ARTICLES

CONFIDENCE INDICATORS AND ECONOMIC DEVELOPMENTS

The current crisis has very often been labelled as a "confidence crisis". While in 2007 and 2008, the crisis was mainly seen as relating to financial markets, subsequently, in the euro area, it has evolved into a sovereign debt crisis. Both business and consumer confidence have been affected by this. Economic theory has long considered the possibility that waves of optimism and pessimism could be important drivers of business cycles. Survey data about economic agents' sentiment can provide information about such optimistic or pessimistic views on future economic developments, especially in terms of uncertainty, which can have substantial implications for the real economy. This article illustrates the usefulness of survey-based confidence indicators for monitoring economic developments in the euro area and for identifying the emergence of waves of optimism and pessimism against the backdrop of the current crisis.

1 INTRODUCTION

The global financial crisis in 2007-08 was followed by a recession that has been unprecedented since the Great Depression in terms of its abruptness, severity, and cross-country synchronisation. The recession resulted, to a large extent, from a situation of heightened uncertainty or fear of the unknown, as the financial crisis had created a general climate of exceptionally low confidence. Consumers, firms, and investors around the world adopted "wait-and-see" attitudes, postponing expenditures that could be delayed until the uncertainty about the severity of the crisis was resolved. These attitudes of extreme prudence, in turn, fed the crisis. Similarly, the sovereign debt crisis in the euro area is another stage of the global financial crisis, in which weak confidence is undermining the forces that would, under normal circumstances, be contributing towards a sustainable rebound in economic conditions.

Measuring the sentiments or confidence of economic agents – households and firms – is not a straightforward process. Survey-based indicators can, however, be helpful in discovering people's opinions on future economic developments. These indicators are both timely and can include information that is known by the survey respondents but not yet reflected in aggregate economic variables, such as consumption expenditures, employment or GDP. As they are based on personal views or the sentiments of individuals, they can also reveal important information about expectations, particularly regarding the emergence of waves of optimism or pessimism that are shown by many authors to be important drivers of the business cycle (see Box 1).

This article aims to analyse the usefulness of such survey-based indicators in order to monitor and predict economic developments in the euro area. Particular attention will be given to the development of such confidence indicators since the start of the global financial crisis in 2007, as the large swings in survey-based indices seem to be consistent with the collapse in confidence as an important driver of the subsequent economic recession. The drivers of confidence and the conditions under which sentiment indicators prove to be helpful in predicting future economic developments will, therefore, be discussed in some detail.

The article is structured as follows. After examining the economic sentiment indicators available for the euro area and their developments since the crisis in Section 2, Section 3 describes some of the factors that affect their movements over time and makes the link between uncertainty and confidence. Section 4 shows how confidence indicators can be used to monitor and predict economic developments in the euro area. Section 5 draws some conclusions.

Box 1

THE ROLE OF CONFIDENCE IN MACROECONOMICS

The role of confidence indicators in economic analysis has been widely debated in the academic literature. There are two main contrasting approaches: the "information" view, which suggests that confidence indicators contain information about future economic developments, and the "animal spirits" view, which claims that independent changes in beliefs have causal effects on business cycles.[1] Both the information and animal spirits views can still be compatible with leading indicator properties, but only the latter would imply causality. Empirically, however, the conclusions remain ambiguous. At one extreme, confidence measures are shown to have both a predictive power and a role in understanding business cycle fluctuations. At the other extreme, some research concludes that the concept of confidence does not play any valuable role in macroeconomics.

Confidence in the consumption theory

From a theoretical viewpoint, the modern theories of consumption suggest that any role given to consumer confidence to explain future consumption is not consistent with rational economic expectations.[2] Therefore, explanations of the predictive power of consumer confidence have to be found outside of the rational expectations theoretical framework with frictionless capital markets. Indeed, with frictions in capital markets, a rise in confidence may reflect higher future income, but borrowing constraints can prevent the consumer from consuming more today in anticipation of the increase in income. As a result, consumption will increase only when actual income rises. In such a case, an increase in consumer confidence predicts the future increase in consumption.[3]

Another theoretical justification of the role of confidence in explaining consumption expenditures relates to the existence of "animal spirits".[4] Information received might alter the consumers' perceptions about the future and affect their current consumption decisions. Consumers revise their economic outlook and behaviour based on signals originating from their economic environment. In particular, optimistic income expectations induce people to increase their discretionary expenditures, which do not only depend on economic determinants such as income or prices, but also on attitudes or expectations. These psychological factors influence the perception of the consumer's economic environment and how to respond to it.[5]

Empirical results

From an empirical viewpoint, the literature has investigated the extent to which confidence indicators could contain any information beyond economic fundamentals that could be helpful to

1 Barsky, R. and Sims, E. (2012), "Information, animal spirits, and the meaning of innovations in consumer confidence", *American Economic Review,* No 102, pp. 1343-1377.
2 Hall, R.E. (1978), "Stochastic implications of the life-cycle/permanent income hypothesis: Theory and evidence", *Journal of Political Economy*, No 96, pp. 971-987.
3 Acemoglu, D. and Scott, A. (1994), "Consumer confidence and rational expectations: Are agents beliefs consistent with the theory?", *The Economic Journal,* No 104, pp. 1-19.
4 Keynes, J. M. (1936), "The General Theory of Employment, Interest and Money", London, Macmillan, pp. 161-162 and Katona, G. (1975), "Psychological Economics", New York, Elsevier Scientific Publishing Company.
5 Shapiro, H. (1972), "The index of consumer sentiment and economic forecasting: A reappraisal", in Strumpel, B., Morgan, J. and Zahn, E. (Eds.), "Human Behavior in Economic Affairs", Jossey-Bass, San Francisco, pp. 373-396.

forecast future consumption expenditures. The questions of interest are, first, whether an index of consumer sentiment has any predictive power on its own for future changes in consumption spending and, second, whether it contains information about future changes in consumer spending aside from the information contained in other available indicators, such as income, unemployment or inflation.

