

II.2. Cross-border spillovers in confidence ⁽²⁸⁾

The recent crisis has been characterised by a sizeable decline in consumption and in consumer confidence and by significant spillover effects across countries. However, the question of whether confidence indicators are useful predictors of consumption by carrying information beyond economic fundamentals remains open. Moreover, while there is evidence of significant cross-country financial spillovers, the role of the confidence channel for the transmission of shocks is relatively unexplored. This section addresses these issues by analysing the link between real consumption and consumer confidence and the role of confidence spillover effects in the euro area. Real consumption and consumer confidence in the euro area show a close correlation, as well as measures of confidence across a number of euro area countries. An econometric analysis is carried out in order to test whether the correlation stems from the information about economic fundamentals contained in the confidence indicators or whether the latter have an additional predictive power and to assess the existence of confidence spillovers. Measures of consumer confidence abroad appear to be meaningful predictors of domestic confidence and consumption, lending support to the hypothesis that there exist significant cross-country confidence spillovers.

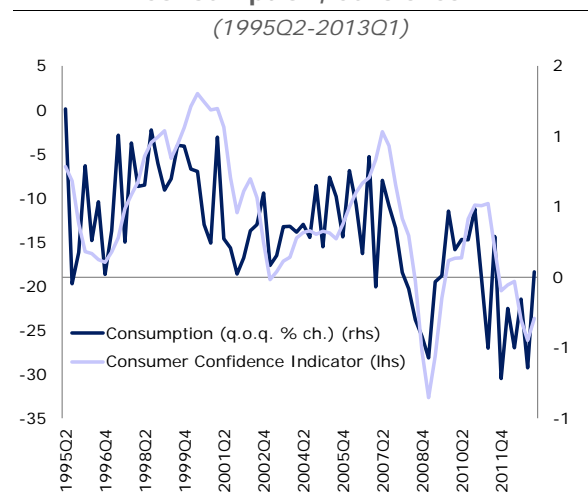
The dynamics of real private consumption and consumer confidence in the euro area

Real private consumption in the euro area has been severely affected during the recent crisis. This has been partly attributed by many commentators to an erosion of consumers' confidence, which is thought to have contributed to the protracted impact of the crisis on the real economy.

Graph II.2.1 illustrates the dynamics of euro area real private consumption and of the Consumer Confidence Indicator, developed by the European Commission as part of the Joint Harmonised EU Programme of Business and Consumer Surveys (BCS), over the period 1985Q1-2013Q1. The graph shows a close co-movement between the two variables, in particular over recent years. After reaching a peak in the second quarter of 2007,

consumer confidence in the euro area started declining, plummeting in the first quarter of 2009. Since then, a partial recovery was followed by a new deterioration at the height of the sovereign debt crisis. The indicator, however, showed an improvement in the first half of 2013. The growth rate of private consumption followed a very similar pattern, showing its largest decline in the last quarter of 2011 (-0.72%), remaining negative over the course of 2012 and improving slightly in the first quarter of 2013.

Graph II.2.1: Confidence and private consumption, euro area

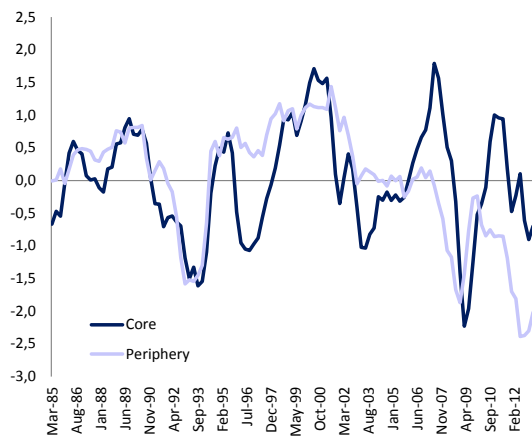


Source: Eurostat and DG ECFIN calculations based on EU Business and Consumer Surveys.

The overall euro area picture hides significant differences at the Member States' level. Graph II.2.2 shows the evolution of the Consumer Confidence Indicator in the core and the peripheral countries since 1985. The indicators for the two groups of countries displayed a similar dynamics in the early years of the sample (with the exception of the years leading to the adoption of the euro, when confidence was higher in the periphery). However, since 2002 and, more markedly, starting from 2009 the link appears to have become much weaker. While the indicators move in the same direction, the rebound in consumer confidence since 2009 in peripheral countries has been considerably more fragile and the subsequent deterioration larger than in core countries. While there was some improvement in the first half of 2013, consumer confidence in peripheral Member States remains at very low levels, particularly in Greece and Portugal.

⁽²⁸⁾ Section prepared by Francesca D'Auria.

