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The “Psycho-analysis” of Common People’s Forecast Errors. Evidence from European Consumer Surveys

by

Maurizio Bovi

ISAE, Institute for Studies and Economic Analyses, Department of
Macroeconomics, Piazza dell’Indipendenza, 4, 00185, Rome, Italy
email:m.bovi@isae.it

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*“There are two kinds of forecasters:
those who don't know, and those who
don't know they don't know.”*

John Kenneth Galbraith
(*Wall Street Journal*, Jan 22, 1993)

ABSTRACT

Persistent and widespread psychological attitudes distort both the subjective probability of future economic events and their retrospective interpretation. It could lead to a systematic gap between (over critic) judgments and (over confident) expectations - the “survey forecast error”. When it goes bad, then, psychology suggests that people could tend to become particularly optimistic towards future evolutions. It could amplify the survey forecast error. These psychological biases are in sharp contrast with the maintained rational expectations hypothesis (REH) of most macro models. Monthly data over twenty-two years reject the REH across ten European countries, supporting the psychological view on non-Muthian expectations.

Keywords: Cognitive Psychology, Expectations, Measurement Errors, Survey Data.

JEL codes: C42, C53, C82, D12, D84.

NON TECHNICAL SUMMARY

Rational Expectations and Cognitive psychology seem to depict very different worlds. According to the former, people's forecast errors can exist only in the short run – erring is costly and agents learn by doing. In addition, every agent has the same expectations. According to the latter, people's forecast errors can exist even in the long run – individuals may persist in biased beliefs because they are unaware of being self-incoherent or because they convince themselves that they are right. In addition, mistakes may be detected even when analyzing many people over short periods - heuristic short-cuts affect a significant share of the population.

The household data underlying the European index of Consumer Confidence are a useful information set to assess expectations formation. Taking advantage of the distribution of respondents emerging from the surveys, this paper examines the “survey forecast error” (SFE), i.e. the difference between judgments and expectations. The time/space dimension of the empirical analysis is unique, covering ten European countries over twenty years.

The results confirm existing results and, most importantly, is it fully consistent with the “psycho-analysis” of the survey forecast error - a perennial mistake pervades Europe and, when it goes bad, the mistake becomes even larger.

UNA “PSICO-ANALISI” DELL’ERRORE DI PREVISIONE DELLE PERSONE NORMALI. EVIDENZE PROVENIENTI DALLE SURVEY DEI CONSUMATORI EUROPEI

SINTESI

Persistenti and diffuse attitudini psicologiche riducono sia la capacità di elaborare in modo oggettivo gli avvenimenti futuri, sia di leggere retrospettivamente quegli eventi senza distorsioni. Esse, pertanto, possono indurre giudizi troppo critici e attese troppo ottimistiche. Di conseguenza, definendo “errore di previsione” la differenza tra come ci si aspettava che andasse l’economia e come poi si è giudicato sia andata, la psicoanalisi dell’errore di previsione porta a ritenere che l’errore può essere altrettanto persistente e diffuso delle inclinazioni psicologiche che lo generano. Tutto ciò è in palese contrasto con una delle più comuni assunzioni su cui si basano molti modelli macroeconomici e cioè che le persone formino aspettative razionali. Le inchieste presso i consumatori europei confermano quanto suggerito dalla psicoanalisi dell’errore di previsione.

Parole chiave: Psicologia Cognitiva, Aspettative, Errori di misura, *Surveys*.

Classificazione JEL: C42, C53, C82, D12, D84.

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1 INTRODUCTION

By tradition and necessity, economics is a behavioral science and people's expectations play a pivotal role in it. Despite of that, by recent tradition and analytical necessity, economists tend to approach expectations in a rather axiomatic way. Standard economic literature just assumes that the representative agent is an unemotional computer who, in the long run, can not reiterate the same mistake. Given a long enough time span and conditional to an information set, objective and subjective expectations must, on average, coincide. Basically, the logic behind is twofold – i) erring is costly; ii) the homo economicus learns by doing. So there is, respectively, both the motivation and the occasion for operating rationally.

Cognitive psychology tells a different story - biases are likely to be the rule, not the exception (Kahneman and Tversky, 1973, 1974, 1982). Kahneman and Tversky (1974), argued that heuristic short-cuts create probability judgments which deviate from statistical principles. Illusion of control, availability bias, confirmation bias, etc., lead to think that common people suffer from a distort reading of the economic conditions/evolutions. Two things are worth emphasizing here. First, according to psychologists, individuals may persist in biased beliefs because they are unaware of being self-incoherent or because they convince themselves that they are right. In any case, with no awareness there is no point in either considering the presence of costs due to errors or waiting for people to change their mind. More in general, despite market forces (competition and arbitrage) and learning by doing, irrational behavior is not contingent (Mullainathan and Thaler, 2000). Second, psycho-biases affect a significant share of the population. That is, they are not isolated quirks, but deep seated and systematic behavioral patterns impinging on people's way of thinking. To sum up, standard economic models *assume* that markets are populated by asymptotically rational agents, cognitive psychology *argues* for the long-lasting and pervasive presence of less than rational individuals. Who is right?

Consumer confidence surveys (CCS) are a useful and, in fact, widely accepted device to gather information about common people's expectations over time (Ludvigson, 2004). The issues of maintaining long-lasting panels are known - selectivity, non-response, attrition, etc., (Baltagi, 2001). So, a typical¹ problem with CCS data is that respondents are interviewed only once.

¹ A notable exception, although limited to some years, is the British Household Panel Survey (Mitchell and Weale, 2007).

