calculated.

Traditionally the level or change in the unemployment rate is used as a proxy, or interpreted as such, for future economic conditions as well as for uncertainty surrounding these conditions. Obviously, researchers create an overidentification and thus interpretation problem by attributing two roles to one variable. But also for uncertainty, use can be made of published macroeconomic forecasts. We consider the standard deviation of the growth forecasts or the maximum less minimum predicted rate as proxy for uncertainty surrounding future economic conditions as experienced by consumers. The underlying hypothesis is that economic uncertainty as experienced by forecasters is transmitted to consumers. Note that mass media tend to highlight the divergences between forecasts, so this approximation makes sense.

The idea to use the dispersion between forecasters, their degree of disagreement, as a measure of the uncertainty is based on the studies by Zarnowitz and Lambros (1987), Rich, Raymond, and Butler (1992), Bomberger (1996) and Rich and Butler (1998). They find that the dispersion between forecasts is an acceptable approximation to the uncertainty individual forecasters experience. The idea is thus that the dispersion of published forecasts contains information on the distributions. Since calculated dispersions of the forecasted growth are not directly related to the

variances of the probability distributions, no conclusion should be derived from their level.

Note that our specification of uncertainty does not imply that unemployment should be discarded as an explanatory variable since this variable remains an important indicator of the business cycle as perceived by consumers.

3. Data

The period under investigation is 1985–2000. We make use of quarterly data. The dependent variable is the change in sentiment of Belgian consumers as published by the European Commission (European Economy, Supplement B, Business and Consumer Survey Results). We recall that consumer sentiment is the arithmetic average of ‘balances of opinion’ on five questions. Two questions relate to the present and expected financial situation of households; two questions relate to the present and expected general economic situation and a last question is on major purchases.

The innovation we propose is to quantify expected economic conditions and uncertainty by the average of the growth forecasts for Belgium and by the dispersion of these forecasts. The consensus or average growth forecast is the arithmetic average of all published real growth forecasts in any quarter. All forecasts by Belgian institutions are considered, irrespective of whether the institution published forecasts on a regular basis. The number of forecasts that our average contains, thus differs from quarter to quarter. When several forecasts are published by the same forecaster in a given quarter, the average is included in the calculation of the consensus. All forecasts are ‘point’ forecasts.

Since forecasters publish simultaneously growth forecasts for the current as well as for next year, two average growth rates can be calculated: the average growth forecast of quarter i of year t for this year, $y_{ti,t}$, and the average growth forecast of quarter i of year t for next year $y_{ti,t+1}$. A straightforward use in regressions of, for example, the average forecast for the current year, could lead to inconsistencies since the forecast horizon is not constant. The horizon of $y_{ti,t}$ equals four quarters in the first quarter of any year ($i = 1$) but declines to one quarter as we move to the last quarter ($i = 4$) and jumps back to four quarters in the beginning of the following year. A similar remark holds for the growth forecast for next year: the initial horizon of eight quarters declines to four at the end of the year but jumps back to eight in the beginning of the following year. Tests should tell whether these changes in the forecasting horizon matter but in order to test for an alternative, we constructed a growth variable with a fixed horizon of four quarters. This fixed horizon growth forecast is the weighted average of the two consensus growth rates:

$$\text{yfix}_{ti} = ay_{ti,t} + (1 - a)y_{ti,t+1}, \quad i = 1, 2, 3 \text{ or } 4, \quad (1)$$

where the weight a equals 1.0 in the first quarter, 0.75 in the second quarter, 0.5 in the third quarter and 0.25 in the last quarter. That is, the weight of the forecast of the current year is proportional to its share in the four quarter horizon: in the last quarter, for example, the forecast horizon is composed of the last quarter of the

current year and three quarters of the next year. This leads to weights of 0.25 for the forecast for this year and 0.75 for the forecast for next year.

