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Artículo

Living in Complex Economies:
On Inconsistent Expectations and Economic Crises

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Abstract

Economic crises are associated with large shocks to beliefs and expectations. Thus, their study includes the strategies that economic actors use to interpret and anticipate the evolution of their environment. In this setting, we start with a brief review of arguments on the possibilities and limitations of probabilistic approaches in economic contexts. Then, we discuss some accounts of the recent macroeconomic crisis, focusing on the problems which arise in predicting the dynamics of non- ergodic systems. Further, we concentrate on the various ways in which agents rationalize an economic path that will eventually be perceived as an unsustainable bubble. We conclude by stressing the relevance of paying attention to the concrete practices of actors in forming representations of the economy and determining expectations.

Key words: expectations, uncertainty, crises.

Resumen

Las crisis económicas están asociadas con importantes shocks a las creencias y expectativas. Por eso, su estudio incluye las estrategias prácticas usadas por los agentes para interpretar y anticipar la evolución de su entorno. En este contexto, comenzamos con una revisión de los argumentos sobre las posibilidades y limitaciones de los enfoques probabilísticos en economía. Luego discutimos algunas explicaciones de las recientes crisis macroeconómicas, concentrándonos en los problemas que surgen en la predicción de las dinámicas de sistemas no-ergódicos. Posteriormente, nos ocupamos de los variados modos en que los agentes racionalizan un proceso económico que eventualmente desemboca en una burbuja insostenible. Concluimos enfatizando la relevancia de prestar atención a las prácticas concretas de los actores en la formación de representaciones de la economía y en la determinación de sus expectativas.

Palabras clave: expectativas, incertidumbre, crisis.

Introduction.

Whatever its detailed characteristics, a macroeconomic crisis represents by its very nature a widespread disappointment of expectations manifested in numerous "broken promises", particularly in the form of unfulfilled debt contracts (Leijonhufvud 2004; Heymann 2007). While a crisis may be triggered by some "external shock", in large- scale events like the recent crisis in the US and the EU the disturbance appears to have been generated by the dynamics of the economies themselves. In this paper we address these topics in the context of the study of financial crises; in particular, we comment the role of behaviors based on the rationalization of observed performances in the development of macroeconomic bubbles, by creating the presumption that ultimately unsustainable paths have "fundamental" underpinnings. However, the general reference to the presence of deep uncertainty and structural change leaves substantive questions open about how agents deal in practice with those features of their environments in order to anticipate and plan their actions, and what makes these take a course that ends in a crisis.

1. Probabilities as instruments to tame uncertainty.

Normal human beings look for psychological certainty. They want to know about past and present things, but above all, about the future. As Martha Nussbaum (2001, p. 154) notes, the problems stemming from ungoverned luck in human life motivated Plato to develop his philosophical art. His dialogue Protagoras relates the story of the progressive human efforts to control contingency. In this task, numbering and measuring are central keys. What is immeasurable and incommensurable has to be made measurable and commensurable in any way possible.

This result provides *akribeia* or precision. Numbers are homogeneous and practical. Expressing realities in numbers facilitates decisions. How can we reduce choice about qualitative features or about future uncertain events to a quantitative calculation? This is the question raised by Plato. He asked: 'What science will save us from the unpredictable contingency?' and answered: "the science of measurement" (Protagoras, 356e). Human beings strive for security, and measurement helps to get it. Social institutions apply standards, proceedings and measurement devices as a means to systematize behaviors.

The idea that degrees of probability can attributed to some facts was already considered in the Middle Ages by the confessors. However, it did

not adopt a mathematical form until modern times[1]. Probability puts in brackets the contingency of the particular case and, at the same time, takes it into account: playing roulette does not provide certainty, but being informed about the odds of the roulette one is playing with provides a great deal of knowledge about the situation (and, probably, it removes much psychological stress from the game).