Obviously, CCS are designed to achieve representativeness such that each time the respondent is the same subject in statistical terms. Nevertheless, it could be not sufficient to correctly pinpoint the individual-level forecast error. Therefore, recently, a number of papers have studied micro data from CCS trying to exploit the panel aspect of the surveys to identify individual-level forecast errors from consecutive or matched surveys. Souleles (2004) has examined the Michigan Index of Consumer Sentiment, Das and van Soest (1997, 1999) have analyzed Dutch data², Brown and Taylor (2006) and Mitchell and Weale, (2007) have studied British data. Comparing expectations and subsequent realizations, these works usually reject the rational expectations hypothesis (REH). Surprisingly, few authors try to explain the presence of non standard behaviors. Carroll (2003) and Branch (2004) suggest that rejection of the REH is due to the costs of forming rational expectations exceeding the benefits. Another strand of research points to belief distortions, which may increase the well-being (Yariv, 2001; Caplin and Leahy, 2001; Brunnermeier and Parker, 2004), or assumes that agents i) have limited information processing capacity (Sims, 2003), or ii) update information only infrequently (Reis, 2003).

This paper contributes to this literature in two ways. First, it proposes an unusual psychological approach to the common people's "survey forecast error" (SFE), i.e. the difference between judgments and expectations, as it emerges from CCS. There are several reasons to address CCS data in the light of cognitive psychology. First, some of the questions are so vague that heuristic answers are likely to emerge. In turn, it may lead to time inconsistencies, that is to non-zero SFEs. A simple look at the nebulous queries faced by the ordinary (therefore inexperienced) person interviewed, should give an immediate idea of what we mean - "How do you expect the general economic situation in the country to develop over the next 12 months?". Dominitz and Manski (2004) discuss this topic, forcefully emphasizing the difficulties experienced by normal people. Then, as mentioned, the number/persistence of irrational agents might be higher/stronger than that assumed by the mainstream economic literature. So, the presence of many non-Muthian agents might influence, and be detected by, long-lasting CCS aimed at capturing the representative citizen. Unlike the economic theory, also, cognitive psychology allows to consider even the problems linked to retrospective questions. Actually, by definition, the SFE might depend on both over-pessimistic judgments and over-optimistic

² Another paper working with Dutch data is that of Franses and van Oest (2006). Unlike the mentioned papers, and ours, they deal with the time comparability of survey data. An important effort, indeed - due to the lack of re-interviews, how can we compute variations in consumer sentiment?

expectations. Thus, one may wonder whether people suffer from problems in both backward- and forward-looking exercises. The proposed “psycho-analysis” of the survey forecast error (section 2) leads to think that i) the SFE could be significantly different from zero considering both many individuals and long periods of time, and that ii) amid (real or psychological) economic hardships the SFE could be even larger.

The second contribution of this paper is to offer new evidence on the survey forecast error. Unlike the mainstream literature, we do not look for connections linking survey and “hard” (GDP, Consumption, etc.) data. We are aware that people might act differently from what they say; a possibility that, actually, affects all works/discussions dealing with CCS data. Still, we acknowledge the importance of mapping CCS data onto national accounts figures. Nevertheless, we argue that survey data could be fruitfully used as a source of information in their own right to test the inner coherence of the replies and, in turn, to highlight some facts on expectations formation. This is the sense of our definition of “survey” forecast error based on the gap between retrospective and prospective views. Our evidence is unique in that it refers to more than twenty years and ten European countries (section 3). Since respondents are randomly selected, there are no re-interviews. Moreover, our basic data are the percentages of respondents having chosen a particular option (a lot better, better, etc.). So, we have no individual-level data even within the same wave. In the present setting, however, it does not hamper useful empirical analyses because we do not want to test whether each and every individual form her expectations in a Muthian way. Given the supposed widespread and perennial nature of psycho-biases, our empirical goal is to test whether judgments/expectations formation are, on average, consistent with the psychological viewpoint. So, we may afford to offer evidence on the SFE at an aggregate, “consensus”, level. Something that can reliably be done by comparing the beliefs of different but representative consumers populating our both N- and T-large data set. From the theoretical standpoint, our approach is consistent with the weak form of REH elaborated by Pesaran and Weale (2006), stating that irrationality may affect some individual but not the average individual emerging from a large enough sample. Obviously, rejection³ of the weak form of REH implies the rejection of the standard version of REH. From the empirical point of view, our approach is consistent with the Deaton’s method of dealing with pseudo-panels. Deaton (1985) showed that consistent findings

³ Throughout the paper we speak about testing the REH but, in fact, we are only interested in testing whether any systematic bias emerges. That is, we do not deal with other features of rational forecasts such as, e.g., efficiency.

may be obtained by analyzing, over a long enough time period, the same cohort of individual. In our case the cohort is the representative citizen of a country.

Confirming previous results based on genuine (but short and single nation wide) panels, data show that a perennial non-zero survey forecast error pervades Europe. Furthermore, conditional on having reported an unpleasant situation, respondents tend to become particularly optimistic and, consequently, to over-err. While the rejection of the REH is consistent with both the recent economic literature and psychology, this latter affords us the possibility to assess even the extra bias recorded in bad times.

2 THE “PSYCHO-ANALYSIS” OF SURVEY FORECAST ERRORS

Common to most accounts of rationality is the notion that a person is largely entitled to his or her own views or preferences, but that these should cohere, should adhere to basic rules of logic and probability theory, and should not be formed or changed based on immaterial factors related to, for example, mood, context, or mode of presentation. Following the seminal studies of Kahneman and Tversky on heuristics and biases (Kahneman and Tversky 1973, 1974, 1983), many authors have documented numerous ways in which judgments and decisions do not cohere, do not follow basic principles of logic and probability, and depend systematically on just such irrelevant factors. People use intuitive strategies and simple heuristics that are reasonably effective some of the time, but that also produce biases and lead to systematic errors. Some of the lessons from psychology can be fruitfully recalled in the present context.