Different possibilities exist for the quantification of uncertainty. Obviously, we can make use of the standard deviation of the published growth forecasts for the current and for next year. Using the appropriate formula, a standard deviation for the fixed horizon growth forecast y_{fix}_{ii} can also be calculated (the covariance between $y_{ti,t}$ and $y_{ti,t+1}$ equals 0.47).

Besides the standard deviation of the growth forecasts, we also test for the difference between the maximum and the minimum forecasts. This difference measures the range of the published forecasts and could be interpreted as an easily available quantification of the uncertainty surrounding forecasts. Note that also minimum and maximum growth forecasts with a four-quarter horizon are calculated. This is done in a similar way as y_{fix}_{ii} , more precisely,

$$y_{fix}^{\max} = ay_{ti,t}^{\max} + (1 - a)y_{ti,t+1}^{\max}, \quad i = 1, 2, 3 \text{ or } 4, \quad (2)$$

$$y_{fix}^{\min} = ay_{ti,t}^{\min} + (1 - a)y_{ti,t+1}^{\min}, \quad i = 1, 2, 3 \text{ or } 4, \quad (3)$$

where y^{\max} and y^{\min} are the maximum and minimum growth rates forecasted.

Graph 1 shows the fixed horizon growth forecast and both measures of the dispersion of forecasts. We note the wide fluctuation in the growth forecasts. Observe that these forecasts were only negative in the two middle quarters of 1993. The standard deviation fluctuates around 0.5 (fluctuations are more pronounced than is apparent in the Fig. 1). The frequently low standard deviations in the first quarter are surprising: it reflects the agreement between forecasters on the growth in the current year. During the year, however, this agreement disappears. The difference between the maximum and the minimum growth forecast fluctuates more. The high value in the third quarter of 1990 is due to one exceptional bearish forecast.

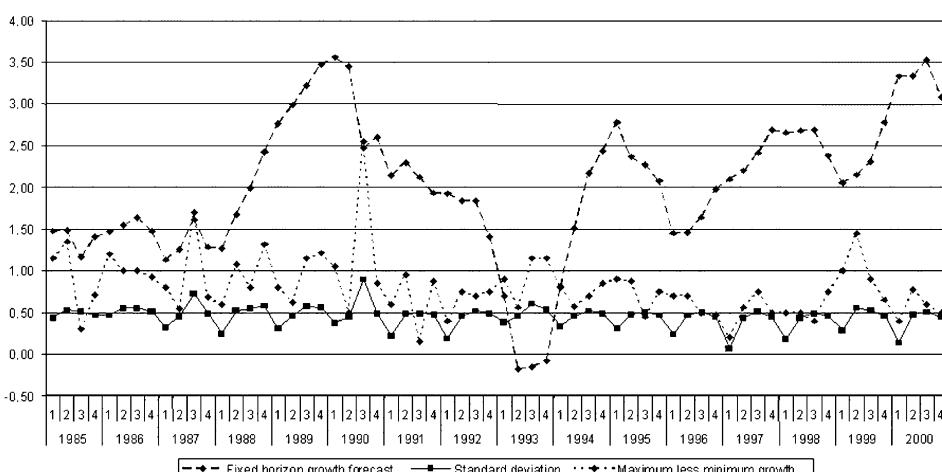


Fig. 1. Fixed horizon growth forecast, standard deviation and maximum less minimum growth forecast.

We feel that both measures of uncertainty are potentially interesting and should therefore be tested. This is done in the next section.

4. Regression results

The point of departure is a regression specification that synthesizes the published regressions for consumer sentiment. In general, four groups of variables are tested, but note that some variables do serve several purposes. The first group includes variables such as business cycle indicators, the price of oil, the inflation rate, the exchange rate, interest rates and unemployment that are supposed to contain information on the current and expected general state of the economy. Unemployment would certainly be the main variable in a second group of variables that explains current and expected economic condition of households. The financial condition of households would be captured by stock prices, interest rates, etc. Finally, most of the time the unemployment rate and its change would be introduced as a proxy for uncertainty. There is no reason to delete any of these variables when we introduce our variables that reflect future growth and uncertainty. Taking also into account that most of the time the lagged dependent variable is also an explanatory variable, the general specification can be written as

