The quest for the best Consumer Confidence Indicator

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Abstract

Out of 11 questions included in the EU harmonised consumer questionnaire, it is possible to construct 2,047 different consumer confidence indicators. We search through all these indicators in order to find the single indicator that has the highest correlation with private consumption growth. Moreover, we contrast this indicator to the current consumer confidence indicator used by the European Commission, and some alternative indicators; also in terms of their predictive power of private consumption. The focus of the analysis is thereby on how to best exploit the information content of the current set of questions included in the harmonised consumer questionnaire, while other methodological aspects of the construction of the indicator is left aside.

We hypothesis that an indicator based on questions related to the household, rather than the general economy, would prove more informative. It seems reasonable to assume that respondents to the surveys have better knowledge of their own economic situation than they have of the general economic situation in their country. We find that this “micro” indicator and an optimal indicator, taking into account the specifics of all EU members states, outperforms the current Consumer Confidence Indicator, which seems to be based on an unfortunate selection of questions.

Key Words: Consumer confidence, consumption, and predictive power

JEL Classification:

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1. Introduction

In co-operation with national partner institutes, the European Commission through the Directorate-General for Economic and financial Affairs (DG ECFIN), surveys more than 40,000 consumers across the EU each month. The results from those surveys reflect consumers’ opinions about the past, current, and future economic developments, and complement quantitative statistics that are often available after significant delay. The survey data are closely followed by economists, policy-makers, and business managers, and provide useful information of the current state of the economy and forecast short-term developments. It is thus essential that the published indicators give correct and reliable signals.

Consumer sentiment is manifested in the consumer confidence indicator (CCI), which is a composite indicator based on answers from several questions in the questionnaire. The CCI is generally viewed as a timely pointer of developments in private consumption. However, for both the EU and the euro-area aggregate, the correspondence between actual consumption growth and the CCI is somewhat weak. Therefore, the aim of this paper is to search for the best possible consumer confidence indicator at the EU and euro-area level.

The questionnaire facing consumers is composed of both macro-oriented questions (e.g. the general economic situation in the country and unemployment) and micro-oriented questions (e.g. the financial situation of the household and the intention of the respondent to spending on capital goods). The current CCI is based on two questions from each of these two categories, and we will show that this is not the optimal set of questions to be included in a consumer confidence indicator for the EU and the euro area.

Out of 11 questions included in the questionnaire, it is possible to construct 2,047 (2^n-1) different combinations of the questions, i.e. consumer confidence indicators.¹ We search for the single indicator that has the highest correlation with private consumption growth. Moreover, we contrast this indicator to the current CCI, and some alternative indicators, also in terms of their predictive power of private consumption. The focus of the analysis is thereby on how to best exploit the information content of the current set of questions included in the harmonised consumer questionnaire, while other methodological aspects of the construction of the indicator is left aside for future research.

Our hypothesis is that an indicator based on questions related to the household, rather than the general economy, would prove more informative. There are at least two a priori rationales for including micro-oriented questions rather than macro-oriented questions. First, it seems reasonable to assume

¹ The consumer questionnaire includes 12 questions, but we exclude question 12 due to lack of harmonisation across countries.
that respondents to the surveys have better knowledge of their own economic situation than they have of the general economic situation in their country. Given shortage of both time and ability, it simply makes more sense for the individual consumer to give priority to seeking information on their own economic situation rather than on the general economy. It is presumably also easier to gather information on and predict the household's own economic situation.

Second, if the aim is to predict developments in household consumption, micro questions seem preferably also on a conceptual basis. As long as survey samples are representative, the questions on household's financial situation, its intention to spend or to save (variables that may reflect the household's budget constraints) should aggregate into an indicator that resembles consumption. An indicator that includes questions on the general economic situation of the country should, on the other hand, aggregate into something that is different from consumption (possibly GDP).

The remainder of this paper is organised as follows. The following section elaborates briefly on the measurement of consumer sentiment and presents a background to the topic. The subsequent section provides an overview of the literature on the predictive power of consumer sentiment. Section 3 introduces the harmonised EU-wide consumer sentiment data. Section 4 defines and presents our ideal consumer confidence indicator, and section 5 compares the performance of this indicator to the performance of other, inferior, indicators. The last section summarises and concludes.

2. Theoretical and empirical work

2.1 Economic Theory and Consumer Sentiment

The role of consumer sentiment in theories of consumption behaviour is not obvious. The classical theory for explaining household's consumption behaviour is the life-cycle permanent income hypothesis (LC-PIH). The LC-PIH predicts that consumption depends on permanent income, which is the annuity of overall life time resources. The theory implies that consumption is unrelated to current income and if expectations are rational, consumption will follow a random walk. Thus, there will be no role for consumer confidence in predicting actual consumption.