Why could common people be prospectively over optimistic about financial changes?

Representativeness is a heuristic for making probability judgments. A byproduct of representativeness is the law of small numbers. According to it, people believe that the mean value from a small sample also has a distribution concentrated at the expected value of the random variable. This leads to a bias due to “overinference” from (too) short sequences of observations. In an overview of behavioral finance, Shleifer (2000) argues that the law of small numbers may explain the excess sensitivity of stock prices (Shiller, 1981) as a

result of investors' overreacting to short strings of good news. Likewise, as suggested by Shiller (2000), another aspect of overconfidence (irrational exuberance, in the famous Mr. Greenspan's 1996 speech) is that people tend to make forecasts in uncertain situations by looking for familiar patterns and assuming that future favorable patterns will resemble past ones, often without sufficient consideration of the reasons for the pattern or the probability of the pattern repeating itself. Illusion of control (DeBondt and Thaler, 1995) may then explain why people believe that their own future situation will get better "against all odds". Its definition is highlighting - "an expectancy of a personal success probability inappropriately higher than the objective probability would warrant" (Langer 1975, p. 313). Closely related to the illusion to control, there is the theory of depressive realism. In a seminal paper, Alloy and Abramson (1979) found that non-depressed people are more likely than depressed people to think that outcomes are contingent on their actions when they are not. They concluded that as opposed to depressed persons, whose perceptions are apparently accurate, normal people distort reality in an optimistic fashion⁴.

Why could common people be retrospectively over critic about financial changes?

People may suffer from the availability heuristic, unduly emphasizing recent events. Therefore, an economic shock may have psychological effects. These latter, in turn, may affect the correct reading of economic events. According to the so called availability bias, individuals base their prediction of the frequency of an event on how easily an example can be brought to mind. That is, because an example is easily brought to mind or mentally "available", the single example is considered as representative of the whole rather than as just a single example in a range of data. This said we can add that, compared to unfamiliar information, familiar information is more easily accessible from memory, and it is therefore believed to be more real or relevant. It turns out that the mere repetition of certain information in the media, regardless of its accuracy, makes it more easily available and therefore falsely perceived as more accurate. The explanation is then completed observing that, as argued by Doms and Morin (2004), the media tend to overweight bad economic news. In fact, that is just the very basic nature of the news media. Moreover, the over critic information flow may also run from people to media (Curtin, 2003). All that

⁴ We may also speculate that non-depressed individuals distort reality in an optimistic fashion because being over confident is an optimal choice. In other terms, while psychology is silent on the causality issue, *i.e.* realism may induce depression, there is economic literature sustaining that over confidence may rise well-being (see Introduction).

generates a perverse spiral locking many individuals in “backward-looking” pessimism.

Why could common people be both over critic ex post and over confident ex ante when asked about financial changes?

Both prospective and retrospective biases are congruent with mental accounting (Thaler, 1999), which posits that people mentally frame assets as belonging to either current or future income. Therefore, from the individual’s standpoint, judging and forecasting are “time separable” exercises that need not to be self-consistent. When inserted in the present setting, then, the prospect theory (Kahneman and Tversky, 1979) suggests another reason why the survey forecast error could not be a zero-mean-reverting process due to both ex ante and ex post considerations. According to it, individuals suffering from a reduction in their income tend to become risk lovers and, perhaps, over optimistic. This could accentuate the gap between the retrospective and prospective views about the financial stance. Alike, it may be noted that future developments have more “degrees of freedom” as compared to the past ones – an already suffered negative shock impact more deeply than a same-size, but still future (hence “illusion prone”), shock. So, the interplay of illusion of control and prospect theory indicates that over confident expectations could be associated with over critic judgments – economic hardships enlarge the SFE.

To summarize, while according to one of the basic axiom of the standard neoclassical models agents should not consistently repeat the same mistakes, cognitive psychology depicts a picture of the human behavior in which the REH can not be assumed. Cognitive psychology has not (and may not ever) develop a unified theory that explains or predicts the full range of human behavior (Kopcke et al., 2004). Nevertheless, it offers a pragmatic collection of situation-specific mini-theories usefully exploitable in connection with CCS data. On the other hand, as argued (Shafir and Leboeuf, 2002), the rationality assumption is ultimately an empirical question. Moreover, psychology suggests several reasons which prevent agents from adequately learning from the past and from being aware of their forecast errors. This is the case underlined by the “hindsight/confirmation bias” (Bernstein, 1994). Suppose there is an unexpected event. People tend naturally to concoct explanations for it after the fact, which makes them appear more predictable, and less random, than it is. All considered, thus, there are well-known emotional departures from mathematical/rational expectations which may help understand the presence of remorseless discrepancies between people’s judgments and expectations. While these biases may be conscious or not, the point remains – psychological

considerations underline the presence of a diffuse and perennial mental “environment” triggering non-zero SFEs. So, taking advantage of the answers given by normal people in CCS, we may fruitfully test whether:

1. judgments and expectations on the economic situation consistently differ;
2. survey forecast errors are consistently greater in bad than in good times.