$$\text{CS}_t - \text{CS}_{t-1} = f(X_t, g_t, \text{un}_t, \text{CS}_{t-1}) \quad (4)$$

where 'CS' is consumer sentiment, g a measure of expected growth, 'un' a measure of uncertainty and X a vector containing the four groups of explanatory variables. Most studies explain the level of consumer sentiment. We prefer, however, to specify the dependent variable as the change in consumer sentiment so as to avoid that the strong autoregressivity is decisive for the level of the coefficient of determination.

The regression results are reported in Table 1. The first regression is the empirical translation of expression (4). The change in consumer sentiment is explained by the change in a coinciding business cycle indicator, the change in the seasonally adjusted unemployment rate, the short-term interest rate, the dollar exchange rate and the lagged level of consumer sentiment. Since, as observed, no explicit assumption is made about the formation of expectations, some variables can be interpreted as representing simultaneously current as well future economic and financial conditions. Since Belgium is a small country, the dollar exchange rate can act as an indicator of future inflation. If expectations are formed by extrapolation, variables as the change in the unemployment rate and the short-term interest rate could also signal the direction of future growth. Expected growth and uncertainty surrounding this growth is captured by the fixed horizon growth forecast ('yfix', see expression (1)) and the standard deviation of this forecast.

The overall quality of the first regression is acceptable as indicated by the statistics in the bottom rows; only the coefficient of the standard deviation of future growth is not statistically different from zero at the usual 5% significance level. Note that we tested additional variables that appear frequently in similar regressions; the coefficients were, however, not statistically significant. Variables tested were the long-term

Table 1

Regression results for change in consumer sentiment, 1985 (1)–2000 (4)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Intercept | 0.578 (0.30) | -1.076 (-0.60) | 0.653 (0.39) | 3.591 (1.83) | 3.751 (1.79) | 3.853 (2.77) | 4.156 (1.66) | 4.326 (2.83) |
| Change in business cycle index | 1.403 (3.95) | 1.201 (3.24) | 1.477 (4.43) | 1.338 (3.02) | 1.748 (5.41) | 1.768 (5.71) | 1.792 (5.31) | 1.743 (5.32) |
| Change in unemployment | -2.752 (-2.01) | -1.532 (-1.16) | -2.795 (-2.18) | -4.246 (-2.55) | -3.170 (-2.66) | -3.146 (-2.71) | -3.253 (-2.60) | -3.370 (-2.72) |
| Short term interest rate | -0.408 (-3.37) | -0.399 (-3.20) | -0.321 (-2.73) | -0.225 (-1.60) | -0.318 (-2.79) | -0.316 (-2.85) | -0.388 (-3.30) | -0.413 (-3.67) |
| Fixed horizon growth forecast (yfix) | 3.260 (5.49) | 2.894 (4.90) | 3.019 (5.37) | | | | | |
| Standard deviation of fixed horizon growth | -3.026 (-1.55) | -3.042 (-1.51) | | | | | | |
| Maxmin | | | -2.166 (-3.24) | | | | | |
| Dollar rate | -0.172 (-3.68) | | -0.161 (-3.67) | -0.095 (-1.71) | -0.199 (-4.62) | -0.199 (-4.84) | -0.209 (-4.34) | -0.220 (-5.02) |
| Lagged consumer sentiment | -0.457 (-7.37) | -0.359 (-6.58) | -0.430 (-7.30) | -0.189 (-3.90) | -0.433 (-8.12) | -0.432 (-8.43) | -0.433 (-7.83) | -0.439 (-8.08) |
| Oil price | | -0.178 (-3.09) | | | | | | |
| Average growth t | | | | 2.182 (5.00) | 2.222 (5.94) | 2.349 (5.06) | 2.308 (5.85) | |
| Average growth $t + 1$ | | | | 0.059 (0.10) | | -0.014 (-0.02) | | |
| Standard deviation growth t | | | | 0.686 (0.29) | | | | |
| Standard deviation growth $t + 1$ | | | | -6.339 (-3.20) | -5.987 (-4.80) | | | |
| Maxmin t | | | | | | -0.801 (-1.09) | | |
| Maxmin $t + 1$ | | | | | | -1.400 (-2.30) | -1.675 (-3.80) | |
| R^2 | 0.62 | 0.59 | 0.66 | 0.38 | 0.72 | 0.72 | 0.69 | 0.68 |
| R^2 corrected | 0.57 | 0.54 | 0.62 | 0.33 | 0.67 | 0.68 | 0.64 | 0.65 |
| Durbin h | 1.52 | 1.38 | 1.75 | 1.70 | 0.78 | 1.46 | 1.50 | 1.55 |
| Jarque–Bera | 1.47 | 0.90 | 2.10 | 1.11 | 4.01 | 5.03 | 2.33 | 1.00 |
| Ramsey RESET | 0.07 | 0.16 | 0.38 | 0.06 | 0.75 | 0.81 | 0.02 | 0.17 |