Numerous empirical studies have, however, found that consumption indeed often is related to current income, which consequently leads to a rejection of the life-cycle permanent income hypothesis in its purest form. To explain this deviation from the LC-PIH, some modification of its original form has been put forward. According to the model of Campbell and Mankiw (1989) some households are strict

\[ \text{Friedman (1957)} \]
\[ \text{Hall (1978)} \]
life-cyclers, while others follow a "rule of thumb" and let their spending equal to current income. This model only leaves room for consumer sentiment to predict spending.

Another line of reasoning concerns uncertainty. This, so called, uncertainty hypothesis states that the more income uncertainty consumers are facing, the less likely they are to show a life-cycle behaviour. Instead they are more prone to act myopic. A large drop in current income would increase uncertainty and the need for precautionary savings, thereby lowering consumption. Thus, this hypothesis can explain a positive link between current income and consumption, a linkage which should be increasing with uncertainty (Blanchard and Fischer, 1989).

These theories leave very little room for sentiment to play a role in determining consumption. Some have even argued that consumer sentiment simply reflects other economic determinants of private consumption. According to this view, once the appropriate underlying economic determinants have been identified and properly measured, there is no additional information value in consumer sentiment.

However, in his seminal work, Katona (1968) questioned this view and claimed that private consumption is determined by both the consumer's ability (disposable income, wealth) and willingness to pay. The latter, he argues, derives from complex psychological factors and cannot in a convenient way be explained by a simple hard measure, such as income. Movements in consumer sentiment are intended to capture changes in the willingness to pay. Thus, according to this line of reasoning, consumer sentiment is not just a reflection of hard data, but captures something unique - of incremental importance - to private consumption. This is also along the line of reasoning by Blanchard (1993), who argued that the spontaneous fall in US household consumption in the early 1990's was caused by households "animal spirits".

2.2 The Predictive Power of Consumer Sentiment - what does the empirical literature says?

The empirical research using consumer surveys for predicting developments in private consumption has mainly been based on consumer surveys done in the U.S. There are two closely watched U.S consumer surveys: the University of Michigan's Index of Consumer Sentiment (ICS) and the Conference Board Index (CBI). Bram and Ludvigson (1998) found that the CBI provides incremental predictive value for private consumption. Eppright et al. (1998) concludes that consumer

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4 The ICS is based on the responses to five questions: (1) household's current finances, (2) current buying conditions, (3) finances in the year ahead, (4) general business conditions in the year ahead, and (5) general business conditions over the next five years. The CBI consists of the following five questions: (1) current business conditions, (2) current employment conditions, (3) business conditions, (4) employment conditions, and (5) total family income for the next six months. Besides the different questions in the two surveys, both the calculation of the indexes and survey methods differs as well.
expectations have superior predictive power, in comparison to other economic indicators. Carroll et al. (1994) takes a two-step approach. First, they ask whether consumer sentiment has any predictive power for future consumption spending; second, whether this power persists also after controlling for other available indicators. They conclude that there is at least some incremental predictive power of the consumer sentiment. In contrast to many other studies, Howrey (2001) recognises that for real-time forecasters an important advantage of consumer confidence data is that it is provided monthly with a very short publication delay. This means that even a contemporaneous value of confidence may be used as a predictive variable. In his study, Howrey finds that including consumer sentiment (ICS) has a statistically significant effect when forecasting quarterly private consumption, although its incremental value is fairly modest. Furthermore, when taking into account private consumption and disposable income for the first month of the quarter, this small value added vanishes.

While most US studies seem to confirm the predictive power of consumer sentiment there are exceptions. Ludvigson (2004) finds that, once controlling for other explanatory variables, both the ICS and the CBI has only a modest incremental predictive power for consumer spending. Moreover, by using a real-time data set, Croushore (2006) finds that consumer confidence does not improve forecast of private consumption once controlling for lagged private consumption and stock prices. Also, Madsen and McAleer (2000) found consumer confidence unable to predict consumption.

For the U.K, Easaw et al. (2005) finds that consumer confidence predicts household's consumption of durable goods. The predictive power of confidence is not only due to its predictability of labour income, and thereby indirectly also spending, but confidence also seems to have a direct link to spending. However, confidence ability to predict spending on non-durable goods seems to pass only via the income channel.

In sum, even though the above studies in general suggest that consumer confidence has predictive power in explaining developments in consumer spending, it is of course impossible to rule out that it is not just a reflection of omitted variables, yet to be discovered. The studies above do, however, include control variables by guidance from economic theory (labour income, interest rate, wealth etc.).

Furthermore, since the construction of consumer confidence indicators varies across countries, the findings for the U.S and the U.K cannot necessarily be generalised to hold also for other countries. Moreover, the mechanism behind sentiment and actual consumption growth may differ substantially across countries. Unfortunately, empirical evidences from other countries are scarcer.