While the evidence is overall rather mixed, most authors seem to, at least, find a significant statistical relationship between confidence measures and economic variables, both current and future.[6] The conclusions are, however, conflicting, because it remains difficult to fully isolate the effect of consumer confidence on consumption. Confidence is indeed closely related to other economic variables that also affect consumption, such as income. The disagreement among the empirical studies, therefore, reflects different sets of economic indicators included in the various consumption forecasting models.

There is, however, more consensus when it comes to events that have led to significant changes in confidence, where there is more likely to be some empirical support for the role of confidence as a predictor of consumption. In particular, some authors stress the special importance of confidence indicators in predicting periods of strong fluctuations in the economy, such as recessions and recoveries, or during periods of major economic or political shocks.[7] Such periods are usually associated with high volatility of consumer confidence, suggesting that large swings in confidence could be very useful indicators of consumption.[8]

The role of confidence in business cycle fluctuations

Beyond the role of confidence in consumption behaviour, the academic literature has also been interested in the importance of sentiment in business cycles, as economic agents' perceptions about the future might impact not only consumption but also firms' investment decisions and production. For instance, Beveridge (1909) was among the first to stress that expectations were the "single underlying" factor in business cycles.[9] Any change in expectations about demand and profits leads firms to increase their production, resulting in a phase of overproduction. This excess optimism about future demand then leads to a wave of pessimism, generating cyclical fluctuations. Clark (1917) also claimed that anything that can change consumer demand (including a sudden wave of optimism) can create an "impulse" that propagates, through an acceleration mechanism, into a cycle.[10] Similarly, for Pigou (1927), psychological factors (i.e. waves of optimism and pessimism) lead entrepreneurs to make errors when forming their expectations about future profits.[11] These errors generate cycles through rises and falls in investment.

6 Carroll, C.D., Fuhrer, J. and Wilcox, D. (1994), "Does consumer sentiment forecast household spending? If so, why?", *American Economic* Review, No 84, pp. 1397-1408.
7 Garner, C.A. (1991), "Forecasting consumer spending: Should economists pay attention to consumer confidence surveys?" *Economic Review*, pp. 57-71 or Howrey, E.P. (2001), "The predictive power of the index of consumer sentiment", *Brookings Papers on Economic Activity*, No 32, pp. 175-207.
8 See "The reliability of survey data during periods of financial turmoil", *Monthly Bulletin*, ECB, pp. 56-58, November 2008.
9 Beveridge, W.H. (1909), "Unemployment: A Problem of Industry", Longmans Green, London.
10 Clark, M.J. (1917), "Business acceleration and the law of demand: A technical factor in economic cycles", *Journal of Political Economy*, No 25, pp. 217-235.
11 Pigou, A. (1927), "Industrial Fluctuations", Macmillan, London.

Although the Real Business Cycle theory does not envisage such psychological factors in its explanation of economic fluctuations,[12] Pigou's ideas have recently been reintroduced into the theory of cycles in the context of equilibrium business cycle models.[13]

12 Barro, R.J. and King, R.G. (1984), "Time-separable Preferences and Intertemporal-Substitution Models of Business Cycles", *The Quarterly Journal of Economics*, No 99, pp. 817-839.
13 See Beaudry, P. and Portier, F. (2004), "An exploration into Pigou's theory of cycles", *Journal of Monetary Economics*, No 51, pp. 1183-1216.

2 CONFIDENCE INDICATORS AND THEIR DEVELOPMENT SINCE THE BEGINNING OF THE CRISIS

The analysis discussed here is mainly based on the European Commission (EC) confidence indices for the euro area and the euro area countries, as they provide the longest time series available for testing and are among the most widely used indicators for the euro area.The EC has been conducting surveys since 1961, with more than 125,000 firms and 40,000 consumers surveyed every month across the EU countries. At the very least, these survey data are useful from the point of view of monitoring economic developments in a timely manner, as they are available earlier than "hard data" (national accounts, output data, etc.) and are subject only to limited revisions. For instance, the EC releases the full set of Business and Consumer Surveys at the end of the reporting period to which they refer. A flash estimate of the consumer confidence index is even available around ten days earlier than that. As the surveys include forward-looking questions (i.e. sentiment over the next 12 months), they also reflect economic agents' expectations about future economic developments.

Starting with the consumer confidence index, the EC's consumer survey asks participants a set of questions about their economic circumstances and their views on the general economic outlook. More precisely, questions relate to households' personal situations, the labour market, and the general economic situation. The questions are both backward-looking (over the last 12 months) and forward-looking (over the next 12 months). For most questions, the respondents are offered various possible qualitative answers, ranging from "a lot better" to "a lot worse". Each question is then summarised as a percentage balance derived from the proportion of respondents opting for each of these response categories. The consumer confidence indicator is calculated as the arithmetic mean of the four balances derived from the four forward-looking questions. Two of them relate to their personal situation (financial position and savings) and the other two relate to the economic situation of their country (general economic situation and unemployment in the country).