The assignment of probabilities to social events raises the question of whether all realities can adequately be reduced to numbers. Numbers are the expression of a real accident of substances: quantity. However, even when applied to things naturally quantitative like extension, for example, defining a numerical expression requires establishing metrics. Numbers can also be applied to qualities like temperature or even beauty, and similarly to the quality of being more or less probable. The conventions involved in these applications may be more or less "firm", depending on the nature of the quality considered. It is more objective to measure temperature by a thermometer than to decide the winner of a beauty contest (but, even here, temperature is not a cardinal variable).

Warnings about the actual inevitability of contingency in economic matters and about the difficulties inherent in trying to reduce uncertainty to a set of well- defined probabilities have come from economists with otherwise quite different worldviews, like Frank Knight, John Maynard Keynes, George L.S. Shackle and Friedrich von Hayek. In 1921, Knight distinguished between risk –the case in which there is an objective probability and it is known– from subjective probability –when there "is no valid basis of any kind for classifying instances" (Knight 1921, p.225). Keynes expresses this in a similar way in his famous 1937 paper: "about these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know" (Keynes 1937, p. 113). An implication may be that when people apply probabilities to these matters they are only making an arbitrary judgment in order to act –a kind of "impulse" driving the way in which agents evaluate their decision scenario.

Economic analysis has an essentially self-referential nature: the observer tries to find representations of a system that evolves through the actions of agents who behave on the basis of perceptions and beliefs about the performance of the same system as it affects their opportunities and restrictions. The representation that the analyst seeks must, in some way, include a depiction of how agents go about the business of understanding the economic context in which they operate. This seemingly abstruse is-

1 See Ian Hacking (1975) for a history of probability; also Jacovkis and Perazzo (2012).

sue is in fact quite pertinent in applied work: when discussing issues of sustainability, an analyst is in fact asking about the quality of the expectations expressed in ongoing plans and decisions.

The usual practice in economic analysis (based on the suggestions of distinguished theorists such as Frank Ramsey, Bruno de Finetti, and mainly Leonard Savage 1954) presumes that people behave as if they had a subjective a priori probability about future events that can be discovered by observing their decisions a posteriori. This notion, substantially different from Knight's idea of uncertainty as "non- objective" likelihood, is often complemented by the ("rational expectations") assumption that the probabilities that agents use in their decisions are those that actually measure the chances of the possible realizations of the quantities of interest, viewed as stochastic variables: here, rationality is somehow equated with full knowledge. The approach (which, indeed, admits variants of different sorts, like the introduction of learning dynamics), lends itself readily to formal modeling.

The uses of "objectifying" devices in social analysis have been much discussed. As the anthropologist and philosopher Claude Lévi-Strauss asserts, the effort to "mathematize" –to extract the quantitative aspects of observations and measure them–, is a legitimate ambition, but may imply a trade-off: "what we gain in meaning, we lose in precision and the inverse" (Lévi-Strauss 1954, p.647). The simplifying ethos may obtain precision at the expense of realism, or generality; at the same time, purely qualitative expositions can fall into vagueness, or into avoidable ambiguities and inconsistencies, leading to the need to "interpret" arguments which could otherwise have been made clear. One should beware of big methodological pronouncements pretending to dictate how to carry out the analysis of each and every phenomenon or scientific problem. Rigor does not always imply precision or exactness, or their opposites.

In this instance, when considering the family of economic events describable as crises, we are dealing both with intricate economic processes and with subtle questions about how people form views about the future and react to them. There are two different problems involved in the lack of certainty: one epistemological –we do not know– and the other ontological –there is no ontological grounds on which to base knowledge. When the problem is epistemological we might have the hope of overcoming it, but when it is ontological, there is no such chance.