Howrey (2001) also finds that the ICS, either by itself or in conjunction with other indicators, predicts future growth rates of GDP.
3. **Consumer confidence indicators and their construction**

3.1 **The current EC Consumer Confidence Indicator**

The European Commission launched the first harmonised consumer survey in 1972. Five countries originally took part in the survey: Belgium, Germany, France, Italy, and the Netherlands. From the beginning the survey was conducted three times a year, but surveys with higher frequency were gradually introduced and by 1986 all participating member states conducted monthly surveys. Over the years, the number of countries included in the programme has expanded, which now covers 29 countries. At present, nearly 40,000 consumers are surveyed each month using a questionnaire that contains 15 questions, 12 monthly and 3 quarterly.

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The four questions included in the current consumer confidence indicator (CCI) are:

- **Q2** How do you expect the financial position of your household to change over the next 12 months?
- **Q4** How do you expect the general economic situation in this country to develop over the next 12 months?
- **Q7** How do you expect the number of people unemployed in this country to change over the next 12 months?
- **Q11** Over the next 12 months, how likely is it that you save any money?

Thus, all questions included in the CCI are forward looking and cover expectations of both the households own economic situation (Q2, Q11) and the general economy (Q4, Q7). An additional observation is thus that the questions stem from two different categories of questions, which can be termed micro-oriented questions (e.g. the financial situation of the household and the intention of the respondent to spend more money) and macro-oriented questions (e.g. the general economic situation in the country and unemployment). The consumer confidence indicator (CCI) is composed of two questions from each of these two categories. A complete list of the questions and their categorisation can be found in Table A1.

On the basis of the distribution of the various answering options for each question, aggregate so-called balances are calculated for each question. Balances are the difference between positive and negative answering options, measured as percentage points of total answers. More specifically, there

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6 26 out of 27 Member States, and Croatia, the former Yugoslav Republic of Macedonia and Turkey.
7 This set of questions was introduced in January 2002, following a report from the IFO institute, commissioned by the Commission (Goldrian et. al, 2001). Before the confidence indicator was calculated from five questions (Q1, Q2, Q3, Q4 and Q11). The complete harmonised questionnaire is attached in Appendix.
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are six answering options: very positive (a lot better, increase sharply, etc.); positive (a little better, increase, etc.); neutral (stay the same, etc.); negative (a little worse, decrease, etc.); very negative (a lot worse, fall sharply, etc.) and don't know. The balances are calculated on the basis of weighted averages according to the formula:

\[ B = (PP + \frac{1}{2}P) - (\frac{1}{2}M + MM), \tag{1} \]

where PP denotes the percentage of respondents with the most positive answer, P the positive, M the negative and MM the most negative. Hence, neither the neutral answering option (stay the same) nor the uncertain answer (don’t know) is taken into account. By construction, the balances are bounded between -100, when all respondents choose the most negative option, and +100, when all respondents choose the most positive option.

In order to calculate the EU and euro-area aggregates, the national results are weighed according to the level of household consumption expenditures in the specific country. This implies that a consumer in a larger country receives a higher weight than a consumer in a small country, which is justified by their different national, rather than individual, consumption levels.

The CCI is then calculated by averaging the balances from the four questions above. More specifically, the consumer confidence indicator can be expressed as:

\[ CCI = \frac{(BQ2+BQ4-BQ7+BQ11)}{4}. \tag{2} \]

Thus, all four questions receive an equal weight in the calculation of the CCI. Note that since the balances are not normalised, questions with higher volatility will dominate the movements of the CCI. For both the EU and the euro area, the macro questions have significantly higher volatility than the micro questions (for descriptive statistics of all the questions, see Table A1 in the appendix). The same pattern with higher volatility in responses to macro questions has also been noticed for US data (Dominitz and Manski, 2004).

3.2 The micro consumer confidence indicator – an alternative confidence indicator

The ability of the current CCI to track real consumption growth can be questioned on several accounts. First, the correlation between the CCI and the reference series, private consumption growth, is relatively low, below 0.7. Second, and more important in forecasting and policy use, the indicator is giving a very different signal than what is realised in the reference series. In this section we therefore put forward an alternative consumer confidence indicator based on micro question.
Our hypothesis is that an indicator based on questions related to the household economy, rather than the general economy, would prove more informative. There are at least two a priori rationales for including micro-oriented questions rather than macro-oriented questions. First, it seems reasonable to assume that respondents to the surveys have better knowledge of their own economic situation than they have of the general economic situation in their country. This thought has been put forward and confirmed earlier in the literature (see e.g. Dominitz and Manski (2004) for U.S data). Given shortage of both time and ability, it simply makes more sense for the individual consumer to give priority to seeking information on their own economic situation rather than on the general economy. It is presumably also easier to gather information on and predict the household's own economic situation.