Graph II.2.2: Consumer Confidence Indicator in core and peripheral countries (1985Q1-2013Q1)



(1) Core: Austria, Belgium, Finland, France, Germany and Netherlands. Periphery: Greece, Ireland, Italy, Spain and Portugal. The Consumer Confidence Indicators have been standardised before aggregation.

Source: DG ECFIN calculations based on EU Business and Consumer Surveys.

The data suggest the existence of a stronger link between consumer confidence indicators across Member States belonging to the core or the periphery.

Table II.2.1: Consumer Confidence Indicator - Correlation matrix (1996Q1-2013Q2)

| | Core | | | | | | Periphery | | | | |
|----|---------------------|------|------|------|----------------------|------|----------------------|----------------------|----------------------|---------------------|------|
| | AT | BE | FI | FR | DE | NL | EL | IE | IT | PT | ES |
| AT | 1,00 | 0,74 | 0,66 | 0,80 | 0,74 | 0,49 | 0,26 | 0,08 ⁽¹⁾ | 0,30 | 0,26 | 0,37 |
| BE | 0,74 | 1,00 | 0,70 | 0,89 | 0,62 | 0,71 | 0,53 | 0,49 | 0,61 | 0,60 | 0,70 |
| FI | 0,66 | 0,70 | 1,00 | 0,70 | 0,41 | 0,80 | 0,48 | 0,46 | 0,51 | 0,62 | 0,68 |
| FR | 0,80 | 0,89 | 0,70 | 1,00 | 0,62 | 0,68 | 0,56 | 0,48 | 0,50 | 0,60 | 0,64 |
| DE | 0,74 | 0,62 | 0,41 | 0,62 | 1,00 | 0,36 | -0,14 ⁽¹⁾ | -0,01 ⁽¹⁾ | -0,01 ⁽¹⁾ | 0,03 ⁽¹⁾ | 0,19 |
| NL | 0,49 | 0,71 | 0,80 | 0,68 | 0,36 | 1,00 | 0,64 | 0,74 | 0,65 | 0,82 | 0,75 |
| EL | 0,26 | 0,53 | 0,48 | 0,56 | -0,14 ⁽¹⁾ | 0,64 | 1,00 | 0,70 | 0,81 | 0,83 | 0,71 |
| IE | 0,08 ⁽¹⁾ | 0,49 | 0,46 | 0,48 | -0,01 ⁽¹⁾ | 0,74 | 0,70 | 1,00 | 0,64 | 0,85 | 0,68 |
| IT | 0,30 | 0,61 | 0,51 | 0,50 | -0,01 ⁽¹⁾ | 0,65 | 0,81 | 0,64 | 1,00 | 0,85 | 0,80 |
| PT | 0,26 | 0,60 | 0,62 | 0,60 | 0,03 ⁽¹⁾ | 0,82 | 0,83 | 0,85 | 0,85 | 1,00 | 0,85 |
| ES | 0,37 | 0,70 | 0,68 | 0,64 | 0,19 | 0,75 | 0,71 | 0,68 | 0,80 | 0,85 | 1,00 |

(1) Not statistically significant at conventional levels.

Source: DG ECFIN calculations based on EU Business and Consumer Surveys.

Table II.2.1 displays simple correlations between the confidence indicators of the countries classified within the two groups. In core countries, with the exception of the Netherlands, the correlation of consumer confidence indicators with other members of the group is stronger than with members of the periphery. The observed correlation of confidence indicators is also stronger across peripheral countries than between these and core countries, in particular in the case of Portugal. These relationships, which characterised the whole

sample period, further strengthened during the crisis. ⁽²⁹⁾ The high correlation can be indicative of a strong synchronisation of the business cycle, but also of confidence spillover effects across a number of euro area countries.

Confidence, consumption and the role of spillovers

The way consumers' attitudes influence the real economy is much debated in the literature. ⁽³⁰⁾ From a theoretical point of view, departures from the permanent income hypothesis can in part be justified by uncertainty about expected income. The extent to which confidence indicators capture information about future economic conditions can explain their predictive power for consumption series. Secondly, the link between consumption and consumer confidence could be explained in terms of 'animal spirits', as the indicators could convey information about non-economic factors affecting consumption. ⁽³¹⁾

Empirically, significant attention has been devoted to the strength of the relationship between confidence and consumption and to the issue of causality. A number of studies, for example Carroll, Fuhrer and Wilcox (1994), find evidence of a strong correlation between consumer confidence and real consumption. ⁽³²⁾

However, a close correlation between the dynamics of private consumption and confidence indicators is not necessarily indicative of a relation of causality, as consumption and consumers' confidence are largely driven by the same determinants. In other words, the question is whether confidence indicators carry information beyond economic fundamentals. The evidence is

⁽²⁹⁾ In particular, the moderately positive and robust correlations between consumer confidence indicators in Germany and in peripheral countries turned negative and not statistically significant since the onset of the crisis. Moreover, over the period 2008Q1-2013Q2, consumer confidence in the Netherlands became more strongly correlated with consumer confidence in core countries than with confidence in the periphery.

