



# Are Italian consumer confidence adjustments asymmetric? A macroeconomic and psychological motives approach



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## ARTICLE INFO

### Article history:

Received 16 April 2012

Received in revised form 10 April 2014

Accepted 22 April 2014

Available online 9 May 2014

### JEL classification:

C22

C32

D12

### PsycINFO classification:

3900

### Keywords:

Asymmetric error correction

Long-run

Short-run

Consumer confidence indicator

Psychological motives

## ABSTRACT

This paper estimates the determinants of Italian consumer confidence indicator (*CCI*) using time series methods. We find there exists a long-run relationship between *CCI* and its determinants when an important political event 'operation clean hands', captured by a dummy, is considered. Using the asymmetric error correction model (Enders & Siklos, 2001), we find that consumers respond asymmetrically to different types of disequilibrium error under threshold autoregressive (TAR) adjustment specification. These findings are consistent with the psychological bias approach (Bovi, 2009).

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## 1. Introduction

The consumer confidence indicator (*CCI*) released by the European Commission for the Euro Area is widely used by economists and practitioners to forecast private consumption. Monitoring the future paths of consumption spending is important because it contributes to the largest share of GDP. Numerous studies have attempted to explore the significance of *CCI* in predicting private consumption spending; however the findings are mixed and inconclusive. Most of the studies have focused on the US. For example Adams (1964), Kamakura and Gessner (1986), Kumar, Leone, and Gaskins (1995) and Allenby, Jen, and Leone (1996) find that consumers' confidence in the economy contributes significantly to the prediction of consumer expenditures. Alternatively, Carroll, Fuhrer, and Wilcox (1994) and Bram and Ludvigson (1998) present

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<sup>1</sup> The first author acknowledges financial support under the project MISURA, funded by the Italian MIUR.

<sup>2</sup> The views expressed in the article are those of the authors and do not involve the responsibility of the Institute.

evidence that *CCI* can improve the short-term forecast of consumption to a limited extent, while [Croushore \(2005\)](#) finds that *CCI* is completely ineffective in explaining future consumption patterns. In the case of Italy, existing evidence shows that *CCI* has a good forecasting performance. [Dreger and Kholodilin \(2011\)](#) investigate the role of *CCI* in predicting private consumption expenditure for various countries; for Italy, the gains in predicting capacity are about 20%. [Malgarini and Margani \(2007\)](#) show that the lagged values of *CCI* can improve the short-run behavior of Italian consumption expenditure.

This paper investigates the determinants of *CCI* for Italy over the period 1985m1–2010m10. The key variables used are *CCI*, short-term interest rate (*i*), industrial production index (*IP*) and the gap between perceived and measured inflation (*DINF*). The unit root tests indicate that *CCI* and *DINF* (*i* and *IP*) are stationary (non-stationary) in their levels and therefore we apply time series techniques that deal with the mixture of  $I(1)$  and  $I(0)$  variables to estimate the relationship between *CCI* and its determinants. The contribution of this paper is twofold. First, we find there exists a long-run relationship between *CCI*, *i*, *IP* and *DINF* when an important political event ‘operation clean hands’, captured by a dummy, is considered. We employ [Pesaran, Shin, and Smith’s \(2001\)](#) autoregressive distributed lag model (ARDL) and the London School of Economics (LSE) Hendry’s general to specific (GETS) ([Hendry, 1995](#)) time series techniques and we attain consistent results across the two methods. Second, using the asymmetric error correction model ([Enders & Siklos, 2001](#)), we find that consumers respond asymmetrically to different types of disequilibrium error under threshold autoregressive (TAR) adjustment specification. These findings are consistent with the psychological bias approach ([Bovi, 2009](#)). The above finding of threshold cointegration is quite surprising because *CCI* is a stationary dependent variable. Our intuition is that because some explanatory variables are non-stationary and hence cointegrated with each other, perhaps this may be the reason for existence of a threshold cointegration in the *CCI* model.