There is, of course, an important caveat to mention as regards the measurement of confidence. Household sentiment is a personal and subjective assessment of the environment (current and future) in which agents take economic decisions. Moreover, the consumer sentiment indices might be subject to measurement errors, as survey questions are very often too ambiguous for the respondent and too qualitative to be used for quantitative assessment.[1] However, in most empirical work, confidence indices derived from surveys are assumed to be a good proxy of individuals' perceptions about their economic environment and to be informative about their behaviour.

Turning to the business surveys, the EC conducts surveys for five different sectors (industry; services; construction; retail trade; and financial services). The surveys are largely qualitative and the main questions refer to an assessment of recent developments in the business situation, of the

1 See, for instance, Dominitz, J. and Manski, C.F. (2004), "How should we measure consumer confidence", *Journal of Economic Perspectives*, No 18, pp.51-56.

current levels of order books and stocks, as well as expectations about production, selling prices and employment. Answers are usually given according to a three-option ordinal scale: "increase", "remain unchanged", "decrease"; or "more than sufficient", "sufficient", "not sufficient"; or "too large", "adequate", "too small". Answers are aggregated in the form of balances, which are then used to build composite indicators for each surveyed sector.

As an aggregate confidence index, the EC also computes the economic sentiment index, as a weighted average of sentiment in industry, services, the retail trade and construction as well as among consumers.[2]

The EC survey indicators have experienced large swings since the beginning of the crisis. Consumer confidence fell first with the international propagation of the US "subprime" crisis in mid-2007 (see Chart 1). The Lehman Brother collapse was also associated with one of the largest falls in the consumer confidence index in September 2008. The index reached an historical trough in March 2009. The index recovered from this trough to rise just above its long-term average at the end of 2010 and beginning of 2011, before declining once again. The euro area sovereign debt crisis in the summer of 2011 was associated with a large fall in the confidence index. After some stabilisation at the beginning of 2012, the index fell again in the summer of 2012. Although the recent trough remains higher than the previous 2009 low, the current level of the consumer confidence index stands far below the historical average.

The heterogeneity in economic developments across euro area countries is also reflected in the development of confidence indicators (see Chart 2). While the developments were relatively

2 Further information on the EC survey data can be found on the DG ECFIN's BCS website: http://ec.europa.eu/economy_finance/db_indicators/surveys/index_en.htm

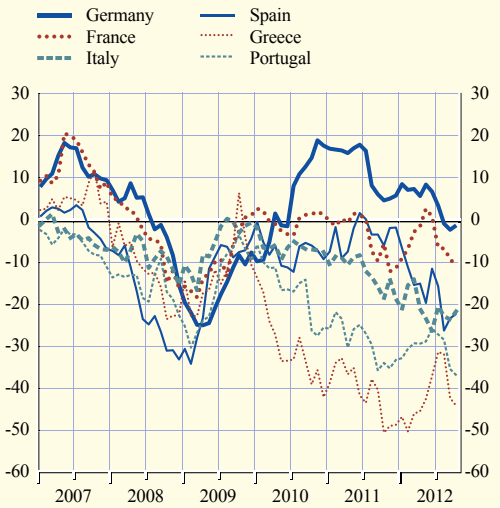
Chart 1 Developments in euro area consumer confidence

(percentage balances)

Sources: European Commission and ECB calculations.
Note: Data shown are calculated as deviations from the average over the period since January 1985.

Chart 2 Developments in consumer confidence in selected countries

(percentage balances)



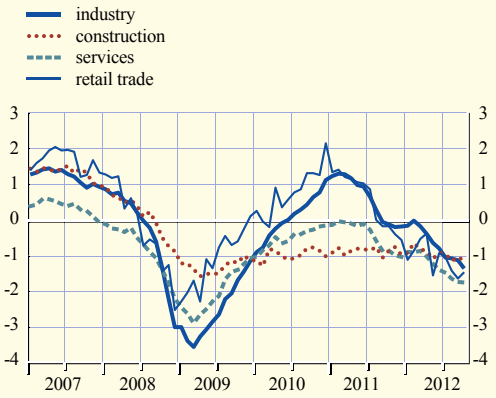
Sources: European Commission and ECB calculations.
Note: Data shown are calculated as deviations from the average over the period since January 1985.

homogenous across countries until 2009, the consumer confidence indices have shown diverging trends across the euro area countries since 2009. The index recovered rather strongly in Germany in 2010 and remained broadly stable thereafter. In France, it remained very close to the euro area aggregate, while it declined more strongly in Italy and Spain, especially since mid-2011. The confidence indices in Greece and Portugal fell from the end of 2009 to historical lows in mid-2011. They have since then recovered somewhat, though remaining at very low levels.

Business confidence indices have also developed along similar lines, with sharp declines from 2007 to 2009, a recovery up to mid-2011, and a renewed decrease since then. Some sectoral differences ought to be pointed out, however, with the industry and retail trade sectors experiencing the largest swings in business confidence. Although less volatile, confidence in the services and construction sectors has remained at low levels since the end of 2009 (see Chart 3).

Chart 3 Developments in business confidence by sectors

(percentage balances)



Sources: European Commission and ECB calculations.
Notes: Data shown are calculated as deviations from the average over the period since January 1985. To facilitate sectoral comparisons balances are normalised.