Second, if the aim is to predict developments in household consumption, micro questions seem preferably also on a conceptual basis. As long as survey samples are representative, the questions on household's financial situation, its intention to spend or to save (variables that may reflect the household's budget constraints) should aggregate into an indicator that resembles consumption. An indicator that includes questions on the general economic situation of the country should, on the other hand, aggregate into something that is different from consumption (possibly GDP).

As an alternative to the current CCI, we propose to use a different set of questions to produce a micro-consumer confidence indicator (MCCI). It includes four questions, where all are selected from the micro category. Using the same methodology as for calculating the CCI, the four questions included in the micro indicator are:

Q1 How has the financial situation of your household changed over the last 12 months?
Q2 How do you expect the financial position of your household to change over the next 12 months?
Q8 In view of the general economic situation, do you think that now it is the right moment for people to make major purchases such as furniture, electrical/electronic devices, etc.?
Q9 Compared to the past 12 months, do you expect to spend more or less money on major purchases (furniture, electrical/electronic devices, etc.) over the next 12 months?
It is evident that the MCCI is doing a better job in tracking y-o-y consumption growth (see Figure 1). Looking at the developments of the indicators in the recent past, the message using the micro indicator is rather different from the one provided by the CCI. The MCCI has signalled a much more subdued growth path for private consumption, and the decline has also been deeper, underlining the severity of the current slowdown. More importantly, before turning down in mid 2007, the micro indicator just barely managed to sneak above its long-term average. The CCI, on the other hand, has been well above its long-term averages for almost two years, and thus signalled strong consumption growth, something which has not been realised.

4. **Defining and finding the best indicator(s)**

We aim at finding the indicator that has the highest coincident and leading correlation with private consumption growth. As mentioned previously, out of the 11 questions incorporated in the questionnaire, there exist 2,047 potential indicators. In this section, we calculate the coincident and leading correlations for all those and rank them in descending order of correlation. Furthermore, the derived optimal indicator\(^8\) is compared in more detail to the current CCI, the above described micro indicator, and a globally optimised indicator. We also make a comparison with an indicator calculated based on factor analysis (see Gayer and Genet, 2006). Although our main interests are the EU and the euro area aggregates, we also examine how the indicators perform at a country level. As second a

\(^8\) Depending on the criteria imposed for determining optimality (e.g. coincident correlation, leading correlation, predictive power, or a combination), several different indicators can be judged as optimal.
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step, we evaluate a selection of indicators by the additional predictive power they provide in a simple forecast model of consumption.\footnote{9}

The focus is to a large extent on how to capitalise more on the current set of questions included in the harmonised consumer survey. Thus, the study is limited in the sense that we only considers the questions that are currently asked in the consumer surveys, and leave the issue of other methodological aspects of how to construct indicators aside to future research. We deem, however, that many other issues, such as normalisation and seasonal adjustment, are less important than the choice of questions.\footnote{10} Furthermore, we disregard the additional quarterly questions since we are looking for a monthly indicator.

Ideally one would strive for an indicator with as good leading properties as possible. It turns out, however, that rather than leading, most of our derived indicators are either coincident or lagging. One should keep in mind that the consumer confidence indicators are available on a monthly basis, with a significantly shorter publication lag than consumption data from the national accounts. The coincident CCI may therefore serve as a proxy for current unobserved consumption. Furthermore, in most cases, the indicators with high coincident correlations also have relatively high leading correlations, i.e. correlation with private consumptions one or more quarters ahead. The choice of indicator would therefore often be the same no matter if we look at coincident or leading behaviour.

As a reference variable we use household private expenditures, chain-linked volumes, from the quarterly national accounts provided by Eurostat. The series is transformed into year-on-year percentage changes. This transformation is not obvious, but choosing year-on-year changes instead of e.g. quarter-on-quarter changes can be justified for at least two reasons. First, all the harmonised questions in the consumer surveys refer to a 12-month horizon, and should in principle therefore also correspond better to developments over this period. Second, it is by far the most commonly used transformation when comparing survey data to reference series. The popularity of the year-on-year transformation may derive from that it is a smoother reference series than the quarterly one (since it can be expressed as a moving sum of quarterly differences).

\footnote{9} Other aspects to evaluate are the ability of the consumer confidence indicator to detect turning points and its volatility. First, we argue that although detecting turning points is an important matter, it is difficult to do an empirical evaluation, as our reference series starts only in 1995. There are simply too few turning points. Second, concerning the volatility of the indicators, being a monthly indicator, we ideally would like it to provide reliable information each month. In practice, however, the survey indicators are somewhat noisy, which implies that the outcome for a single month should be interpreted tentatively, since it does not provide a certain signal for future changes. A popular measure of volatility is the so-called month of-cyclical dominance (MCD). The MCD measure indicates the fewest number of months needed for the movement in the trend component to exceed the irregular component. We have used calculated the measure, but for the vast majority of indicators that we calculate it does not provide any additional information that allow us to distinguish between indicators.