3 DATA

To examine empirically the psychological implications discussed in the previous section, a useful data set can be drawn from the Business Surveys Unit of the European Commission. Data are based on monthly surveys carried out at a national level by public and private institutes in the framework of the Joint Harmonised European Union Programme of Business and Consumer Surveys⁵. The surveys are designed to capture the representative European consumer across twenty-seven countries. Almost 40,000 persons are usually selected by a random stratified sampling procedure or by simple random sampling.

We focus on four questions on general and personal financial situation/evolution referring to the same target dates (Appendices 1 and 2). Respondents may choose among six qualitative reply options (a lot better, better, a lot better, better, the same, worse, a lot worse, don't know) and the individual-level answers are then used to compute the percentages of respondents having chosen a particular option. Only these six aggregate shares are available, and only four of them form the basis of our study. The exceptions are the proportions relative to the options “don't know” and “the same”. We exclude the former because it is a “non response”, i.e. it is not the outcome of an explicit elaboration but, rather, a declaration of no information. Otherwise stated, a survey forecast error computed by comparing prospective and retrospective “don't know” is a hard-to-interpret time series. On that, the European Commission Users' Manual (1997, p. 18) claims that: “(...) there are six reply options: five “real” ones and a “do not know” option.”. As for the other exclusion, it is important to note that the queries are about “developments/changes”. Thus, one might a priori suspect (Theil, 1961) that

⁵ Detailed information on the Joint Harmonised EU Programme of Business and Consumer Surveys can be found in European Commission (1997, 2007).

individuals respond “the same” the most part of times because it is hard to think to ever improving/worsening economic conditions (whatever it means for common people⁶) over many years. Psychologists would add that an over-preference towards this choice may be induced by the presence of uninformed and/or uninterested respondents. Part of the problem comes from the respondents’ reluctance to admit lack of an attitude. Simply because the surveyor is asking the question, respondents believe that they should have an opinion about it. Since we could observe unbiased answers because of both psychological neutrality and analytical rationality⁷, we prefer to focus on replies for which psychological distortions could play a dominant role.

Despite we only deal with queries about general and personal economic conditions, national surveys contain other questions about the labor market, spending intentions on major purchases (furniture, electrical/electronic devices, etc.), savings, etc. Needless to say, each question has potential information content. However, the selected questions seem quite adequate to the present aim - their vagueness make them particularly suitable for testing the psychological considerations discussed in section 2. The point is that, when elicited about “financial conditions/evolutions”, ordinary people may use heuristic shortcuts to manage large quantities of information that may lead users astray⁸. Then these data allow to match, repeatedly over almost three-hundred months and across many European countries, expectations and judgments referring to the same time span (a year). Lastly, it is noteworthy that there is no need for respondents to exactly address and quantify “general economic situations/evolutions” - we just compare qualitative answers given to the same question (see sections 4 and 5).

The data set suffers from some change throughout the sample. Since 1995, for instance, Italy substituted on-the-spot interviews with the telephone

⁶ To the extent i) GDP growth coincides with people’s view of “development in economic condition”, and ii) GDP growth follows a stationary process agents should, on average, accumulate towards the “stationary” item of the questionnaire.

⁷ Actually, data show that the most part of the respondents prefer this reply option – during the last twenty years, the continental-level average value scored by this option is about 55% for the two personal queries and 35% for the general ones. Similar outcomes, based on genuine panel data, are found for the UK (Mitchell and Weale, 2007). Although these results are an interesting stylized fact calling for closer investigations, we prefer to focus on the other options for which psychological implications could play a dominant role.

⁸ Although the average value of variables such as GDP, Consumption, Wealth, etc., has been growing during the period across the countries under analysis, Europeans have been, on average, more pessimistic than optimistic. Summing up over time and across Europe all the proportions relative to the eight pessimistic answers (four queries, two pessimistic reply options, see Appendix 1), one obtains a number more than double than that emerging from the sum of all the eight optimistic answers.

method. In Germany, apart from the issues stemming from the re-unification of 1991, there have been some modifications in the order as well as in the wording of some questions. All that means that there are some problems⁹ in the time series comparability of the data. In an attempt to reduce temporary data issues and to increase the reliability of the econometric tools we use (see Section 4), we focus on the countries with the largest and most time-comparable data sets. So, we end up with ten countries¹⁰ (Belgium, Germany, Ireland, Greece, France, Italy, Finland, Spain, Netherlands, UK) and 268 monthly interviews¹¹ (from January 1985 to April 2007).

4 ECONOMETRIC SPECIFICATION

To examine formally the consistency between judgments and expectations in our pseudo panels, we could analyze the gap between same period referring ex ante and ex post responses and test the joint hypothesis $(\beta_{Z_PER}, \beta_1)=(0,1)$ in the following regression

$$Q1_Z_t = \beta_{Z_PER} + \beta_1 Q2_Z_{t-12} + u_t \quad (1)$$

where $Q1_Z_t$ = % of respondents having chosen the Z reply option (Z=PP, P, M, MM; see Appendix 1) to the query Q1 in the survey carried out in month t, u_t =random disturbance. Similarly for $Q2_Z_{t-12}$ and for the regression referring to the general queries $Q3_Z_t = \beta_{Z_GEN} + \beta_1 Q4_Z_{t-12} + u_t$.

If the joint hypothesis is rejected, it can be concluded that the judgments and expectations of the representative consumer are different in a statistical sense and that there is irrationality in a Muthian sense. An example may help to clear the matter. Let the share of individuals forecasting that the system wide economic situation will be “a little worse” in the next year be, according to the survey performed in January 2000, 35%. After a year, interviewed are asked to

⁹ Other problems affecting the data are more general. *E.g.*, it is easily understood that there are not incentives/disincentives related to a particular answer. The fact that CCS are more and more diffusely performed, used and commented is an indirect clue to their reliability.