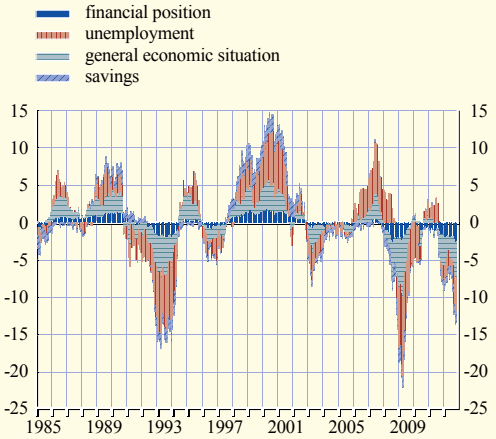
3 DRIVERS OF CONSUMER CONFIDENCE

Computing the contribution of the various components to the overall confidence index can provide some clues about the driving forces of confidence. In addition to this simple statistical approach, it is also interesting to identify a few variables that tend to co-move with confidence indicators, without presuming any causal link between them. As confidence indicators are used here solely from the perspective of measuring economic agents' expectations about the future, the analysis focuses on consumer surveys. Moreover, most of the academic literature concentrates on consumer sentiment indices when analysing the usefulness of such indicators as predictors of economic developments or as a way to identify confidence shocks.

Chart 4 shows the contributions of the four components to the overall euro area consumer confidence index. Most of the volatility of the indicator is driven by changes in expectations relating to unemployment developments. This was particularly the case during the recession in the 1990s and in 2008. There are, indeed, strong co-movements between consumer

Chart 4 Contributions of components to euro area consumer confidence

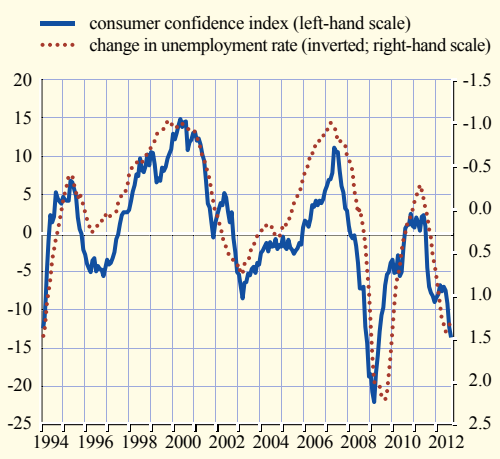
(percentage balances)



Sources: European Commission and ECB calculations.
Note: Data shown are calculated as deviations from the average over the period since January 1985.

Chart 5 Consumer confidence and the unemployment rate in the euro area

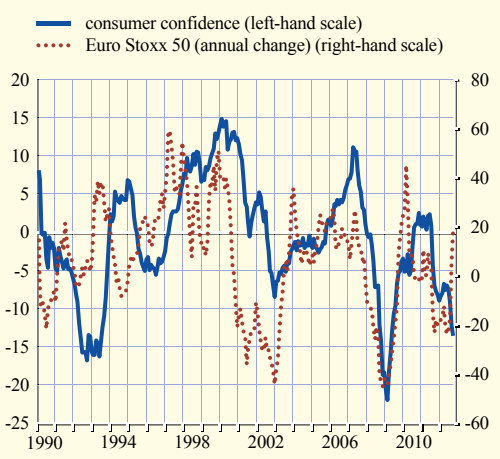
(percentage balances; annual change)



Sources: European Commission, Eurostat and ECB calculations.
Note: Survey data shown are calculated as deviations from the average over the period since January 1985.

Chart 6 Consumer confidence and equity prices in the euro area

(percentage balances and year-on-year change, percentages)



Sources: European Commission, Eurostat and ECB calculations.
Note: Survey data shown are calculated as deviations from the average over the period since January 1985.

confidence and unemployment. Chart 5 illustrates the fact that increases in the annual change in the unemployment rate tends to be associated with declines in consumer confidence. The correlation between the consumer confidence index and the inverted yearly change in the unemployment rate is highly positive: 84% contemporaneously and 88% with a three-month lead for the confidence indicator.

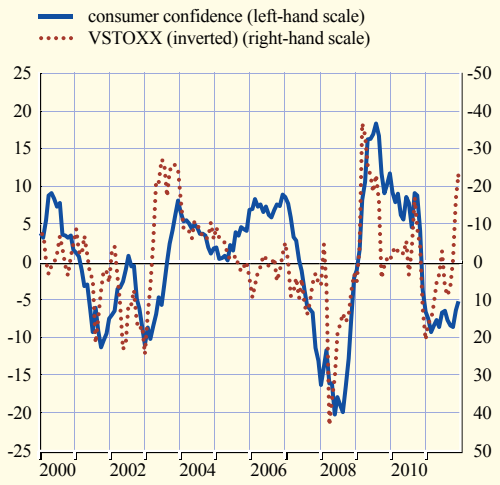
During the 2008-09 financial crisis, as well as during the euro area sovereign debt crisis, expectations about the general situation have also contributed significantly to the changes in the euro area confidence indicator. Such high-profile events may have, indeed, had a large impact on the respondents' perceptions about the future economic situation.