One can distinguish three situations. In the first, one can assume that there is an objective probability for the relevant event, and that its magnitude

can be approximately established. Here, probability is not an ontological but an epistemological phenomenon: "it is not some feature of the world, which we seek to discover, but rather it is a way of dealing with the world" (Weatherford 1982, p. 47). The second possibility is that the probability is still "out there", but is not known, and agents treat their problem as one involving risk, for pragmatic reasons. Then, from the point of view of studying behavior, probability is an assertion about someone's mind, not about the events (Weatherford 1982, p. 234). The third type of uncertainty, also called "uncertainty as unawareness" or "fundamental uncertainty": given the character of reality the probability is not unknown, but unknowable[2]. But that does not necessarily mean that agents take those conditions as given: they may rationalize their circumstances and make their decisions under the impression that they are capable of predicting their environment with some accuracy, or of attributing reliable likelihoods to alternative scenarios (this could be applicable in particular to sophisticated agents like financial operators).

To sum up: the analysis of crises requires addressing questions about the attainable knowledge on the evolution of the economy from the perspective of an outside observer and from that of the actual agents; the analyst must include among his topics of investigation the procedures that the economic actors employ in trying to "make sense" of their conditions and to form expectations.

2. Accounts of the crisis: frictions, fat tails, rare events and deep uncertainties.

The analysis of crises must deal with this contrast between the ex-post appearance of "transparency" of the bursting bubble and the necessary opacity that made it develop (like in the image in Taleb 2010, of a black swan as a seemingly impossible animal before it has been observed, and an unremarkable one after it has been shown to exist). In the interpretations of the recent international crisis, one can find the tension mentioned by Bernstein between "those who assert that the best decisions are based on quantifications and numbers, determined by the statistical patterns of the past, and those who base their decisions on more subjective degrees of belief about the uncertain future" (Bernstein 1996, p. 6).

2 In some sense, this begs the question of how to know the impossibility of knowing. It may be noted that, in some practical contexts, the behaviour of agents can lead to a more or less direct interpretation in (perhaps implicit) probabilistic terms. When an individual buys a bond with some yield premium with respect to the "safe asset", it seems reasonable to infer that he is acting as if the chance that he assigns to the event of total default does not exceed some (calculable) limit.

In systems with fixed structures and performance, which can be characterized by constant probability distributions, expectations may converge asymptotically to those determined by the realized laws of motion. "In the short-run, subjective probabilistic expectations need not coincide with the presumed immutable objective probabilities. Today's decision makers, therefore, can make short-run errors regarding the uncertain future. Agents, however, should "learn" from these short-run mistakes so that subjective probabilities or decision weights tend to converge to an accurate description of the programmed external reality"[3](Davidson 2009). Thus, in these worlds, "averages calculated from past observations cannot be persistently different from the time average of future outcomes" (Davidson 1991), and knowledge accumulates as time passes. Eventually, if enough time is allowed to obtain very large samples of realizations, the observer can extract all the potential information about the properties of the system: what is left is "irreducible" randomness described by a known distribution.

However, macroeconomic crises are large and infrequent phenomena. They are not "normal" because they often do not seem to form part of the scenarios contemplated by agents, and also because they may involve orders of magnitude of some variables which would have vanishing chances of being observed under Gaussian distributions with parameters drawn from past history. Even though the economy could be represented by given, fixed probability densities, the existence of such events would anyway call into question the applicability of distributions that treat extreme realizations as practically impossible. As an implication, actual decision-making, policy design and economic analysis alike should take into account the "fat tails" in the relevant distributions. Terzi summarizes thus Taleb´s related Black Swan argument:

> "…Intractable uncertainty means that there exist outlier events with the property of carrying a large impact on our lives. And because we do not have much hope to forecast these better, we can only attempt to shield the system from (inevitable) forecasting errors. Because the possibility of Black Swan Events (BSE) is incalculable, the best defense from uncertainty is to build a robust financial system, more resilient to BSE… [E]˙even using the best of our abilities, and although BSE follows a predetermined (yet unknown) statistical path, there will always be events that are so rare that we cannot possibly predict them… In Taleb's world, the possibility of surprises (BSE) is typical and deplorably disregarded by most agents and, for this reason, the economic system lacks

3 This conclusion depends on the stability properties of the learning algorithm. In the present context, that technical matter can be left aside.

robustness" (Terzi 2010)