\footnote{10} We have recalculated the CCI by first normalising the balances for their respective means and standard variations. It turned out that this normalised CCI was as correlated with actual private consumption growth as the non-normalised CCI.
4.1 The optimal indicator at EU and euro area level

Table 1 and Table 2 present the correlations and rankings for six different consumer confidence indicators. The first two indicators in each table are the highest ranked indicators for coincident and leading correlation in the EU and the euro area. The third is the globally optimal indicator, which is further described in the following section 4.2. Basically it is an indicator which has been derived from an optimisation taking into account both the coincident and leading properties, and that it should be the least harmful to use across all countries. The following two indicators are the current and the micro indicator described in the preceding section. We also include a factor based indicator to show that the methodology of aggregating survey data is of less importance.

Table 1: EU consumer confidence indicators, sample 1995Q1 – 2008Q2, monthly survey data are averaged to quarterly

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Included questions</th>
<th>Coincident Correlation</th>
<th>Ranking (1-2047)</th>
<th>Leading Correlation</th>
<th>Ranking (1-2047)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal coincid.</td>
<td>x x x x x</td>
<td>0.83</td>
<td>1</td>
<td>0.81</td>
<td>22</td>
</tr>
<tr>
<td>Optimal leading</td>
<td>x x x</td>
<td>0.81</td>
<td>115</td>
<td>0.83</td>
<td>1</td>
</tr>
<tr>
<td>Global</td>
<td>x x x x</td>
<td>0.78</td>
<td>501</td>
<td>0.72</td>
<td>733</td>
</tr>
<tr>
<td>Micro</td>
<td>x x x x</td>
<td>0.75</td>
<td>917</td>
<td>0.69</td>
<td>980</td>
</tr>
<tr>
<td>Current</td>
<td>x x x x x</td>
<td>0.69</td>
<td>1519</td>
<td>0.64</td>
<td>1429</td>
</tr>
<tr>
<td>Factor-based</td>
<td></td>
<td>0.75</td>
<td>893</td>
<td>0.69</td>
<td>1033</td>
</tr>
</tbody>
</table>

a) The questionnaire is attached in the appendix. Note that question 5 and 7 are included with negative signs (since they are negatively correlated with the reference series).
b) The factor-based indicator is described in Gayer and Genet (2006)

For the EU and the euro area, the optimal coincident and the optimal leading indicators generate very similar coincident and leading correlations. All these indicators include both macro and micro questions. In comparison to the optimal EU indicators, both the micro and factor based indicator have lower correlation than the optimal ones. At the euro-area level, on the other hand, the micro indicator performs very close to the optimal indicator; it ranks among the 15 to 25 percent best indicators. The factor based indicator, however, is close to the median indicator in all cases.

In both the EU and the euro area, the current indicator is truly inferior to both the micro and the factor-based indicators and of course the optimal ones. The current indicator seems to be built on a particular unfortunate set of questions. The correlation between the current indicator and private consumption growth is relatively low, which is also manifested in the low ranking, which is close to or even below the 25th percentile, there are about 1 500 other indicators that are better during the considered time period.
Table 2: Euro area consumer confidence indicators, sample 1995Q1 – 2007Q4, monthly survey data are averaged to quarterly

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Included questions</th>
<th>Coincident Correlation</th>
<th>Ranking (1-2047)</th>
<th>Leading Correlation</th>
<th>Ranking (1-2047)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal coincid.</td>
<td>x x x x</td>
<td>0.86</td>
<td>1</td>
<td>0.83</td>
<td>2</td>
</tr>
<tr>
<td>Optimal leading</td>
<td>x x x</td>
<td>0.86</td>
<td>3</td>
<td>0.83</td>
<td>1</td>
</tr>
<tr>
<td>Global</td>
<td></td>
<td>0.78</td>
<td>724</td>
<td>0.69</td>
<td>877</td>
</tr>
<tr>
<td>Micro</td>
<td>x x</td>
<td>0.82</td>
<td>284</td>
<td>0.73</td>
<td>530</td>
</tr>
<tr>
<td>Current</td>
<td>x x x x</td>
<td>0.68</td>
<td>1617</td>
<td>0.61</td>
<td>1434</td>
</tr>
<tr>
<td>Factor-based</td>
<td>0.78</td>
<td></td>
<td>831</td>
<td>0.69</td>
<td>896</td>
</tr>
</tbody>
</table>

a) The questionnaire is attached in the appendix. Note that question 5 and 7 are included with negative signs (since they are negatively correlated with the reference series).

b) The factor-based indicator is described in Gayer and Genet (2006)

The optimal indicator, and the ranking of all others, should not be regarded too strict. It is important to take into account that the actual correlation span among all indicators is in practice rather narrow. For instance, 50% of the indicators have a correlation between 0.76 and 0.86 for the euro area, while only 25% of the indicators have a correlation below 0.69. Unfortunately, our current indicator belongs to the latter group. In fact, the current indicator is statistically significantly worse than the optimal indicator. The correlation thresholds for significance at the 5 percent level is 0.69 for the EU and 0.74 for the euro area; a correlation below these values imply that that an indicator has a significantly lower correlation than the maximum obtainable. Thus, the ranking figures provided below have to be interpreted bearing in mind that the correlation range down to a significantly poor indicator is relatively narrow. For the EU and the euro area the correlation range between the highest correlation and the median is only 0.08 and 0.10, respectively. A graphical illustration and descriptive statistics of the distributions of all indicators are available in Figure A1 and Table A3 in the annex.