In general, the other two components (savings and financial situation) contribute less to the changes in the overall index. There is, notwithstanding this, a rather strong correlation between the change in the consumer confidence index and the change in equity prices in the euro area (Chart 6). Compared to the co-movements with unemployment, the correlation between the confidence indicator and the change in equity prices is more contemporaneous. This may indicate that stock markets are not so much important for consumers in terms of their personal financial situation (particularly in the euro area, where the share of financial wealth in total wealth is low by international standards), but they become much more important in terms of providing timely information about the economic situation. The co-movements between this financial market variable and consumer confidence actually increased during the financial crisis. There are also strong co-movements between financial market uncertainty and the consumer confidence indicator (Chart 7). Consumer confidence and the uncertainty indicator derived from the volatility of financial market variables in the euro area (VSTOXX index[3]) have co-moved rather strongly from the

3 The VSTOXX is a volatility index, providing a measure of market expectations of near-term up to long-term volatility based on the Euro Stoxx 50 options prices. The data shown here refer to the index of percentage implied volatility, on a hypothetical at the money Euro Stoxx 50 option 30 days to expiration.

Chart 7 Consumer confidence and financial market uncertainty

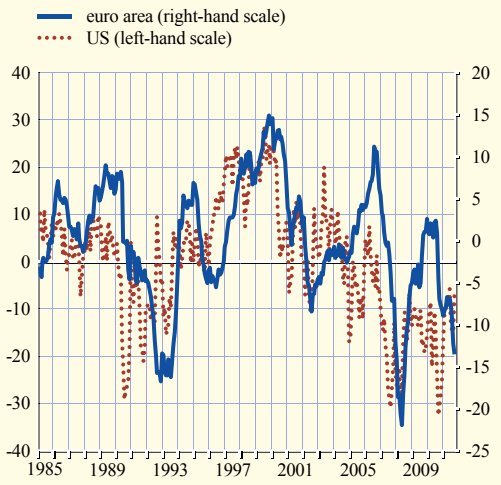
(percentage balances; annual changes)



Sources: European Commission, Stoxx and ECB calculations.
Note: Data shown are calculated as deviations from the average over the period since January 1985.

Chart 8 Euro area consumer confidence and US consumer sentiment index

(percentage balances)



Sources: European Commission, University of Michigan and ECB calculations.
Note: Survey data shown are calculated as deviations from the average over the period since January 1985.

beginning of the 2000s and during the recent financial crisis. These co-movements, between a measure of confidence and a measure of uncertainty, point to quite a strong relationship between these two concepts, which, in any case, remain difficult to quantify owing to their latent nature. Higher uncertainty tends to be associated with low confidence, which is particularly true since the beginning of the crisis.[4]

Finally another key aspect of the recent financial crisis has been the increased synchronisation in business cycles across countries. These co-movements in economic activity can also be found at the level of the confidence indicators. Chart 8 illustrates, for instance, that there is not only a clear relationship between the US consumer confidence index (measured by the University of Michigan consumer sentiment index) and the corresponding euro area index, but that there is also some lead in the US sentiment index when compared with the euro area (the maximum correlation between the two series is when the United States leads the euro area by three months). This underlines the role of the United States in the world economy and the importance of the transmission of shocks from the United States to the rest of the world.

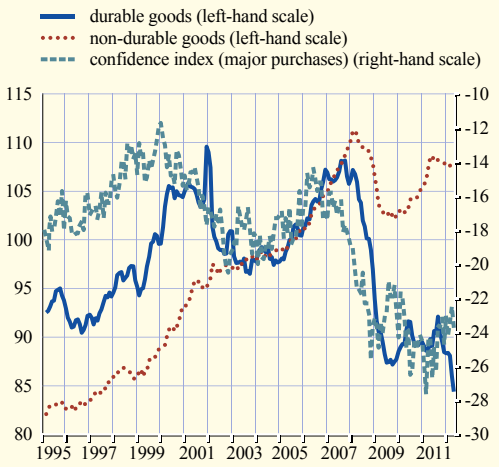
Overall, the previous charts show strong correlations between the confidence indicators and various economic and financial indicators. However, these correlations do not imply any causality relationship. The association between movements in consumer confidence and those in other economic or financial variables indicate that common causes, possibly related to third factors (e.g. rare events producing financial or uncertainty shocks), might be at the origin of these large swings.

4 Positive innovations to business uncertainty are shown to have effects similar to negative business confidence innovations (see Bachmann, R., Elstner, S. and Sims, E.R., "Uncertainty and Economic Activity: Evidence from Business Survey Data", *NBER Working Paper*, No 16143, 2010).

4 THE USE OF CONFIDENCE INDICATORS TO MONITOR AND PREDICT ECONOMIC DEVELOPMENTS

Chart 9 Turnover index for durable and non-durable consumer goods industry (domestic market) and confidence index for major purchases

(levels, 2005=100, 3-month moving average; percentage balances)



Sources: Eurostat, European Commission and ECB calculations.

The relationship between confidence and uncertainty has often led the persistent weakness in economic activity since the beginning of the financial crisis to be interpreted as a persistent wave of pessimism following a strong, negative confidence shock associated with an increase in uncertainty.[5] Reacting to higher uncertainty about their future income, households may increase their precautionary savings, reducing equivalently their consumption expenditures. This accumulation of precautionary wealth aims at protecting households' spending from future adverse shocks. Shocks to uncertainty could then explain a large part of households' savings behaviour, together with shocks to wealth and credit conditions.[6] Firms also react to uncertainty both, on the demand side, by cutting investment plans, and on the supply side, by reducing hiring plans. Heightened risk awareness and uncertainty hinders especially those decisions that are difficult and costly to reverse, such as fixed investment or the purchase of durable goods.[7] Chart 9 illustrates the fact that, within the consumer goods industry, durable goods have been the most affected by lower confidence, as shown by the high correlation with the confidence sub-index related to major purchases over the next 12 months. By contrast, non-durable goods have remained less influenced by swings in consumer confidence, as a large part cannot be postponed.

