

Sentiment Surveys in Portugal – Description and Empirical Analysis^{1,2}

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Abstract

Sentiment surveys are a powerful tool to capture economic agents' expectations and activities, which makes them particularly useful for policy makers in interpreting and analysing economic conditions, especially since the global financial crisis, often labelled as a "confidence crisis".

This paper empirically assesses the role of confidence in explaining private consumption and analyses to what extent the Portuguese consumer confidence index can bring additional information beyond variables which are usually found to have some power in explaining the real expenditure of households. When relevant, we draw some comparisons of this phenomena in the euro area through similar studies previously conducted.

Keywords: statistical surveys, consumer confidence, economic expectations.

1. Introduction

Sentiment indicators can be defined as a representation designed to measure the economic agents' perception about a specific market, business, environment or other factor.

In the European Union (EU) countries, the most known sentiment indicator is the European Commission's Economic Sentiment Indicator (ESI), a composite indicator made up of five sectoral confidence indicators with different weights: the industrial confidence indicator, the services confidence indicator, the consumer confidence indicator (CCI), the construction confidence indicator and the retail trade confidence indicator.

Each of these confidence indicators is calculated as a simple arithmetic average of the seasonally adjusted balances of the answers given to a specific set of questions – the ones that are closely related to the reference variables that they are supposed to track – that are chosen from each full survey³. These surveys are defined within the Joint Harmonised EU Programme of Business and Consumer Surveys and are conducted in each participating country, on a monthly basis. The sample sizes vary across countries

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³ For more information regarding each survey see EC (2017).

according to the heterogeneity of each economy and are generally positively related to their respective population size. In Portugal, these surveys are conducted by the National Statistics Institute, which every month inquires about 4200 firms and 1630 consumers (EC, 2017).

The survey results are published by the European Commission (EC) and are then used for economic analysis, surveillance and short-term forecasting, not only by the EC, but also by the European Central Bank (ECB), National Central Banks, researchers and financial institutes, especially since the global financial crisis, “*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*” (ECB, 2013, p. 45)

The link between confidence and economic decisions has been, so far, widely covered in the literature, namely, in what concerns consumer confidence – an indicator that measures the consumers' feelings about the current and future economic conditions.

The main concerns on this topic are, on the one hand, whether consumer confidence can be explained by current and past values of variables such as income, unemployment or consumption and, on the other hand, whether confidence measures have any statistical significance in predicting economic outcomes once information from the variables cited above is used.

Dées *et al* (2011) present an interesting literature review on this subject and show that, although the evidence found seems to be mixed, most authors appear to find a significant statistical relationship between confidence measures and economic variables, current and future.

In their work, they tried to empirically assess the role of confidence in explaining households' consumption in the United States (USA) and the euro area and to analyse to what extent confidence indicators could bring additional information beyond the variables which are usually found to have some power in explaining the real expenditure of households (*e.g.* income, wealth or interest rates). They also tried to identify under which circumstances confidence indicators could be a good predictor of the households' consumption, by measuring the contribution of confidence during periods associated with large movements in household survey indicators. Overall, they concluded that the CCI can be, in certain circumstances, a good predictor of consumption. In particular, out-of-sample evidence showed that the contribution of confidence in explaining consumption increased when the household survey indicators featured large changes, such that confidence indicators can have an increasing predictive power during such episodes. Moreover, they found evidence of a “confidence channel” in the international transmission of shocks, as the USA confidence indices lead consumer sentiment in the euro area.

As future research, the referred authors suggested the extension of this analysis to other countries, since it would be interesting to verify whether the conclusions taken to the euro area could be confirmed at the level of the different countries.

With this challenge in mind, this paper aims to assess the role of confidence in explaining Portuguese household consumption and analyses to what extent Portuguese CCI can bring additional information beyond the variables which are usually found to have power in explaining the real expenditure of households.

2. Consumer Confidence Indicator - Main Components and Its Developments

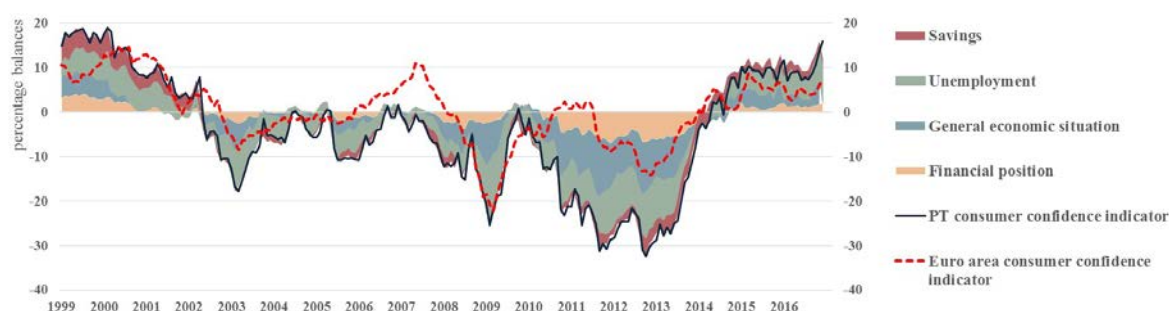
The CCI released by the EC is defined as the arithmetic average of the balances (in percentage points and seasonally adjusted) of the answers to the survey questions on the financial situation of households, the general economic situation, the unemployment expectations (with an inverted sign) and savings, for the next 12 months.