4.2 The optimal indicators across countries

Carrying out the optimisation procedure as above on a country level, we find that the optimal set of questions included in a consumer confidence indicator varies significantly across countries (Table 3). Despite the large differences in the optimal set of questions, a few common denominators may be worth noting. First, the most frequently included question across the optimal country indicators is the micro question whether consumers intend to make major purchases in the coming 12 months (Q9), which is closely followed by question how consumer prices has develop during the past 12 months (Q5). Thus, in many countries lower perceived inflation is associated with higher consumption expenditures. The third most frequently included question is the other micro questions concerning the willingness of making major purchases at present (Q8). In general, however, we do not find that micro
questions are more often included in the optimal country indicators than the macro questions. It therefore seems that at the country level the micro questions are not superior with regard to their coincident correlations.

**Table 3:** Optimal coincident country indicators, compared to global optimal, current, and micro indicators

<table>
<thead>
<tr>
<th>Country</th>
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<th>2</th>
<th>3</th>
<th>4</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>x</td>
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<td></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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</tr>
<tr>
<td>DK</td>
<td>x</td>
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<tr>
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<tr>
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The highest achieved coincident correlation varies significantly across countries, ranging from above 0.85 in EE, LV, LT, HU, PL and PT, to below 0.50 in BE, CY, MT, NL, AT and SI. Given the large variation across countries in the optimal set of questions to be included, it seems inappropriate to use our derived optimal indicator for the EU at a country level. If we, nevertheless, want to avoid using 24 different indicators, we may ask which common indicator is the most appropriate one, i.e. the least harmful to use across all countries and aggregate economic areas. The answer to this question
The quest for the best Consumer Confidence Indicator

is found by calculating a statistics that minimise the difference between the optimal and potential indicators across countries. More specifically, we seek the global best indicator that minimises the average sum of squared differences between both coincident and leading correlations and the respective optimal national indicators:

\[
\min \sqrt{\sum_{c=1}^{24} (\rho_{c_{\text{Optimal, coincident}}} - \rho_{c_{\text{Coincident}}})^2 + (\rho_{c_{\text{Optimal, leading}}} - \rho_{c_{\text{Leading}}})^2} / 28 .
\]  

(3)

The best global indicator turns out to include questions: Q3 past general economic situation (macro), Q8 currently the right time to make major purchases (micro), and Q9 plans for making major purchases within the next 12 months (micro). Table 3 also shows how this globally optimal indicator performs at the country level. In general, the differences in correlations between the countries' optimal indicator and the global indicator are rather small; although in some cases the correlations are significantly lower (for example Belgium, Cyprus, Malta, and Finland). This means that the globally optimal indicator is not only the best across countries, but also that it delivers satisfactory correlations compared to the indicators optimised for each country. An additional attractive feature of the global indicator is that it also performs very well at the EU and the euro-area levels (for a graphical alternative to Table 3, see Figure A2 in the appendix).

Comparing the performance of the current indicator to the optimal ones, there are in most countries large correlation gains to be made. For instance, in Germany the correlation increases from 0.2 to 0.7 or 0.6, depending on which optimal indicator is used. The current indicator only belongs to the 25 percent best indicators in three countries (Spain, France, and Slovakia), while it is among the 25 percent worst indicators in ten countries. We conclude that also at the country level, the current indicator in general seems to be based on an unfortunate set of questions.

The micro indicator, on the other hand, performs better than the current indicator in a majority of countries. Furthermore, it receives an overall ranking of 248, where both the leading and lagging properties have been taking into account. Only in very few cases the current performs significantly better than the micro indicator (Belgium, Netherlands, and Sweden). The micro indicator can be said to be a reliable and good performer, as it has proved to consistently provide high correlations across countries, with different and not perfectly synchronised business cycles. Thus this ranking constitutes a stability check of the indicator.
5. The predictive power of consumer confidence

It is fair to argue, that considering only correlations may not be sufficient to determine an ideal indicator. In order to evaluate the true, incremental, predictive value of consumer sentiment, one would need to condition on other determinants of private consumption. Usually, the methodological way forward is to regress private consumption growth on some predefined determinants, such as lagged values of private consumption growth, disposable income, interest rate etc., and compare the share of variance (measured as R²) that is explained by this benchmark model to another model, which incorporates also consumer sentiment. In doing so one receives an estimate of the marginal value of consumer sentiment. In this section we follow this approach in order to assess the incremental predictive value of the indicators derived in the previous section.