Actually, forming beliefs and expectations about "non-routine" and possibly "life-changing" events like macroeconomic crises carries special problems. As phenomena with a deep actual significance, agents and analysts should have strong incentives to understand and anticipate them. Crises are indeed memorable events, which leave persistent traces in beliefs, attitudes and behaviors of the people who live through them (Heymann 2002; Malmendier and Nagel 2010). However, although it may be tempting to look for timing regularities on the basis of a small number of instances, crises have no definite periodicity, and they involve processes at relatively long time scales. This by itself constrains the vivid experiences that the population at a given moment may have accumulated and, from the point of view of the analysts, it also brings down the number of pertinent "data points" on a specific economy with which to work. If there are some "deep probabilities" hidden somewhere, this feature would restrict the chances of learning about them with any precision.

This calls attention to the much discussed issue of ergodicity. Economic systems change over time. Their development is very much driven by technical, organizational and behavioral evolution; the notion is hardly controversial. From the perspective of individuals, learning and adaptation to the environment take place on a daily basis, and they modify the context in which others carry out their activities: the future "depends on our intentions and beliefs" and, therefore, "it is open" (Skidelsky 2011, p.3). Of course, this raises the questions of to what extent we (observers) can extrapolate to a specific case patterns identifiable in other times and places, and what actual agents do about the matter.

When the system under consideration undergoes structural change, uncertainty may persist, even if the available information accumulates over time (North 2005, p. 22). Intuitively, as new realizations are observed, older ones become "obsolete". Thus, the relevant sample never becomes very large, since "primitive" data points should be disregarded effectively as corresponding to behavior patterns that no longer apply. As a corollary, the parameters can never be estimated with high precision.

The pertinence of these effects depends on the time scales, both of the processes and the analytical, or decision scenarios. In normal times, we (agents) carry out our daily activities with the implicit assumption that the environment will not experience rapid unforeseen changes (the breakdown in the presumption of "business as usual" over short time spans

is precisely one of the characterizing features of crises and episodes of extreme macro instability, and the source of considerable economic disturbance in those instances). Thus, the problems associated with forming expectations in non-ergodic contexts would operate especially when the outcomes of decisions depend in some way on the accuracy of anticipations about economic variables over long time horizons, as it happens in macroeconomic crises, viewed as indicators of big discrepancies between past and current wealth perceptions.

The extrapolation of observed conditions may be a plausible heuristic, in some circumstances: "the existing of the state of affairs will continue indefinitely, except in so far as we have specific reasons to expect a change" (Keynes 1936, p. 148). Simple-minded extrapolation is likely to overstate the naivety of the reasoning employed in making important economic decisions. It is a matter of common observation (in Argentina particularly) that many people show a keen interest in interpreting economic ups and downs, and that they spend time and effort trying to "make sense" of economic information. That is: they operate as "model- makers" even if their models are informal, and not necessarily appropriate. A crisis would then represent a failure of those working models which, for practical purposes, may have shared features with those held by influential economists, as in the "long list of leading academics, investors, and the U.S policy makers" (Reinhart and Rogoff 2009, p. 208) who argued for the sustainability of the macroeconomic trajectory that preceded the crisis.

Timely spotting structural changes and deciphering their potential consequences are prime analytical problems, which agents must also confront somehow. Two types of error may arise: lack of response to an actual, permanent shift in economic patterns (misguided induction), and overreaction to indications of change, disregarding past experience as irrelevant (the "this time is different" syndrome as in Reinhart and Rogoff 2009). The path leading to crises often shows (retrospectively) indications of the second type of reaction.

It is in the nature of the facts that over-expansions of wealth perceptions and debt are associated with economic signals that lend themselves to conflicting interpretations. Consider the following scenario. A major technical change emerges that may modify the way of doing business across the economy, and motivates the creation of numerous start-up companies, which go to the financial market to fund their establishment and growth. For some observers, while these new activities entail risks, they are the "wave of the future" and are likely to generate high profits, for their initia-

tors and also for others that will benefit from the innovation. It follows that asset processes should rise, credit should reasonably increase, and if consumers spend on the basis of their expected prosperity, that need not cause concern. But alternative interpretations of events are strongly different: indeed, there may be something interesting in the new technologies, but many of them could prove to be false starts, and in any case their overall effects are unlikely to correspond to the exaggerated enthusiasm that fashionable opinion is propagating.