Figure 1 sheds some light on the developments of Portuguese and euro area CCI since 1999. During the period under analysis, consumer confidence experienced large swings and strongly reacted, in a relatively homogeneous way, to the various exceptional events, especially those related to the global economic and financial crisis.

Consumer confidence fell with the international propagation of the US “sub-prime” crisis in mid-2007 and with the Lehman Brothers collapse in September 2008. The Portuguese indicator declined in the beginning of 2010, with the emerging of the banking crisis and the successive supplementary fiscal consolidation measures adopted, namely, under the Financial Assistance Programme (EFAP) agreed between the Portuguese authorities, the EU, the ECB and the International Monetary Fund (IMF) in May 2011. The indicator started recovering since the end of 2012, reaching positive levels, in the mid of 2014, the year that marked the end of the EFAP.

The computation of the contribution of the various components of the CCI is a very useful tool to provide evidence on the driving forces of confidence. In Portugal, between 2007 and 2014, most of the volatility of the CCI was mainly driven by changes in expectations related to unemployment and to the general economic situation. The other two components, savings and financial situation, contributed relatively less to the changes in the overall indicator.

Figure 1: Contributions of components to Portuguese CCI



Source: EC and authors' calculations

Note: Data shown are calculated as deviations from the average over the period since June 1986.

The ECB (2013) further suggested that, in addition to this analysis, it is also interesting to identify a few variables that tend to co-move with the CCI, even without presuming any causal link between them. This exercise was developed to the euro area, for the period between the early 90's and 2013, and it was found that increases in the annual change in the unemployment rate tend to be associated with declines in consumer confidence. The correlation between the CCI and the inverted yearly change in the unemployment rate was strong and positive: 0.84 when calculated contemporaneously and 0.88 with a

3-month lead for the confidence indicator. It was also found a strong correlation between the change in the CCI and the change in equity price in the euro area, especially when computed contemporaneously.

For the purpose of this paper, the same exercise was performed to Portugal for the period between 1999 and 2016. The correlation between the CCI and the inverted yearly change in the unemployment rate is strong and positive (0.65) and only a minor change is observed when we consider a 3-month lead for the CCI. The correlation between changes in the Portuguese CCI and changes in equity prices is lower and more contemporaneous, either considering the PSI 20 index (0.11 contemporaneously and 0.04 with a 3-month lead for the confidence indicator) or the Eurostoxx50⁴ index (0.31 contemporaneously and 0.25 with a 3-month lead for the confidence indicator)⁵.

Besides the unemployment rate and the stock indexes, there is also empirical evidence of an association between consumer confidence and real consumption. Déés *et al* (2011) found that, in the euro area, the correlation between these two variables is the highest when confidence is lagged by one period (0.42), decreasing when higher lags are considered (0.20 for a 2-period lag and 0.21 for a 4-period lag). We found much higher results when performing the same exercise with Portuguese data: the coefficient of correlation achieves 0.8 when computed contemporaneously and remains relatively high (0.74) when CCI is lagged by one-period, which could be a strong suggestion of leading properties for consumer sentiment.

Overall, we can also corroborate that “*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*” as in ECB (2013).

3. Consumer confidence as a predictor of consumption

In this section, we aim at testing if confidence indicators bring additional information beyond economic fundamentals, by following the methodology proposed by Déés *et al* (2011)⁶. We start our empirical analysis by running a causality test. Thereafter, we estimate a set of consumption equations where the confidence indicator is considered as an explanatory variable for consumption alongside with other standard variables used in the empirical literature. Finally, we estimate a VAR model to derive impulse response functions and historical decomposition⁷.

3.1. Data

The dataset used in this section covers quarterly information from the first quarter of 1999 to the fourth quarter of 2015. The variables considered in this study were treated as suggested by Déés *et al* (2011), *i.e.*, whenever applicable they were seasonally adjusted and deflated.

Concerning the confidence indicator, we used the CCI released by the EC. The other explanatory variables, denominated by the Déés *et al* (2011) as “economic fundamentals”, include the real disposable income, the financial and housing wealth, the real stock prices, the short-term interest rates, the

⁴ The Eurostoxx50 index was also tested due to the increasing integration of financial markets.