The choice of determinants or control variables in the benchmark model is of course crucial. Following previous studies (Carroll et al., 1994 and Easaw et al., 2005), we estimate a model including the following control variables for the euro area: four lags of the dependent variable (i.e. y-o-y private consumption growth) and four lags of the y-o-y disposable income growth. The results suggest, however, that income cannot significantly explain short-term variation in private consumption growth. Furthermore, only one lag of the dependent variable turned out to be significant. Thus, the AR(1) model became our benchmark model.

Figure 1: Typical forecast situations - releases of survey data and national accounts

One of the most important features of survey data, which should be considered in assessing their predictive power, is their short publication delay. Suppose that we would like to forecast the outcome for the current quarter t. Depending on when during this quarter we would like to carry out the forecast,
different information will be available. Figure 1 sketches the typical situation for quarter \( t \) and its three months (labelled \( m1t \), \( m2t \) and \( m3t \)). While survey data arrives at the end of each month, consumption figures for the preceding quarter will arrive in the mid of the quarter. This implies that if we would like to carry out the forecast during the first half of quarter \( t \), indicated as (I) in the graph, the outcome of private consumption for quarter \( t-1 \) will not be available.

Having this release schedule in mind, a reasonable forecast model in this particular situation may then be specified as:

\[
\hat{c}_t = \alpha + \beta_0 c_{t-2} + \beta_1 CCI_{t-1} + \epsilon_t
\]

(4)

where \( c \) is year-on-year change in private consumption, \( CCI \) refers to the consumer confidence indicator and \( \epsilon \) is the error term.\(^{12}\) Hence, the survey data in this case have the advantage of being one quarter ahead of lagged private consumption. If we instead would like to carry out the forecast during the second half of the quarter, we may make use of the outcome from the last quarter. The forecast model may in this case be specified as:

\[
\hat{c}_t = \alpha + \beta_0 c_{t-1} + \beta_1 CCI_{t,m1} + \epsilon_t
\]

(5)

where \( CCI_{t,m1} \) refers to the indicator for the first month in the quarter. In this case survey data for the first (or even the second month) of the current quarter will be available. Consequently, when assessing the predictive value of consumer sentiment one should also take into account their timeliness as compared to many other variables (e.g. from the quarterly national accounts), which is often a neglected issue.

The models above are estimated for the different consumer confident indicators discussed in previous section. In order to limit the scope, only the EU, the euro area and the five largest Member States are considered. The results for the second model above are shown in Table 4.\(^{13}\)

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\(^{12}\) Note that this procedure amounts to a test of Hall's (1978) random walk hypothesis; if either of the coefficients to the explanatory variables turns out not to be zero, the hypothesis is rejected.

\(^{13}\) Results for the first model are very similar.
The quest for the best Consumer Confidence Indicator

Table 4: Share of variance explained by different indicators (adjusted R2-values)

<table>
<thead>
<tr>
<th></th>
<th>EU</th>
<th>EA</th>
<th>DE</th>
<th>FR</th>
<th>IT</th>
<th>ES</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benchmark model (β = 0)</td>
<td>0.64</td>
<td>0.68</td>
<td>0.43</td>
<td>0.52</td>
<td>0.56*</td>
<td>0.74</td>
<td>0.54*</td>
</tr>
<tr>
<td>Models including CCI</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Optimal (coincident)</td>
<td>0.74</td>
<td>0.77*</td>
<td>0.56*</td>
<td>0.56</td>
<td>0.55</td>
<td>0.82*</td>
<td>0.54</td>
</tr>
<tr>
<td>Optimal (leading)</td>
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<td>0.77*</td>
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<td>0.55</td>
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<td>0.56</td>
<td>0.55</td>
<td>0.76</td>
<td>0.54</td>
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<tr>
<td>Micro</td>
<td>0.69</td>
<td>0.72</td>
<td>0.52</td>
<td>0.56</td>
<td>0.55</td>
<td>0.76</td>
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<td>Current</td>
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<td>0.47</td>
<td>0.57*</td>
<td>0.55</td>
<td>0.77</td>
<td>0.54</td>
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</table>

*) Indicator with highest correlation for each area or country

Note: sample sizes differ across areas and countries (longest available used)

For both the EU and the euro area, the optimal indicators, derived from correlation analysis only, stands out in terms of predictive power. In both areas, the optimal leading indicator seems superior and also significantly better than the benchmark model. At the country level, the picture is more mixed. The optimal indicators derived for Germany and Spain also perform well. For Germany, however, the values are low in general, reflecting a difficulty to explain short-term developments in German households’ consumption. In France, it seems that the current or factor-based indicators are the best ones, although the share of variance explained by each indicator is low. For both Italy and the UK, consumer confidence indicators seem not to be useful in predicting household consumption.