Solvency and sustainability conditions (which are ultimately the objects under scrutiny) are essentially prospective concepts. Their assessment must somehow rely, formally or informally, on past experience (whether in the economy in question or in others); that requires a judgment about the relevance of the available information. In concrete instances, it seems likely that the impressions gathered from analogies with other cases and from more or less refined data analysis will be mixed: some may favor the view that solid "fundamentals"[4] will validate the current debt decisions, while others can point to the development of an artificial boom that will end badly. Which attitude will prevail? Who will turn out to be right? The answer to the first question can depend critically on where common sense opinion places the burden of proof, since no side would be able to gather firm, convincing evidence pointing in its direction.

The forms of reasoning prevalent on the road to the crisis may have been mistaken, but this does not imply that they should be viewed as arbitrary: "there is always a very real basis [of real opportunities to invest lucratively] for the 'new era' psychology before it runs away with all its victims" (I. Fisher 1933). However, there is also much cold logic in the decisions that result in a crisis. "Slow thinking" (Kahneman 2010) does use the mind´s rational faculties, but does not lead necessarily to rational expectations in its usual meaning in Economics.

Understanding the "model-making" heuristics used by agents in their economic activity seems an open issue for macro analysis, particularly that which is concerned with crises and large-scale phenomena; addressing it would require some sort of "empirical" or "positive" epistemology

4 Economic fundamentals (e.g. productivities, income levels, budgetary positions) are often treated as if they could correspond to objective notions. However, that cannot be so in this context, since the relevant fundamentals refer necessarily to future realizations. Also, although the point is quite obvious, it may be remarked here that the common distinction between "backward-looking" and "forward-looking" expectations can be highly misleading. The procedures used to form anticipations may be more or less sophisticated or alert to news contained in signals from the environment. However, by definition, all expectations look to the future; and, as a strict matter of fact, they must depend on past information, since there is nothing else on which to build an image of things to come.

directed towards the procedures and criteria for information processing employed in practice. This would imply paying attention to the choice of starting references on the part of agents in order to base their interpretations, that is, to their activity of abduction, especially when faced with potentially new situations (Crespo et al. 2010).

That is a big task for the future. In the meantime, a point that may deserve attention, and which lends itself to qualitative exploration, is the way in which people who hold certain views about the sustainability of a macroeconomic over-expansion deal with "anomalies" which can challenge their opinions. In this regard, attitudes that "rationalize the bubble", by finding reassuring explanations for potentially disturbing news can be part of the "coping strategies" of agents, and at the same time they would contribute to prolong and propagate the boom, and to amplify the subsequent downturn. We address that feature in the next section.

3. Rationalizing the bubble.

A quite long list of candidates has been put forward as possible factors in the generation of the bubble that burst in the recent international crisis. Among them:

Errors in the design and implementation of monetary and financial policies, reflected in too-low interest rates and a lax regulatory environment which allowed excessive degrees of leverage and, especially, the growth of markets for sophisticated credit instruments, "new financial instruments like ABS (Asset-backed securities), CDO (collateral debt obligations) and CDS (credit default swaps). Those products were the result of the mortgage securitization, which developed rapidly as US house prices rose 124 per cent between 1997 and 2006. Mortgage volumes, including subprime crisis subprime mortgages, increased significantly during this time period. As those loans became securitized, uncontrollable risk-taking commenced." (Svetlova and Fiedler 2011, p. 153).

Malincentives in the re-packaging and sale of assets, which made loan issuers unconcerned about the potential repayment of debts: "Accordingly there was a great profit incentive for mortgage originators to search out any potential home buyers (including subprime ones) and provide them with a mortgage. The originator could then profitably sell, usually within 30 days, these mortgages, to an underwriter, or act as underwriter to sell to the public a package of exotic mortgage backed securities (MBS). The originator therefore had no fear of default if the borrower could at least make his first monthly mortgage payment" (Davidson 2009, p. 192).