⁵ Stock markets have a relatively low importance for consumers in terms of their personal financial situation: the investment in quoted shares represents less than 2 per cent of the total financial wealth in the Portuguese households.

⁶ We also assume that confidence indices derived from surveys are a relatively good proxy of households’ perception about their economic environment and could be used as explanatory variables of their consumption expenditures.

⁷ For all the methodological details, see Déés *et al* (2011).

unemployment rate and the real oil prices. Due to lack of data on non-financial Portuguese households' total wealth, we considered the households' financial wealth as a proxy of their total wealth. Eurostoxx 50 data were considered to measure stock prices⁸ and the six month Euribor as a proxy for short-term interest rates.

3.2. Granger causality test

Given that the strong correlations found in section 2 do not warrant any causal relationship, the existence of Granger causality was tested among the various variables of our dataset. The results show that, for a 95 per cent confidence level, consumption is Granger-caused by interest rates and by oil prices, while consumption and unemployment rate are the only variables that Granger-cause domestic confidence. However, confidence does not seem to Granger-cause changes in consumption, at least at the conventional significance levels.

For the euro area, Déés *et al* (2011) showed that consumption is Granger-caused only by confidence and interest rates while confidence is Granger-caused by unemployment rate, interest rates and foreign confidence.

These results remain however very limited. The estimation of consumption models together with a dynamic analysis are necessary to better understand the role of the various possible determinants of consumption and their complex dynamic relationship.

3.3. Estimation of a simple model for consumption

We extend our causality analysis with the estimation of a very simple model where changes in consumption only depend on the lagged changes⁹ in consumer confidence (Model 1). We then compare Model 1 with a second one (Model 2) where changes in consumption depend on a set of “economic fundamentals” and where the CCI is excluded, as defined in subsection 3.1.. Finally, we define Model 3, as the combination of Model 1 with Model 2. We then compare the adjusted coefficient of determination (\bar{R}^2) of each tested model.

Although the fit in Model 1 is not particularly high – about 11 per cent of real consumption fluctuations could be explained by changes in consumer confidence, – the analysis of the results shows a positive relationship between both variables, as the parameters estimated for the lags of consumer confidence are positive. In Model 2, the adjusted \bar{R}^2 increased to 18.7 per cent. However, once these economic indicators are included in the regression, there is still a benefit to be obtained by including the CCI as an explanatory variable, as the \bar{R}^2 that would result from such a regression (Model 3) would be 20.6 per cent – almost 2 percentage points better when compared to Model 2. These results are in line with those obtained by Déés *et al* (2011) for the euro area, where Model 3 seems to be the best one (with a \bar{R}^2 equal to 18 per cent against a \bar{R}^2 of 10 per cent in Model 1 and 16 per cent in Model 2).

Although this analysis remains relatively simple, it helps to tentatively conclude that both for the euro area and for Portugal, consumer confidence seems to help explain consumer expenditures when taking fundamentals into account.

⁸ Eurostoxx50 shows a higher correlation with Portuguese CCI when compared to PSI20 (*vd* section 2).

⁹ According to the evidence of the information criteria of several auxiliary regressions, we decided to use only one lag of the independent variables of models 1, 2 and 3.

3.4. VAR analysis

In this section, we set up a VAR modelling framework to help us analyse the dynamics of the impacts of a shock to confidence on consumption through impulse response functions. In a first step, we estimate a VAR model for Portugal using the same variables as in Model 3. This allows us to infer the response of consumption to a one standard deviation shock to confidence over time. In a second step, we compute historical forecast error decomposition to describe the relative importance of shocks to confidence and shocks to the other fundamental variables.

Figure 3 shows the impulse function of a shock to confidence on real consumption in Portugal and allows to infer that, for the model and data used, a shock to confidence has a short-term significant impact on consumption. Nonetheless, one cannot identify any long-run persistent movement, which is completely in line with the results obtained for the euro area (Dées, *et al*, 2011).

Figure 3: Responses to a 1 standard deviation innovation in confidence on consumption growth with 95% confidence