6. Summary and concluding remarks

The optimal indicator in both the EU and the euro area turns out to include both micro and macro questions. Thus, in a strict sense, our hypothesis of the superiority of the micro questions cannot be confirmed. In a broader perspective, however, we find that a set of the micro questions seems to be more informative of private consumption growth than most combinations where macro questions are included. The micro indicator performs better than both the factor based indicator and, more importantly, the current indicator, in particular for the euro area aggregate.

Although the current indicator turned out to perform relatively poor, some further investigations needs to be done before choosing a new indicator. Our optimal indicator is obviously derived from the historical relationship between the indicator and private consumption growth. A change may be based not only on historical performance, but also on more principal, and economic, grounds, which speaks in support of the micro indicator. Our results also underline the large variation across countries. The optimal set of questions included varies considerably across countries and the best indicator derived for the EU and euro-area performs not necessarily very well at the country level. As a consequence,
we derive a globally best indicator that ideally should be used for comparisons across countries, which includes 2 micro questions and 1 macro question. Furthermore, the micro indicator performs better than the current indicator in almost all countries.

Finally, it should be pointed out that consumer sentiment may be considered as measuring something multidimensional and the consumer survey’s raison d’être may therefore not only lay in its use as an early indicator of private consumption growth, but has a wider usage (e.g. simply as a measurement of overall consumer confidence). In our view, however, the use of such an indicator is rather unclear, and we deem that the ability of a consumer confidence indicator to predict developments in private consumption is of superior importance. Also, most previous research has been focussed on consumer confidence indicators ability to predict private consumption growth.14

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14 There are exceptions. For instance, Matsuka and Sorbone (1995) choose to look into the relationship between consumer sentiment and general economic fluctuations. Taylor and McNabb (2007) finds that consumer survey indicators generally play a significant role in predicting downturns.
The quest for the best Consumer Confidence Indicator

References


The quest for the best Consumer Confidence Indicator


Appendix

Consumer survey – Questionnaire (monthly questions)

Q1 How has the financial situation of your household changed over the last 12 months? It has...
   + + got a lot better
   + got a little better
   = stayed the same
   - got a little worse
   - - got a lot worse
   N don't know.

Q2 How do you expect the financial position of your household to change over the next 12 months? It will...
   + + get a lot better
   + get a little better
   = stay the same
   - get a little worse
   - - get a lot worse
   N don't know.

Q3 How do you think the general economic situation in the country has changed over the past 12 months? It has...
   + + got a lot better
   + got a little better
   = stayed the same
   - got a little worse
   - - got a lot worse
   N don't know.

Q4 How do you expect the general economic situation in this country to develop over the next 12 months? It will...
   + + get a lot better
   + get a little better
   = stay the same
   - get a little worse
   - - get a lot worse
   N don't know.
Q5 How do you think that consumer prices have developed over the last 12 months? They have…

+ + risen a lot
+ risen moderately
= risen slightly
− − stayed about the same
− − fallen
N don’t know.

Q6 By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months? They will…

+ + increase more rapidly
+ increase at the same rate
= increase at a slower rate
− − stay about the same
− − fall
N don’t know.

Q7 How do you expect the number of people unemployed in this country to change over the next 12 months? The number will...

+ + increase sharply
+ increase slightly
= remain the same
− − fall slightly
− − fall sharply
N don’t know.

Q8 In view of the general economic situation, do you think that now it is the right moment for people to make major purchases such as furniture, electrical/electronic devices, etc.?

+ + yes, it is the right moment now
= it is neither the right moment nor the wrong moment
− − no, it is not the right moment now
N don’t know.
Q9 Compared to the past 12 months, do you expect to spend more or less money on major purchases (furniture, electrical/electronic devices, etc.) over the next 12 months? I will spend...

+ + much more
+ a little more
= about the same
− a little less
− − much less
N don't know.

Q10 In view of the general economic situation, do you think that now is...?

+ + a very good moment to save
+ a fairly good moment to save
− not a good moment to save
− − a very bad moment to save
N don't know.

Q11 Over the next 12 months, how likely is it that you save any money?

+ + very likely
+ fairly likely
− not likely
− − not at all likely
N don't know.

Q12 Which of these statements best describes the current financial situation of your household?

+ + we are saving a lot
+ we are saving a little
= we are just managing to make ends meet on our income
− we are having to draw on our savings
− − we are running into debt
N don't know.
## Table A1: Volatility and averages of balances per question

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Table A2: Descriptive statistics of the correlations of the 2047 indicators

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Figure A1  Box plots of EU, euro area, and country distributions of 2 047 correlations
Figure A2  Optimal coincident country indicators, compared to global optimal, current, and micro indicators (graphical illustration of Table 3)