The rising inequality trend in the US (along with other economies) which was associated with stagnant or declining real incomes of large segments of the population: the impact of these developments on demand may have led sellers to use credit expansion as a compensating device, with the consequence that financing was granted to ultimately insolvent borrowers (Rajan 2010).

The US was a major contributor to the "global imbalances" through its current account deficit, which reflected low savings levels, and was financed in part by credit originated in China´s large trade surpluses. These flows could not be sustained indefinitely, and the adjustment could be disruptive (Obstfeld and Rogoff 2009).

The possible pertinence of these effects in the specific case of the US is quite clear. However, a more demanding question would be whether, individually or jointly, they may represent necessary or sufficient requisites for a crisis. The answer seems to be definitely negative. Large-scale crises have been observed in economies with tightly constrained monetary policies and a set of relatively few and simple financial contracts, lacking the extremely complicated instruments that were traded in the US, and the markets for securities that "dispersed" the risks of classes of credits like mortgages. Recent history also shows examples of crises in countries where income distribution had improved significantly during the boom (Greece; Gialdi 2012), and in economies running current account surpluses (e.g. Japan). Conversely, the arguments just sketched do not identify sufficient conditions, because they do not provide an explanation of how and why bad debts are generated, given that it would be hard to admit that the non-fulfillment of contractual obligations is an outcome perfectly anticipated from the start: at some point, there must be a frustration of previously held expectations. Thus, an account of the bubble and the crisis should consider the interaction between the characteristics of the economy identified as salient in terms of their relevance for the macroeconomic performance and the processes of expectation formation and the consequent behaviors.

In fact, those features that retrospectively came to be generally seen as sources of weakness and fragility were apt to be interpreted quite otherwise in their time by large and influential sectors of the public, either complacently or even as confidence-strengthening. Monetary policies that kept interest rate low could be viewed as promoting real growth, in the context of a macroeconomic "great moderation" (Blanchard and Simon 2001; Bernanke 2004a), marked by strong demand and output increases

with smaller volatilities and an absence of inflationary pressures. In turn, these performances were interpreted as an indication of the success of economic policies in dampening macro instabilities, and the ability of the macro analysis in use to provide guides for that purpose[5]. Although there was some discussion about whether the central bank should be concerned about asset prices and not only about inflation in goods prices (Bernanke 2004b; Gerthner 2006), the prevalent opinion (known as the "Greenspan doctrine") held that there were no strong reasons to lean against upswings which could well be based on real economic improvements and, in any case, if the asset-price movement was eventually proven exaggerated and got reversed, policies could intervene to prevent the propagation of the shock, an argument that evoked the comparatively small macroeconomic impact of the reversal of the dot-com bubble some years before. Financial deregulation (embodied, in particular, in the repeal of the Glass-Steagall act that segmented the credit market in order to cushion the effect of asset price fluctuations on commercial banks) was supported by most of the mainstream analysts and practitioners (Zappia 2012); securitization of loans through derivatives of intricate design was seen as an ingenious form of diversifying risk and tailoring exposure to shocks to the specific conditions of asset holders; thus, large earnings in the financial sector rewarded the real contribution of high-skilled productive activities[6].

Behind these sanguine (and sometimes self-congratulatory) attitudes was the notion that real forces were changing the trend of the international economy in a way that would raise incomes and sustain higher asset prices. This supported the perception that a real estate bubble was "most unlikely" and that that home-price increases "largely reflect strong economic fundamentals" was supported by Bernanke in 2005[7]. The high spending in the US, and the associated international borrowing was interpreted as a more or less natural consequence of the strong propensity to lend in economies like China, Japan, Germany and Middle Eastern countries (a "global savings glut"), and the attractiveness of the US as a supplier of presumably safe assets (cf. Cooper 2004; Clarida 2005; Backus and Lambert 2005; Bernanke 2007). The strong supply of funds, it was argued, was matched

5 Robert Lucas, in his 2003 presidential address to the American Economic Association, argued that "the central problem of depression-prevention has been solved" (Lucas 2003); cf. also Blanchard (2008): "The state of macro is good".