Note: t-ratio statistics are in parentheses under the coefficients, R^2 is the coefficient of determination, R^2 corrected this coefficient corrected for degrees of freedom, Durbin h is the Durbin autocorrelation coefficient, Jarque–Bera tests residuals for normality and Ramsey RESET tests for specification errors.

interest rate, stock market variables (Belgian as well as foreign), the level of the unemployment rate and inflation rates.

It is interesting to observe that the forecast for real growth as well as a coinciding business cycle indicator is significant. This shows that consumers do seem to make a

distinction between the current and the expected economic situation. Consumer sentiment fluctuated between -28 and 13 over the sample period so a coefficient of about 3 for expected growth indicates an important effect.

A similar conclusion holds for the change in the unemployment rate and the business cycle indicator. The significance of both variables indicates that consumers do not consider the unemployment rate to be an adequate proxy for economic conditions, or, vice versa: unemployment and the stance of the business cycle are not synonyms. The preliminary conclusion is that consumer sentiment is sensitive to forecasts of economic growth and uncertainty about this growth.

Previous results for Belgium (Vuchelen, 1995) did show that the oil price was also a significant variable in consumer sentiment regressions. In a second regression we therefore replaced the dollar exchange rate by the price of oil. Notwithstanding the fact that the coefficient of the oil price is significant, this regression does not explain the change in consumer sentiment as well as the previous regression. Since the introduction of the oil price as well as the dollar exchange rate did not result in significant coefficients for either, it appears that consumers consider these variables to be substitutes for signalling international financial and economic conditions. An increase in either of the two variables lowers consumer sentiment indicating that consumers assimilate this with a worsening of future economic conditions. An obvious interpretation is that consumers consider both variables to be indicators of future inflation rates. In a small open country without its own energy resources, this would not be surprising.

The previous two regression results support the view that consumer sentiment reflects current as well as future economic conditions, including uncertainty surrounding future economic growth. In a third regression we test an alternative specification for the uncertainty variable: the standard deviation of the expected rate of real growth is replaced by the more simple measure of the dispersion, i.e., the difference between the maximum and the minimum forecasted growth rate (Maxmin). The coefficient of this uncertainty variable is now statistically significant. Although the coefficient of Maxmin is smaller than the coefficient of the standard deviation, the quantitative impact of uncertainty is not really affected since the Maxmin-variable is, on average, larger and fluctuates over a wider range. Admittedly, the difference between the maximum and minimum expected growth rates is an easier and less technical measure of uncertainty since consumers can focus on extreme forecasts, not on those that differ only marginally from each other. Furthermore, one could argue that press reports probably focus much more on extreme forecasts and neglect the average ones. It is of interest that the other coefficients do not change markedly.