¹⁰ About 20,000 consumers are surveyed each month across the ten European countries under scrutiny.

¹¹ Data for Spain start in June 1986, for Finland in November 1987.

say how the general economic situation in the country has changed over the past 12 months. If people's forecasts were corrected, then the share of citizens judging that the economic situation has got "a little worse" should be 35%. Needless to say, people may sometimes err, what the REH states is that the error must disappear over time.

The lack of genuine panel data is not an issue here because Deaton (1985) has shown that, referring to cohorts rather than to individuals, one can obtain consistent estimates of the slope coefficient following the same cohorts over time. In our case the cohort is just one, namely the synthetic citizen. This latter may appear a very heterogeneous cluster but, according to the REH, all agents should tend to have the same expectations. From the theoretical standpoint, moreover, our approach is consistent with the weak form of REH elaborated by Pesaran and Weale (2006). According to these authors, the weak form of the REH states that irrationality may affect some individual but not the representative consumer emerging from a large enough sample. Obviously, rejection of the weak form of REH implies the rejection of the standard version of REH. So, European surveys are suitable for our goal.

This said, we may refine equation (1) even more. In the presence of measurement errors (due, e.g., to the sample design and/or to the data issues mentioned in section 3), in fact, the OLS slope coefficient of equation (1) will suffer from a persistent bias toward zero. Consider the following generic bivariate model (suppressing the t subscript)

$$y = \beta_0 + \beta_1 x^* + u \quad (2)$$

where a star indicates a variable observed with no error¹². That is, we observe $x = x^* + e$ (e =measurement error) and, therefore, we actually run

$$y = \beta_0 + \beta_1 x + (u - \beta_1 e) \quad (3)$$

We may now distinguish two cases (using a widespread notation).

a) $\text{cov}(x,e)=0$; $\text{cov}(x^*,e) \neq 0$

b) $\text{cov}(x,e) \neq 0$; $\text{cov}(x^*,e)=0$

¹² Actually, the Deaton's suggestion stems from measurement error models.

In case a), β_1 can be computed consistently by OLS (β_{ols}) because the measurement error is absorbed in the disturbance of the regression and can be ignored. In case b), instead, the regressor is correlated with the disturbance and β_{ols} will be biased toward zero. This everlasting effect, usually called attenuation (Greene, 2002), can be more formally seen in the following equation:

$$\beta_{ols} = \frac{\text{var}(x^*)}{\text{var}(x^*) + \text{var}(e)} \beta_1 \quad (4)$$

Since a priori we can not rule out this latter event, we regress the survey forecast error on a constant. That is, returning to our specific notation, we run

$$\text{SFE_Per_Z} \equiv \text{Q1_Z}_t - \text{Q2_Z}_{t-12} = \beta_{Z_PER} + u_t \quad (5)$$

Alike for $\text{SFE_Gen_Z} \equiv \text{Q3_Z}_t - \text{Q4_Z}_{t-12} = \beta_{Z_GEN} + u_t$. We prefer this latter to equation (1) for other reasons, too. First, a significant non-zero intercept is a necessary and sufficient condition to reject Muthian behaviors – the weak form of REH is rejected regardless of the size of the slope coefficient. As a matter of fact, this procedure is typical in the literature dealing with the presence of any systematic bias in the professionals' economic forecasts (Boero *et al.*, 2007). On the other hand, measurement errors influencing in the same way the two different waves of surveys used to compute the SFE (i.e., those carried out in period t and t_{-12} for $t=1, \dots, T$) disappear when differencing. This could happen for sampling errors, which are likely to be a common factor influencing relatively consecutive surveys. Moreover, measurement errors affecting only the dependent variable just impinge on the disturbance of the regression and can be ignored. Thus, the OLS estimator is unbiased (Greene, 2002). Finally, a similar logic affords the opportunity to assess the second testable implication pointed out in section 2. It is worth noticing, in fact, that our test basically amounts to compute the average of the dependent variable (i.e. the mean of the difference between judgments and expectations) and its associated standard error. By the same token we may therefore test whether the mean value of the SFE is larger in economic hardships (i.e. when individuals respond M or MM) than in good times. More formally, we test whether $\beta_{PER} \neq 0$ in the following

$$\text{SFE Per_Y}_t - \text{SFE Per_X}_t = \beta_Y - \beta_X + u_t = \beta_{PER} + u_{t_PER} \quad (6)$$

Where Per=(Q1, Q2)=Personal queries (Appendix 1), Y=MM, M and X=PP, P. Similarly for the SFE referring to the general queries.

Another critical element of our econometric procedure is the variance-covariance matrix of the OLS parameter estimates. We address it via the covariance estimator proposed by Newey and West (1987), which is robust to both heteroskedasticity and autocorrelation of unknown form (NW-HAC). Our empirical setting calls for this correction. Just to mention, we use monthly data on one-year forecasts. This naturally induces serial correlation – respondents will definitively know their expectations are in err only twelve months after the initial projection. Although judgments and expectations refer to different individuals, which to some extent hampers the memory of the process, therefore, serial correlation is likely to affect our regressions. Then measurement errors affect, as said at least inflating, the disturbance of the regression – a robust procedure may increase the reliability of the estimates. As known, the NW-HAC covariance estimator needs large T and this is another reason why we prefer countries for which full-sample data are available.