⁽³⁰⁾ See Déés S. and P. Soares-Brinca (2011), "Consumer confidence as a predictor of consumption spending – Evidence for the United States and the Euro Area", *ECB Working Paper*, No. 1349 for a discussion of the theoretical arguments in support of the relationship between consumption and consumer confidence.

⁽³¹⁾ See, for example, Acemoglu D. and A. Scott (1994), "Consumer confidence and rational expectations: Are agents' beliefs consistent with the theory?", *The Economic Journal*, No. 104, pp. 1-19.

⁽³²⁾ Carroll C., J. Furher and D. Wilcox (1994), "Does consumer sentiment forecast household Spending? If So, Why?", *American Economic Review*, Vol 84, pp. 1397-1408.

Box II.2.1: Confidence spillovers and consumption

This box assesses the impact of confidence spillovers on consumption for a sample of 8 euro area Member States (Austria, Finland, France, Germany, Greece, Italy, Portugal and Spain) using quarterly data over the period 1999Q1-2012Q4. This is done by developing an error correction model consisting of a medium-term co-integrating equation and a short-term equation. ⁽¹⁾ The first equation tests the relationship between consumption and real disposable income, real net financial wealth, real house prices and the ratio of household credit to house prices. The latter is assumed to be correlated with banks' loan-to-value ratios, implying that an increase in the ratio can be interpreted as an easing of credit constraints. The medium-term relationship is estimated by dynamic OLS including a time trend (all variables are in logs). The table below displays the results for the medium-term equation.

Real consumption- Estimation of medium-term co-integrating equation

| | Real disposable income | Real net foreign assets | Real house prices | Ratio of credit to house prices |
|-------------|------------------------|-------------------------|-------------------|---------------------------------|
| Coefficient | -0.1950*** | -0.0436*** | -0.2195*** | -0.1702*** |

Note: *** denotes statistical significance at the 1% level.

The estimation of the short-term equation allows to test the role of confidence spillovers across the countries included in the sample. The equation relates consumption to first differences of the variables included in the medium-term equation, to the error correction term from the medium-term equation and to the real long-term interest rate. In addition, the equation includes the domestic BCS Consumer Confidence Indicator and an indicator of foreign confidence. The latter is constructed by combining confidence indicators for a sample of 14 countries (including, in addition to the countries included in the panel, Belgium, Ireland, Netherlands, Sweden, United Kingdom and United States) using trade weights. ⁽²⁾

Real consumption - Estimation of short-term equation

| Variable | 1 | 2 | 3 |
|--------------------------------------|------------|------------|------------|
| Cointegrating equation residual (-1) | -0.2876*** | -0.2889*** | -0.2873*** |
| Dlog_net foreign assets (-1) | 0.0766*** | 0.0881*** | 0.0682*** |
| Dlog_credit / house prices (-1) | 0.1129*** | 0.0869** | 0.1027*** |
| Dlog_real house prices (-1) | 0.1080*** | 0.0866*** | 0.0941*** |
| Long-term interest rate (-1) | -0.0010*** | -0.0008*** | -0.0009*** |
| Domestic confidence indicator (-1) | | 0.0024*** | 0.0018*** |
| Foreign confidence indicator (-1) | 0.0013** | | -0,0002 |

Note: ***, ** and * denote respectively statistical significance at 1, 5 and 10%.

The results (table above) show that the foreign confidence indicator is statistically significant. The domestic confidence indicator is also strongly significant. The channel through which foreign confidence is expected to influence real consumption is domestic confidence, which is confirmed by the lack of significance of the foreign confidence indicator once the domestic confidence indicator is included. To test the extent to which domestic confidence is affected by foreign confidence, the next table shows results from the regression of the domestic confidence indicator on the same determinants as in the consumption equation, on the growth differential between the domestic economy and abroad (proxied by GDP for the same countries included in the construction of the foreign confidence indicator), to partly capture the impact of differences in business cycles, and by foreign confidence. The foreign confidence indicator is strongly significant.

⁽¹⁾ Similarly to Balta, Ruscher and Valdés Fernández, "Assessing the impact of uncertainty on consumption and investment", *Quarterly Report on the Euro Area* (2013) Vol. 12(2), where an analogous error correction model is used to assess the role of uncertainty on consumption.

⁽²⁾ For the United States, the University of Michigan Consumer Sentiment Index is used.