6 See, for example, Reinhart and Rogoff (2009): "the top employees of the five largest investment banks divided a bonus pool of over $36 billion in 2007…", while "… leaders in the financial sector argued that their high returns were the result of innovation and genuine value-added products"

7 Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2005/10/26/AR2005102602255.html

on the demand side by good investment prospects, as institutional and structural features of the US economy, such as the flexibility of labor, capital and product markets, made it especially well-suited to capitalize on the opportunities afforded by revolutionary new technologies.

The vision of a "new economy" was summarized by Eichengreen (2005) as implying that "U.S. consumption exceeds U.S. production because Americans stand to benefit disproportionately from the high return on investment in the United States. The anticipated rise in future incomes is captured by the ratio of household stock market wealth to personal disposable income, which rose strongly in the 1990s. Together with the ratio of household residential property wealth to personal disposable income and the yield on a ten-year Treasury bond, this stock market variable can explain most of the variation in U.S. personal savings rate in the last 40 years." Those opinions were shared in policy circles: Greenspan (2002) envisaged the emergence of a "productive miracle", as the benefits of electronic technology propagated throughout the economy as a whole, creating a prosperity enhancing structural break. And, in any case, the implicit belief in the validity of the efficient market hypothesis, in its strong version or in the form that "[the private sector] can judge the equilibrium of [housing] prices at least as well as any government bureaucrat" (Reinhart and Rogoff 2009, p. 212) supported a hands-off policy approach.

Thus, wealth estimates seemed to be significantly exaggerated and risks severely undervalued; this is a central ingredient of a large boom-bust business cycle (Heymann and Sanguinetti 1998). Seen in retrospect, the judgments of large and authoritative groups of academics, policymakers and market participants shared a strong misperception of the economic process they were watching and deciding on. Although cognitive distortions (such as confirmation biases) may have played a role in those errors, these do not appear to have originated from "emotional" or "irrational" (in the usual sense) responses, but were maintained for considerable periods of time by highly skilled individuals trained specifically for complicated analytical tasks. The agents who surfed with the tide were not simply over-enthusiastic amateurs or mere extrapolators of past data. Rather than being incidental to a particular episode, the pattern arose in the whole spectrum of macroeconomic crises: the expectations that sustained the ultimately inconsistent behaviors in the upward phase were rationalized, sometimes by very sophisticated arguments, and relying on indisputable observable evidence. "Why did nobody see it coming? The queen of England snapped at his interlocutors in the London School of Economics (Svetlovaand Fiedler 2011). The query carries a complaint,

but also an analytical challenge for epistemologists and economists, to understand when, how and why prevalent intellectual and practical views of the world end up misinterpreting economic trends in such costly ways.

4. Concluding remarks.

And then: "the entire intellectual edifice collapsed", in the words of Alan Greenspan in 2008. The system was shocked by the crisis, hitting not from outside the economic system, but from its own core. A crisis represents by its very nature an occasion for large re- evaluations of economic opportunities and choices, in a rapidly changing scenario. While the upward phase is marked by a probably slow drift of sustainable economic trends away from the anticipated expected evolution ("the development of increasingly optimistic forecasts alongside economics forces that cannot justify those expectations" (Harvey 2010)), the eruption of the crisis sharply shortens time horizons: agents must decide "on the spot", and the economy appears to be near a bifurcation, so that its future seems to be in play from one moment to the next (Heymann and Leijonhufvud 2013). If the members of the herd are nervous, and made to be alert to danger signs, stampedes may easily happen. The representation of people´s cognitive processes, decisions and interactions "in crisis" is another open issue to be addressed. Overall, macroeconomics faces a reconsideration of its description of expectations and behavior, in a concrete and fact-oriented fashion. It remains to be seen if that demand is met.

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