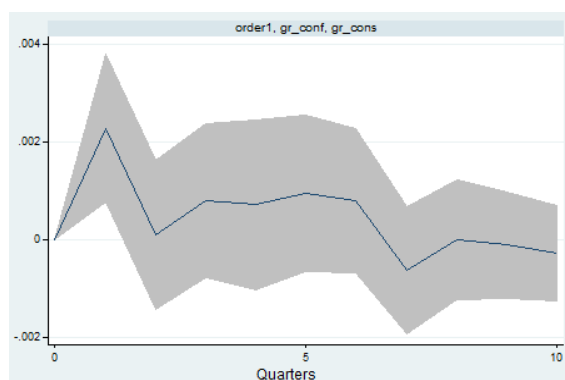


Figure 4: Historical forecast error decomposition - Portugal

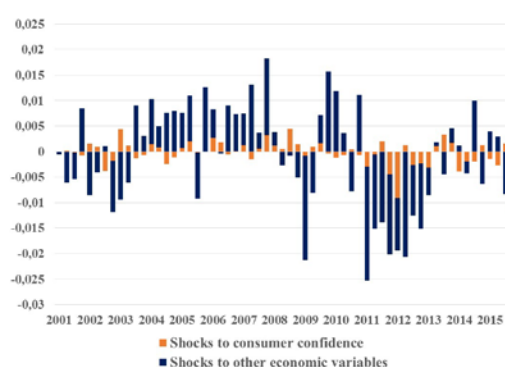


Figure 4 illustrates how the contribution of confidence shocks has changed over time. As expected, these play, on average, a relatively small role when compared to shocks to fundamentals. However, there are some periods when confidence seems to play a relatively more important role. Indeed, we can notice that while the contributions of confidence shocks tend to oscillate around zero, such shocks had larger negative influence on the forecast error decomposition during very specific episodes, such as during the economic and financial assistance programme (2011-2014). Negative confidence shocks contributions are sometimes absorbed by positive contributions of other shocks (2004-2005), while strong positive contributions can also be found, for instance in the last two quarters. Once again, the results obtained are entirely in line with those found by Dées, *et al* (2011) for the euro area.

Overall, the historical decomposition exercise shows that the confidence seems to matter in some specific episodes, which in most cases corresponds to periods where there are large changes in household survey indicators.

4. Consumer Confidence as a Driver to Bank Loans Demand

The high levels of households' indebtedness is one of the main concerns regarding the Portuguese economy. Bank loans are traditionally the main liability of Portuguese households' representing, at the end of 2016, about 86% of the total liabilities of the sector. Despite some reductions since the onset of the financial crisis, the indebtedness levels remain still high when compared to other EU countries (*Banco de Portugal, 2016*).

The Bank Lending Survey (BLS)¹⁰ provides some useful information on the factors influencing loan demand¹¹. Figures 5 and 6 show the relevance of consumer confidence in the changes of the demand for housing loans in Portugal and in the euro area. Since the beginning of 2014, this variable is having a positive impact towards the shift observed in the demand for loans.

Figure 5: Changes in demand for housing loans and contributing factors – Portugal¹²

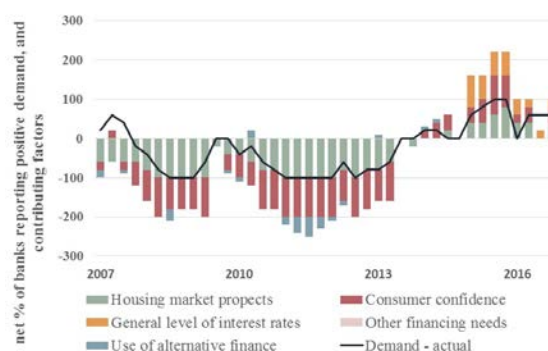
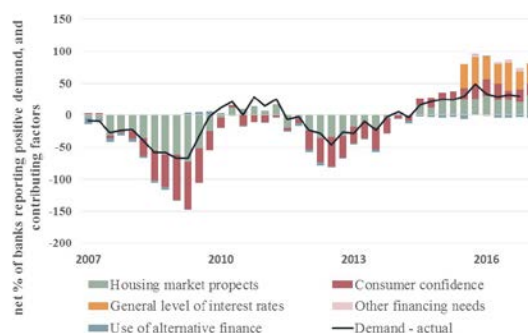


Figure 6: Changes in demand for housing loans and contributing factors – Euro area



5. Conclusions

This paper confirms the usefulness of survey-based confidence data to monitor economic developments in Portugal in a timely manner, as they are available earlier than, for example, national accounts. Our empirical evidence showed that the Portuguese CCI seems to contain some valuable information to explain consumption when taking other economic fundamentals into account. These

¹⁰For more detailed information on BLS, see:

https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html

¹¹Loan demand refers to the need of households for bank loan financing, irrespective of whether or not this need results in a loan being granted.

¹²We use the same aggregations as shown in ECB (2016).

results were confirmed by the VAR approach, which also showed – through a historical decomposition exercise – that confidence seems to matter in some specific episodes, which, in most cases, correspond to periods where there are large changes in household survey indicators. In this domain, future research, as suggested by Déés *et al* (2011), could include the development of a third empirical approach that relies on a non-linear estimation of the consumption equation using a threshold model. It would also be interesting to explore if a “confidence channel” can be observed between the euro area and Portugal.

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