High uncertainty and low confidence are likely to have some impact on business cycle fluctuations, following the idea that non-economic fundamental reasons could have some impact on economic developments. In particular, booms and busts can arise even without any significant changes in economic fundamentals, and recessions can develop merely from a wave of pessimism unrelated to any technological regression.[8] In other words, changes in expectations driven by changes in sentiment could drive a large part of economic developments. Theoretical and empirical studies show that major uncertainty shocks have a significant impact on the real economy, bringing about a substantial drop and rebound in output and employment. This occurs because higher uncertainty causes firms to suspend their investment and hiring. In turn, this affects consumer confidence and spending. Productivity growth also falls, because this pause in activity freezes reallocation across units. In the medium term, uncertainty shocks lead output, employment, and productivity to overreact, generating short, sharp recessions and recoveries.[9] Heightened uncertainty also affects

5 See, for instance, IMF (2012), "World Economic Outlook – October 2012: Coping with High Debt and Sluggish Growth".
6 See Carroll, C., J. Slacalek and M. Sommer (2012), "Dissecting savings dynamics: Measuring credit, wealth and precautionary effects", ECB, mimeo, and J. Slacalek (2012), "What drives the US personal savings rate? The role of wealth, credit and uncertainty", *ECB Research Bulletin*, No 16, pp. 10-12, www.ecb.europa.eu/pub/pdf/other/researchbulletin16en.pdf
7 See, for instance, Pindyck, R.S. (1991), "Irreversibility, Uncertainty and Investment", *Journal of Economic Literature*, No 29, pp. 1110-1148, and Bernanke, B. (1983), "Irreversibility, Uncertainty and Cyclical Investment", *Quarterly Journal of Economics*, No 98, pp. 85-106.
8 See Beaudry, P. and Portier, F. (2004), "An exploration into Pigou's theory of cycles", *Journal of Monetary Economics*, No 51, pp.1183-1216.
9 Bloom (2009), "The Impact of Uncertainty Shocks", *Econometrica*, Vol. 77, No 3, May, pp. 623-685.

the effectiveness of economic policy. It is has been found that increased uncertainty alters the relative impact of government policy, making it, in the short run, less effective.[10]

The euro area consumer confidence index co-moves clearly with households' consumption expenditures (see Chart 10). However, as such co-movements also reflect information included in other economic variables (see Charts 5 to 7), it is important to distinguish the additional information that survey-based data can bring and that which is not contained in any other indicator. One obvious advantage of the confidence index is its timeliness. On top of this, a key question concerns its ability to predict future changes in actual households' consumption expenditures. Since they are based on forward-looking questions, the confidence indicator can include some information that is not available in any other economic indicator.

Chart 10 Private consumption and consumer confidence in the euro area

(annual percentage changes; percentage balances, standardised)

Sources: European Commission, Eurostat and ECB calculations.

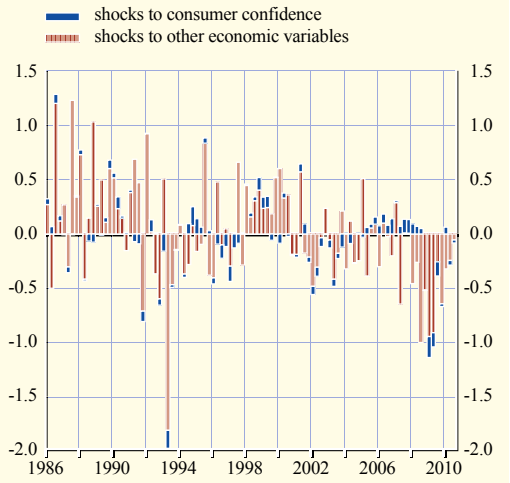
A simple regression between changes in consumption and lagged changes in consumer confidence in the euro area shows some sort of positive relationship between the two. Although the fit is not particularly high, 14% of real consumption fluctuations could be explained by changes in consumer confidence. However, once additional economic indicators are included in such regressions (i.e. income, unemployment, stock prices, interest rates, etc.), the gain obtained by including confidence indicators in explaining consumption becomes even less significant. The same applies when using consumer confidence to predict consumption in out-of-sample forecasting exercises.[11]

Thus, if confidence indicators are used to infer changes in economic agents' sentiment, one needs to distinguish in the information contained in these indices the part related to economic developments that is also included in other indicators from the part that is uniquely related to agents' perceptions about the future. This can be done through the estimation of a VAR model used to forecast changes in real consumption and including consumer confidence in addition to standard economic and financial variables.[12] This model can then be used to obtain a historical forecast error decomposition. Chart 11 illustrates the relative contribution to forecast errors of real consumption due to shocks to confidence and to the other economic variables. This shows that shocks to confidence play a relatively small role, on average, compared to shocks to other economic variables. However, there are periods during which confidence shocks play a more important role, such as during episodes of economic tensions (financial crises or economic recessions) or during geopolitical turmoil.