We are now in a position to better qualify the usefulness and uniqueness of our data set. Unlike previous works (Souleles, 2004; Das and van Soest 1997, 1999; Brown and Taylor, 2006; Mitchell and Weale, 2007), dealing with one single country and few years, the European surveys afford us the opportunity to examine an unparalleled time-space dimension. Last, but not least, using both N- and T-large data sets lessens temporary data issues and abates time inconsistencies due to shocks hitting consumers after they made the forecast and before they made the retrospective judgment (Brown and Taylor, 2006).

5 RESULTS

All empirical results are collected in Appendices 2 and 3. Before commenting them, it is useful to recall that we are examining percentages of respondents based on qualitative reply options. As for the former, it means that our evidence is not relative to the individual-level SFE (SFE_i , i =individual i , with $i=1, \dots, N$) but, rather, refers to the aggregate or “consensus”

$(N^{-1} \sum_{i=1}^N SFE_i = SFE_N)$ rationality. What does it mean in the present context?

When the consensus REH can not be rejected, it may be so because there is

significant individual level rationality or, although much less likely, because individual level errors disappear in the aggregate by chance. When evidence point to $SFE_N \neq 0$, instead, a significant share of population doubtless have distort expectations. The qualitative nature of our data brings to mind that we are inspecting the number of discrepancies between ex ante and ex post “adjectives” (worse, better, etc). So, even with individual level data we would not know the magnitude of the single survey forecast error. Despite qualitative data have limited information content, it is not totally bad when taking into account that our aim is to test whether consensus forecasts conform to the REH. The presence of quantitatively very large SFE_i , in fact, could lead to detect market-level irrationality even if the number of irrational individuals is relatively low. Working with qualitative answers, in contrast, we study the number of irrational individuals, not the average amount of their SFEs. One may ask - which situation is less rational, one where few people commit very large forecasting errors or one where a significant proportion of individuals is not Muthian? Our proposed “psycho-analysis” of the SFE is consistent with both this latter situation and the concept of weak rationality - psycho-biases are ubiquitous and there is no quantitative indication about them (more on that below). In Appendix 3 we report the results of some robustness checks on the presence of psycho distortions across Europe. In Tables 1 and 2 we contrast the responses given by different representative consumers about the same year; in Table 3, instead, we examine judgments and expectations referring to the beliefs of the same synthetic respondent on different periods. The motivation is that in this latter case, because over critic judgments and over optimistic expectations do not depend on the time period they refer, psycho-biases should still emerge. On the other hand, alike, the mainstream economic literature suggests that over time, no matter the concerned time period, ex ante and ex post perceptions about “economic changes” should tend to be self consistent.

Results collected in Appendix 2 point out that, over the last twenty years, the average SFE has been significantly different from zero in almost all European countries. As well-known, few exceptions out of eighty regressions can be found just by chance. Even more so for the two cases of zero SFE referring to the PP option reply detected for Italy and Belgium. In fact, the PP-proportions have very small values and volatility¹³. This, in association with the fact that data are rounded to the first decimal, implies that these data somewhat

¹³ The sample mean is 0.8 for Italy and 1.6 for Belgium, the standard deviation is 0.4 for Italy and 1.8 for Belgium. Possibly, this is why other CCS allow to respond only “better” or “worse” without any other qualification (such as “a lot”, “a little” and alike). In passing, we can note that the number of “a lot worse” is much higher than that of “a lot better” – is there no (psychological?) limit to the worse?

resemble to a zero-one binary time series. All that clearly increases the probability of observing zero SFEs just by chance. In any case, the overall picture strongly rejects the REH and it is consistent with the first testable implication highlighted by the “psycho-analysis” of the SFE. Moreover, it confirms existing findings based on genuine panel data. As mentioned, cognitive psychology is silent about the magnitude of the bias and we can not refer to it to explain why the detected nation-wide SFEs are different. Possibly, this could be partly due to objectively disparate economic evolutions across countries. But it is outside our main aim. Within each country, alike, psychological implications just evoke the presence of a significant non-zero intercept - nothing can be said a priori about how much backward looking over pessimism and prospective over confidence affect people. As a consequence the magnitude of the psycho-biases and, in turn, the sign of the constant is an empirical fact waiting for theoretical explanations.

Data support the second implication, as well - people’s forecast errors on the economic stance are consistently larger in hard than in good times. It is important to note that, while the recent economic approaches on expectations formation may explain the presence of a non-zero SFE, only psychology may account for this latter evidence. Otherwise stated, Table 1 helps in examining the presence of rationality, Table 2 deals with the presence of psycho distortions. To save space, but even more so to address the drawbacks arising from the presence of too little proportions (as mentioned this is often the case for the PP option reply), we do not report all the four possible combinations¹⁴ ($\beta_{MM} \vee \beta_{PP}$, $\beta_{MM} \vee \beta_P$, etc., see equation 6). Thus we aggregate, separately, the two pessimistic and the two optimistic answers (Appendix 2). Results collected in Table 2 show, with no exception, that the intercepts referring to the pessimistic answers are systematically larger than those referring to the optimistic ones. After a negative shock leading to bad judgments, people’s expectations become more over confident - conditional on a poor judgment, the SFE become larger. This evidence is congruent with the results reported by Mitchell and Weale (2007). Just like Table 2, the robustness checks collected in Table 3 supports the psychological way of forming judgments/expectations and, in turn, the reliability of the “psycho-analysis” of the SFE.

¹⁴ Some clue can be drawn by comparing the intercepts reported in Table 1. For instance, it is easily seen that, conditional to a large and positive β_{MM} (or β_M), a negative β_{PP} (or β_P) in all likelihood supports the emphasized psychological suggestions. Table 1 informs that this event is frequent.