This paper is organized as follows. Section 2 provides a brief overview of the drivers of *CCI* and psychological sensitivity. Section 3 presents the data description and the unit root test results. Section 4 provides the methodological insights of symmetric and asymmetric models used in the empirical analysis. Section 5 details the empirical results. Section 6 concludes.

## 2. Consumer confidence drivers and psychological sensitivity

The *CCI* reflects public opinion about the state of the economy. This indicator is the arithmetic average of balances (over the next 12 months) of household finances, economic conditions, unemployment expectations and savings (see [European Commission, 2007](#) for details). [Katona \(1975\)](#) argued that *CCI* is affected by economic and non-economic (psychological) factors. Since then several attempts have been made to investigate about the robust determinants of *CCI*. A first group of studies considered only the economic variables (for example, inflation, unemployment and interest rates) to explain the formation of consumers’ confidence, for instance see [Golinelli and Parigi \(2004, 2005\)](#) and [Vuchelen \(2004\)](#). A second group of studies examined the *CCI* determinants using some international and/or socio-political factors, for example [Vuchelen \(1995\)](#), [De Boef and Kellstedt \(2004\)](#), [Malgarini and Margani \(2007\)](#) and [Ramalho, Caleiro, and Dionfsio \(2011\)](#). Among the above studies, [Golinelli and Parigi \(2004, 2005\)](#) and [Malgarini and Margani \(2007\)](#) used Italian data.

[Golinelli and Parigi \(2004\)](#) estimated a vector autoregressive (VAR) model for G7 countries over the period 1970Q1–2002Q1.<sup>3</sup> For Italy, they found a long-run relationship between *CCI*, inflation and the employment ratio. In another paper, [Golinelli and Parigi \(2005\)](#) found an unstable cointegrating relationship of *CCI* in Italy. Further, they asserted that including the inflation gap instead of inflation rate is crucial to attain a stable long-run relationship. [Malgarini and Margani \(2007\)](#) estimated the *CCI* model in first difference form over the period 1980Q1–2004Q4. They included explanatory variables such as GDP growth, interest rate, nominal exchange rate, debt-to-GDP-ratio and a series of dummy variables to capture the political electoral events and relevant international facts. Their findings suggested that consumer sentiment plays an important role in explaining consumption patterns of Italian households.

Empirical literature is silent on how consumers adjust their economic climate perception. In the context of psychology, permanent and widespread psychological biases affect both the subjective probability of future economic events and their retrospective interpretation ([Bovi, 2009](#)). Cognitive bias is defined as errors in the way the mind processes information causing the human brain to draw incorrect conclusions. These biases are common outcome of human thought in decision making ([Tversky & Kahneman, 1974](#)). Examples of cognitive biases in economic decision making are anchoring ([Ariely, Loewenstein, & Prelec, 2003](#)), availability heuristic ([Sedlmeier, Hertwig, & Gigerenzer, 1998](#)), conjunction fallacy ([Charness, Karni, & Levin, 2010](#)), false consensus effect ([Engelmann & Strobel, 2000](#)), confirmation bias ([Jones, 2008](#)), endowment effect and status quo bias ([Ert & Erev, 2008](#)), hyperbolic discounting ([Benhabib, Bisin, & Schotter, 2010](#)), optimism bias ([Bracha & Brown, 2012](#)), escalation of commitment and sunk cost fallacy ([Camerer & Weber, 1999](#)), money illusion ([Fehr & Tyran, 2007](#)), overconfidence ([Moore & Healy, 2008](#)), self-serving bias ([Offerman, 2002](#)), illusion of control ([Charness & Gneezy, 2010](#)) and Gambler’s fallacy ([Huber, Kirchler, & Stöckl, 2010](#)). For a brief survey on cognitive biases in decision making process, see [Hilbert \(2012\)](#).

One of the most studied biases in the information processing literature is the anchoring and adjustment effect, see [Epley and Gilovich \(2004, 2006\)](#) and [Mussweiler, Englich, and Strack \(2004\)](#). Anchoring is a form of cognitive bias that affects

<sup>3</sup> Australia is also included in their sample.

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