10 See Bloom, N. et al. (2012), "Really uncertain business cycles", *NBER Working Paper*, No 18245.
11 See, for instance, Dees and Soares-Brinca (2011), "Consumer confidence as a predictor of consumption spending: Evidence for the United States and the euro area", *Working Paper*, No 1349, ECB, forthcoming in *International Economics*.
12 See Dees and Soares Brinca (2011), op. cit.

Chart 11 Real consumption historical forecast error decomposition

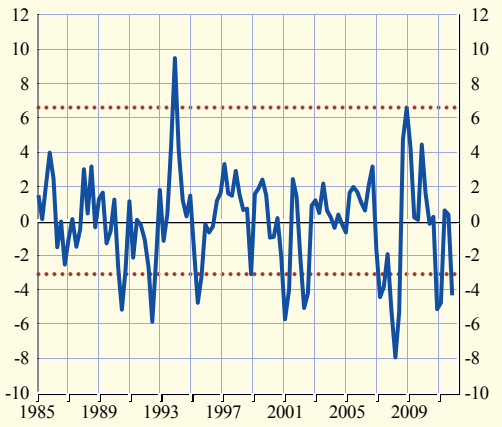
(percentage)



Source: Dees and Soares Brinca (2011).
Note: Historical decomposition of forecast errors based on a VAR model including real consumption, consumer confidence, real disposable income, financial and housing wealth, real equity prices, short-term interest rates, unemployment rate and real oil prices.

Chart 12 Quarterly changes in consumer confidence and optimal prediction thresholds

(percentage balances)



Sources: European Commission and ECB calculations.
Note: The upper and lower bands are obtained so as to maximise the in-sample fit of the equation linking changes in consumption with lagged changes in consumer confidence.

Against this background, one possible hypothesis could be that significant changes in confidence indicators might be particularly helpful to predict economic developments. Non-linearities in the relationships between confidence indicators and economic variables might then play a large role. Even if during normal periods of economic activity, sentiment indices are not of any help to forecast future changes in economic variables, they might include information that is not yet contained in any other economic indicator during periods of tensions, when these indices feature large swings.

Within a regression explaining changes in consumption with various economic variables, including confidence, it is possible to estimate upper and lower thresholds beyond which changes in confidence indicators start having a significant forecasting ability to predict future developments in consumption. For the euro area, these thresholds are found to be asymmetric, that is to say, strong decreases in consumer confidence are more important to predict future changes in consumption than large increases (see Chart 12). Over the period 1985-2012, only one large increase could be considered as important, which was in the first quarter of 1994, and it corresponds to a period of economic recovery. By contrast, nine episodes of large declines in the confidence index are considered, by this empirical approach, as being an important leading indicator as to future developments in consumption. In all cases, the identified dates correspond to economic downturns (1990, 2001-02 and 2008), financial crises (1992, 2007, 2011 and 2012) or geopolitical tensions (2001 and 2002).

The relative gain in predictability of confidence indicators when they exhibit large changes, therefore, points to a non-linear and asymmetric relationship between confidence and economic fluctuations. It could, therefore, be helpful to exploit these properties to use the confidence indicators

as a predictor of economic recessions. Box 2 shows that most cyclical downturns in the euro area could have been predicted by large downward changes in consumer confidence. Using this model over the most recent period shows that monitoring the strong declines in confidence in the summer months of 2011 would have been helpful to predict the renewed downturn in economic activity from the end of 2011. The intensification of the euro area sovereign debt crisis, as a result of the deterioration in the confidence of economic agents, indeed contributed to the sudden worsening of economic conditions at the end of 2011 and in 2012.

Box 2

CONFIDENCE INDICATORS TO PREDICT ECONOMIC RECESSIONS

The link between confidence indicators and economic activity is not straightforward, but may be more relevant during crisis periods. During normal times of economic activity, changes in confidence may reflect misperceptions about the economic situation or simply be following real developments, such that the information content of such indicators may be small. As a result, sentiment indicators may have poor leading properties. However, during crisis periods, a significant deterioration in confidence can have some predictive power with regard to future economic developments. In such circumstances, confidence indicators reflect a significant change in economic agents' behaviour, which is likely, in turn, to have real implications.

This box aims to provide more evidence on the link between confidence indicators and economic activity in the euro area. Using a model relying on confidence indicators to predict economic cycle phases, it shows that a significant fall in confidence is often associated with a recession.

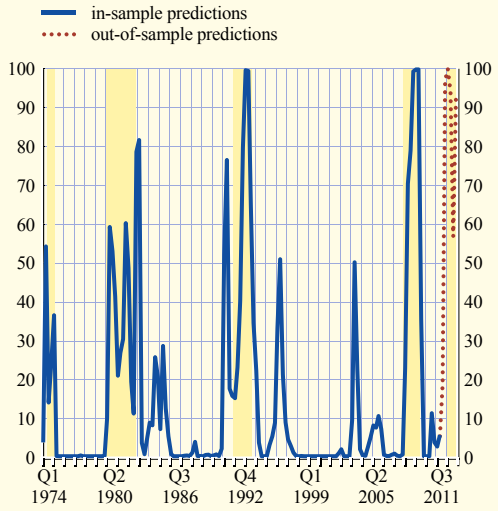
Recessions are usually severe shock events and abrupt confidence falls can be good indicators of regime shifts out of normal cyclical swings and into periods of negative feedback loops between confidence, domestic demand and asset market changes. A theoretical explanation of the link between confidence and economic cycle phases can be found in a range of dynamic general equilibrium models that give rise to multiple equilibria, in which expectations about the future level of output can become self-fulfilling. As a result, a decline in consumer or business confidence can, *ceteris paribus*, cause a decline in output.[1]