6 CONCLUDING REMARKS

Recently there has been a growing interest in examining expectational errors taking advantage of consumer confidence survey data. Typically, evidence shows the presence of persistent forecast errors. Typically, no attempt to explain why this is so is made. This is puzzling given the central role of the REH in standard economic models.

In this paper we argue that the theory of heuristics and biases may offer useful indications when dealing with the common people's coherence in reading prospectively and retrospectively the economic evolution. Moreover, psychological implications are particularly suitable when looking for evidence based on household survey data. The "psycho-analysis" of the common people's forecast error lead to test whether i) judgments and expectations on the economic situation consistently differ and ii) people's forecast errors on economic stances are significantly larger in hard than in good times.

Our monthly data have a unique time-space dimension, covering more than twenty years and ten European countries. On the negative side, these surveys are not genuine panels, i.e. each wave has different, although representative, respondents. It means that our evidence refers to the "consensus" forecast error. This is not particularly disturbing in our setting. First, it is coherent with a weak form of the REH, i.e., one where irrationality may affect some individuals but not the average individual. Second, the psychological considerations which form the basis of our empirical effort can be thought of as applying to the ordinary person. That is, to the synthetic consumer that the surveys are designed to capture.

Evidence confirms existing results and, most importantly, is it fully consistent with the "psycho-analysis" of the survey forecast error. A perennial mistake pervades Europe and, when it goes bad, the mistake becomes even larger.

APPENDIX 1

The Data

Participants in the survey are asked the following questions, which are harmonized in all countries according to the EU guidelines (European Commission, 1997, 2007):

Q1 = How has the financial situation of your household changed over the last 12 months? It has ...

Q2 = How do you expect the financial position of your household to change over the next 12 months? It will ...

Q3 = How do you think the general economic situation in the country has changed over the past 12 months? It has ...

Q4 = How do you expect the general economic situation in the country to develop over the next 12 months? It will ...

PP = got/get a lot better;

P = got/get a little better;

E = stayed/stay the same;

M = got/get a little worse;

MM = got/get a lot worse;

N = don't know.

PP, P, E, etc. are the percentage of respondents having chosen the corresponding option so that $PP + P + E + M + MM + N = 100$.

APPENDIX 2 - COMMON PEOPLE'S FORECAST ERRORS. EVIDENCE FROM EUROPE.

A2.1 Do Common People's Judgments and Expectations on Economic Stances Differ?

The following Table A1 reports the estimated intercept of equations 5) of Section 4. That is, we run:

PERSONAL QUERIES:

$$\text{SFE Per_MM} \equiv (\text{Q1_MM}_t - \text{Q2_MM}_{t-12}) = \beta_{\text{MM}} + u_t$$

$$\text{SFE Per_M} \equiv (\text{Q1_M}_t - \text{Q2_M}_{t-12}) = \beta_{\text{M}} + u_t$$

$$\text{SFE Per_P} \equiv (\text{Q1_P}_t - \text{Q2_P}_{t-12}) = \beta_{\text{P}} + u_t$$

$$\text{SFE Per_PP} \equiv (\text{Q1_PP}_t - \text{Q2_PP}_{t-12}) = \beta_{\text{PP}} + u_t$$

GENERAL QUERIES:

$$\text{SFE Gen_MM} \equiv (\text{Q3_MM}_t - \text{Q4_MM}_{t-12}) = \beta_{\text{MM}} + u_t$$

$$\text{SFE Gen_M} \equiv (\text{Q3_M}_t - \text{Q4_M}_{t-12}) = \beta_{\text{M}} + u_t$$

$$\text{SFE Gen_P} \equiv (\text{Q3_P}_t - \text{Q4_P}_{t-12}) = \beta_{\text{P}} + u_t$$

$$\text{SFE Gen_PP} \equiv (\text{Q3_PP}_t - \text{Q4_PP}_{t-12}) = \beta_{\text{PP}} + u_t$$

Tab. A1 Do Common People's Judgments and Expectations on Economic Stances Differ?

		PER	GEN					PER	GEN
BELGIUM	β_{MM}	2.7***	7.1***		ITALY	β_{MM}	3.3***	13.7***	
	β_M	6.1***	6.7***			β_M	12.7***	11.8***	
	β_P	-2.3***	-4.3***			β_P	-4.9***	-11***	
	β_{PP}	0.2***	0.1			β_{PP}	0.0	-0.1***	
GERMANY	β_{MM}	2.9***	6.4***		FINLAND	β_{MM}	2.3***	4.7***	
	β_M	7.5***	4.5***			β_M	4.1***	1.5	
	β_P	1.1***	0.2 ⁽¹⁾			β_P	-2.7***	-4.7***	
	β_{PP}	0.5***	0.7***			β_{PP}	0.4***	0.41***	
IRELAND	β_{MM}	4.1***	7.3***		SPAIN	β_{MM}	2.9***	5.1***	
	β_M	8.7***	3.2***			β_M	7.5***	9.7***	
	β_P	-1.3***	0.7			β_P	-5.0***	-3.2***	
	β_{PP}	0.7***	3.3***			β_{PP}	0.1***	0.5***	
GREECE	β_{MM}	3.0***	2.8***		NETHERL.	β_{MM}	4.6***	6.0***	
	β_M	12.7***	16.4***			β_M	1.3***	-1.8**	
	β_P	-6.3***	-7.3***			β_P	-0.7**	-2.8***a	
	β_{PP}	-0.4***	-0.8***			β_{PP}	2.5***	2.9***	
FRANCE	β_{MM}	3.5***	10.5***		UK	β_{MM}	5.4***	8.6***	
	β_M	4.8***	7.3***			β_M	4.8***	6.2***	
	β_P	-4.3***	-6.3***			β_P	-4.2***	-5.8***	
	β_{PP}	-0.4***	-0.3***			β_{PP}	0.7***	-0.4**	