(Continued on the next page)

Box (continued)

Determinants of domestic consumer confidence

| Variable | Coefficient |
|---|-------------|
| Dlog_net foreign assets (-1) | 9.8871*** |
| Dlog_credit / house prices (-1) | 4.1694* |
| Dlog_real house prices (-1) | 6.4896*** |
| Long-term interest rate (-1) | -0.0883*** |
| Domestic and foreign growth differential (-1) | 0.0641*** |
| Foreign confidence indicator (-1) | 0.7314*** |

Note: ***, ** and * denote respectively statistical significance at 1, 5 and 10%.

mixed, but many studies seem to point to a positive answer.

Several authors conclude that the inclusion of consumer confidence indicators can reduce forecast errors in predicting the dynamics of consumption, see, for example, Ludvigson (2004).⁽³³⁾ Others, however, find that the addition of measures of consumer sentiment leads to a small or no improvement in forecast accuracy.⁽³⁴⁾ Finally, some papers argue that confidence indicators have a particularly strong predictive power during periods of strong economic fluctuations.⁽³⁵⁾

Moreover, there is some (though limited) evidence that real consumption can also be affected by confidence abroad through its impact on domestic confidence. Déés and Soares Brinca (2011) find evidence of confidence spillovers from the US to the euro area on the basis of regression analysis and of a two-region vector autoregression (VAR) model (while shocks to euro area confidence do not appear to have an impact on confidence and consumption in the US). Fei (2011) uses data for G7 countries and Spain and finds evidence of a confidence transmission channel from large countries to smaller countries.⁽³⁶⁾

⁽³³⁾ Ludvigson S. (2004), "Consumer confidence and consumer spending", *Journal of Economic Perspectives*, Vol. 18(2), pp. 29-50.

⁽³⁴⁾ For example, Claveria, O., E. Pons and R. Ramos (2007), "Business and consumer expectations and macroeconomic forecasts", *International Journal of Forecasting*, Vol. 23, pp. 47-69.

⁽³⁵⁾ For example, Howrey E. (2001), "The predictive power of the index of consumer sentiment", *Brookings Papers on Economic Activity*, Vol. 1, pp. 175-216.

⁽³⁶⁾ Fei S. (2011), "The confidence channel for the transmission of shocks", *Banque de France Working Paper*, No. 314.

The role of confidence spillovers in the euro area

This sub-section discusses the role of confidence spillovers on the basis of a fully-specified consumption equation using an Error Correction Model (ECM) for a panel of euro area Member States over the period 1999-2012. The model includes a set of economic fundamentals as explanatory variables, in order to try to isolate the role of consumer confidence and reduce the bias due to omitted variables. Box II.2.1 describes the model in more detail.

Consumer confidence is measured by the BCS Consumer Confidence Indicator. The indicator is the arithmetic average of the balances of the answers to questions on the financial situation of households, the general economic situation, unemployment expectations and savings, all over the next 12 months.⁽³⁷⁾ It can therefore be considered a proxy for the consumers' expectations about their future economic situation.⁽³⁸⁾ In order to assess the role of cross-country confidence spillovers, the model also includes a foreign confidence indicator built using trade weights.

⁽³⁷⁾ More specifically, the survey questions asked are the following: 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?

⁽³⁸⁾ It must be noted, however, that confidence indicators can suffer from measurement errors due to the qualitative nature of the survey questions asked. See, for example, Dominitz J. and C. Manski (2004), "How should we measure consumer confidence?", *The Journal of Economic Perspectives*, Vol. 18, pp. 51-66.

Regression results indicate that confidence abroad has a significant effect on real consumption which goes beyond economic fundamentals. However, once domestic confidence is included in the estimation, the foreign confidence indicator loses significance. This is consistent with the fact that domestic confidence constitutes the channel of transmission through which foreign confidence can affect domestic consumption.

To better assess the transmission mechanism between foreign and domestic confidence, the domestic confidence indicator is regressed on the same economic fundamentals which were found to affect real consumption, on a measure of the difference in the business cycle between the domestic economy and abroad and on the foreign confidence indicator. Two regression results are worth underlining. First, consumer confidence appears to be partly driven by the same determinants as private consumption. Secondly, foreign confidence is strongly significant and has a robust positive effect on domestic confidence.

Overall, the results from the econometric analysis discussed above provide evidence in support of cross-country confidence spillovers, as foreign confidence appears to play a significant role in affecting domestic confidence and private consumption in the euro area.

Conclusions

Real consumption and measures of consumer confidence appear to be strongly correlated in the euro area. Moreover, confidence indicators display a very close dynamics within core and periphery groups of Member States.

The econometric analysis discussed in this section lends support to the existence of confidence spillovers across euro area countries, suggesting that foreign confidence can positively affect domestic confidence and thereby consumption.