Empirically, the modelling of business cycle phases has been popularised by the use of probit models predicting recessions for some periods ahead based on financial variables.[2] The main goal has not necessarily been to understand how the economy behaves in the different phases of the business cycle, but instead to use the current values of the predictors to forecast the likelihood of recessions and expansions some quarters ahead of the current period. Applying probit models to business cycle phases therefore aims at fitting the historical pattern of recessions and expansions through some observable variables or combinations of variables. Although the use of probit models to link survey indicators with business cycle phases has been scarcer than models using financial variables, some studies find that both consumer and business confidence indicators are pro-cyclical and generally play a significant role in predicting recessions.[3]

1 Farmer, R. (1999), "Macroeconomics of Self-fulfilling Prophecies", second edition, MIT Press, Cambridge, MA.
2 Estrella, A., (2005), "Why does the yield curve predict output and inflation?", *Economic Journal*, No 115, pp. 722-744.
3 Taylor, K. and R. McNabb (2007), "Business Cycles and the Role of Confidence: Evidence for Europe", *Oxford Bulletin of Economics and Statistics*, No 69 (2), pp. 185-208.

Chart A Recession probability in the euro area

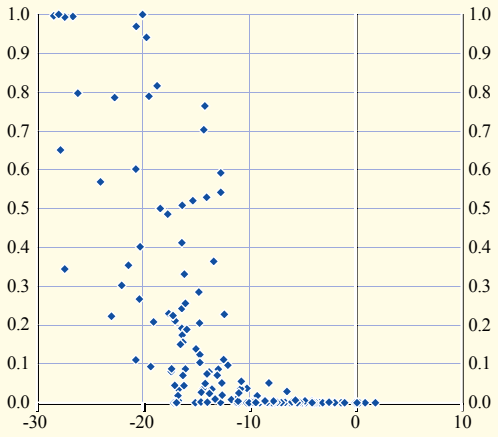
(probability equals 1 when the economy is in recession)



Source: ECB calculations.
Note: The yellow areas correspond to recessions defined by the CEPR. In-sample over 1974Q4-2011Q3; out-of-sample over 2011Q4-2012Q4.

Chart B Euro area consumer confidence (x-axis) and recession probability (y-axis)

(x-axis: balance of opinion; y-axis: probability equals 1 when the economy is in recession)



Sources: Eurostat and ECB calculations.

Following the empirical literature, a probit model including the EC consumer confidence index can be estimated. To account for the predictability coming from other economic variables, the OECD leading indicator for the euro area is also included in the model as a summary of other available economic information. Overall, this model captures relatively well business cycle phases, with probability values increasing when recessions occur (see Chart A). Interestingly, the probabilities are close or equal to 1 for the recessions that were associated with financial crises (the ERM crisis in the 1990s or the financial crisis in 2008). The drawback of this modelling approach is that the probability also increases during periods of falls in confidence that are not necessarily associated with recessions (such as during the geopolitical tensions in 2003). These false signals remain, however, limited.

Moreover, while rather low before the recession starts, the probability tends to sharply increase once the confidence indicator goes beyond a certain threshold. This is in line with the non-linear relationships between confidence indicators and their corresponding "hard" data, mentioned in the main text. Here, similar evidence can be shown. For example, when comparing the series of recession probabilities with the consumer confidence data, one sees that the probability of recession increases quickly once confidence balance of opinion drops below -10, while it remains close to zero when the indicator posts higher values (see Chart B).

The main shortcoming of the approach presented here is that using a particular type of indicator in forecasting economic conditions can generate false signals, due to developments which affect the chosen indicators, but which are uncorrelated to, or have low correlation with, the subsequent recession probabilities. This approach may also overlook important indicators that could improve the explanatory power of the models. However, the present exercise remains useful, since it complements other approaches using survey-based data to support analyses of the short-term outlook.

5 CONCLUSION

The recent crisis and the following recession have given a prominent role to sharp movements in confidence as a key driver of economic developments. Heightened uncertainty about the future, and the associated pessimism, has constrained the usual drivers of economic recoveries. Both households and firms have preferred to adopt a wait-and-see attitude before engaging in decisions that are costly to reverse.

The EC's surveys help shed some light on the developments in confidence in the euro area since the beginning of the crisis. Both consumer and business confidence indices have experienced large swings since 2007 and have reacted strongly to the various exceptional events during that period. Their strong correlations with the main economic and financial variables show that these indicators are useful to monitor economic developments, as they are both timely and point to some leading properties with respect to "hard" data, without necessarily implying any causal relationship. The co-movements between consumer confidence and the other economic or financial variables rather point to the fact that common causes, possibly related to third factors (e.g. rare events producing financial or uncertainty shocks), could be at the origin of these changes, notably when they experience large swings.

A more detailed analysis of the leading properties of survey-based indicators shows the existence of non-linearities in the relationships between confidence indices and economic variables. During normal times of economic activity, sentiment indicators are of limited help in forecasting future changes in economic variables, as they include information that is contained in other economic or financial data. However, these indices gain some predictive power during periods of tension, when they feature large swings.

Overall, this article confirms the usefulness of survey-based confidence data to monitor economic developments in the euro area, especially when the indices experience significant changes, as they help anticipate forthcoming movements in the main economic indicators.