Note: Sample 1985:12 – 2007:04 (starting date for Spain 1987:06, for Finland 1988:11). Reported values are the intercepts of $PER=(Q1_Z_t-Q2_Z_{t-12}) = \beta_Z + u_t$; $GEN=(Q3_Z_t-Q4_Z_{t-12})=\beta_Z+ u_t$. (β_Z where Z=MM, M, P, PP). ***=p-value<1% (**<5%, *<10%). Newey and West (1987) robust standard errors. a= a dummy equal to 1 in the periods 1997:02-97:09 and 1999:08-00:04 and zero elsewhere is inserted in the regression (t-stat=7.1).

(1) As mentioned (section 3), data for Germany suffer from Germany reunification. So we have run regressions starting from the early 90s. Results confirm those reported in Table 1 with a notable exception - β_P GEN turns out to be significantly different from zero (average value = -2.1).

A2.2 Are People's Forecast Errors on Economic Stances Larger amid Hardships?

To test whether the mean value of the SFE is larger in hardships (i.e. when individuals respond M or MM) than in good times, we run:

$$(SFE_{Per_MM} + SFE_{Per_M}) - (SFE_{Per_PP} + SFE_{Per_P}) = (\beta_{MM} + \beta_M) - (\beta_P + \beta_{PP}) + u_t = \beta_{PER} + u_{t_PER}$$

$$(SFE_{Gen_MM} + SFE_{Gen_M}) - (SFE_{Gen_PP} + SFE_{Gen_P}) = (\beta_{MM} + \beta_M) - (\beta_P + \beta_{PP}) + u_t = \beta_{GEN} + u_{t_GEN}$$

Positive betas imply a positive answer to the question. Table 2 collects the results.

Tab. A2 Are people's forecast errors on economic stances larger in hard than in good times?

	β_{PER}	Std. Err.	β_{GEN}	Std. Err.		β_{PER}	Std. Err.	β_{GEN}	Std. Err.
BELGIUM	10.9 ^{***}	0.87	18.0 ^{***}	3.33	ITALY	20.9 ^{***}	1.54	37.5 ^{***}	2.76
GERMANY	8.9 ^{***}	1.46	10.0 ^{***}	3.70	FINL.	8.7 ^{***}	1.05	10.5 ^{**}	4.38
IRELAND	13.3 ^{***}	1.17	6.5 ^{**}	3.42	SPAIN	15.2 ^{***}	0.76	17.5 ^{***}	2.13
GREECE	22.4 ^{***}	2.06	27.3 ^{***}	2.68	NETH.	4.0 ^{***}	1.38	6.8, ^a	3.58
FRANCE	13.0 ^{***}	0.65	24.5 ^{***}	1.98	UK	13.7 ^{***}	1.16	20.7 ^{***}	2.80

Note: Positive values=Yes; a= a dummy equal to 1 in the periods 1997:02-97:09 and 1999:08-00:04 and zero elsewhere is inserted in the regression (t-stat=-8.2). Other details under Table A1.

APPENDIX 3 - ROBUSTNESS CHECKS

In order to offer robustness checks to our evidence on the pervasive presence of psycho biases in CCS data, we redo the regressions of Appendix 1 with two differences. First, we use contemporaneous proportions; second, we use balances ($BAL_t = 2 * PP_t + P_t - M_t - 2 * MM_t$):

$$(Q2_BAL_t - Q1_BAL_t) = \beta_{21} + u_t$$

$$(Q4_BAL_t - Q3_BAL_t) = \beta_{43} + u_t$$

As compared to the regressions of Appendix 1, the gain is that we contrast the replies given by the same wave of respondents. The loss is that we compare beliefs referring to different periods, therefore the difference is not a SFE. The motivation is that we have already reliably rejected REH, so we are more interested in looking for another empirical support to the presence of psycho-biases. The logic is that, according to psychologists (section 2), common people suffer from over critic judgments and over optimistic expectations leading the consumer's sentiment, and consequently the balances, to show a significantly positive intercept. Table 3 informs that there is no exception to this psycho rule. In contrast, these results are hard-to-interpret in the light of the mainstream economic literature - despite they refer to different time periods, ex ante and ex post perceptions should tend to be self consistent over time.

Tab. A3 Are people systematically over critic ex post and/or over optimistic ex ante?

	β_{21}	β_{43}		β_{21}	β_{43}
BELGIUM	15.5***	27.0***	FRANCE	17.4***	37.0***
	0.64	2.37		0.51	1.96
GERMANY	11.1***	15.8***	IRELAND	18.9***	14.2***
	1.21	2.99		1.41	4.73
FINLAND	10.7***	14.1***	ITALY	23.7***	51.1***
	0.93	5.86		1.65	3.62
GREECE	23.6***	28.0***	NETHER.	7.46***	6.16
	0.93	1.69		1.72	5.02
SPAIN	17.8***	21.6***	UK	20.0***	29.7***
	0.91	2.83		1.11	3.44

Note: For each country, the first row reports the corresponding β ; the second row the relative Newey-West (1987) standard errors. $\beta_{21} > 0$ implies that people expect that their financial condition is systematically improving as compared to what they judge their current situation is. Alike, mutatis mutandis, for the general queries behind $\beta_{43} > 0$. Other details in Appendix 1 and under Table A1.

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