To illustrate the contribution of the introduction of the average growth and its dispersion, we report in column 4 the results of a regression with the same explanatory variables as in the regressions of columns 1 and 3 except that the forecasted growth and the uncertainty variables were deleted. We observe a drastic decline in the overall quality of the regression: the coefficient of determination is nearly halved. The explanatory power of both variables is herewith clearly shown. Furthermore, the coefficient of lagged consumer sentiment drops significantly and two variables (the dollar exchange rate and the short term interest rate) are no longer statistically sig-

nificant. Note that the larger value, in absolute terms, of the coefficient of the change in unemployment can be seen as an indication that this variable contains information on the uncertainty of future economic conditions. The important point is that, as the previous results prove, unemployment also captures other effects so that it is appropriate to quantify uncertainty by a separate variable.

The regression results in columns 5–8 report some variations and further tests on the previous results. In regression 5, future economic conditions and uncertainty are replaced by their components. More specifically, expected growth is now measured by the average growth forecast for the current year (average growth t) and for next year (average growth $t + 1$); uncertainty relates to the standard deviation of both rates of growth. As previously observed, one should be aware of the fact that this specification introduces a jump into the forecasting horizon since in the last quarter of every year the forecasting horizon for the current year growth forecast equals one quarter but jumps to four quarters in the beginning of next year. Notwithstanding this, the results are reasonable although not all of them are significant: the expected average rate of growth for next year ($t + 1$) is not significant whereas only the standard deviation related to the forecasts for next year is significant. Although no final conclusion can be drawn from this result, one is tempted to think that consumers are concerned about the current level of economic activity, not the uncertainty surrounding this level, whereas the reverse holds for next year. One explanation could be that they feel that for the current year, the near future, the level of growth captures all relevant information; for the coming year, the more distant future, on the other hand, uncertainty dominates the information set. In regression 6, we dropped the two insignificant coefficients of regression 5. The quality of the regression is not affected.

In regression 7, the standard deviation is again replaced by the maximum–minimum growth difference. Results do deteriorate somewhat but the previous conclusion, current growth and future uncertainty, holds. In the last equation we dropped the insignificant coefficients of regression 7. Finally, note that in regressions 5 to 8 the best indicator of uncertainty is the difference between the maximum and minimum growth, not the standard deviation as in the previous regressions.

5. Conclusion

Consumer sentiment has frequently been one of the variables that helped forecasters to avoid important forecast errors. Large shifts, mainly drops, in consumer sentiment indeed signal sharp declines in economic growth. This raises, however, the question as to the determinants of consumer sentiment. Interpreting this variable as completely exogenous does not really help forecasters since it would make any traditional forecasting exercise very difficult, if not impossible. We tested, as many other authors, the view that consumer sentiment can be explained by a limited number of well-chosen variables. In addition, we ‘reduce’ the unexplained part of consumer sentiment by introducing variables that account for frequently formulated explanations for changes in consumer sentiment, i.e., expected economic conditions and

uncertainty. We proxy these variables by the consensus of the forecasted real rate of economic growth and by a measure of the degree of disagreement between forecasters. The regression results support this view. They show that both variables reduce the unexplained part of the variation in consumer sentiment by about one half.

One argument against our quantification could be that households are not informed about forecasts so that a consensus forecast and the dispersion around this consensus is unknown to consumers. In principle, this is quite correct but questions in the consumer surveys do not relate to forecasts. The real problem is thus whether our quantification is an acceptable approximation to what consumers experience. Only results can tell if this is the case. We do feel that the previous results support our view. Further tests in other economic domains such as consumption, savings, durable goods, etc., are required before a final conclusion can be drawn about the general validity of disagreement between forecasters as an acceptable measure of economic uncertainty as experienced by consumers.

6. For further reading

The following works are also of interest to the reader: Batchelor and Dua (1998), Belessiotis (1996), Berg and Bergström (1996), Bram and Ludvigson (1998), Howrey (2001), Matsusaka and Sbordone (1995), Mishkin (1978), Parigi and Schlitzer (1997), Praet and Vuchelen (1984b), Praet and Vuchelen (1988), Starr-McCluer (1999), Throop (1992).

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