From adaptive to rational expectations:
the empirical, methodological and theoretical reasons of a fundamental change of perspective in macroeconomics

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As is well known, in the 1970s macroeconomics was characterized by a radical change in the way expectations were modelled, as the prevailing hypothesis of expectations formation rapidly shifted from the hypothesis of adaptive expectations (AEH) to the hypothesis of rational expectations (REH). This change determined a radical shift of perspective in macroeconomics, favouring the rapid rise of new classical economics, the first macroeconomic school that adopted the REH, and the demise of traditional Keynesism that resisted its introduction. Since the early 1980s, also the most influential Keynesian school (new Keynesian macroeconomics) adopted the REH. After this rapid transition, often called "rational expectations revolution", the debate between classical and Keynesian schools of macroeconomic thought continued on the common terrain set by the REH approach. Notwithstanding the crucial role played by this epoch-making shift from the AEH to the REH in the history of macroeconomics, its causes and consequences have been insufficiently analyzed. This paper aims to contribute to fill this gap.

The sudden shift from the AEH to the REH was determined by a host of factors between which we distinguish empirical reasons induced by the history of facts, theoretical reasons related to the suggestion by Arrow and other mathematical economists of a fully-fledged version of the general equilibrium model under uncertainty, and methodological reasons related to the shift from the conviction that the general equilibrium model required dynamic foundations (as was suggested by Walras in its analysis of tâtonnement and was systematically argued by Samuelson in his Ph.D thesis: *Foundations of Economic Analysis*, 1947) to the conviction that dynamic foundations are unnecessary after Debreu provided rigorous axiomatic foundations to general equilibrium theory in his *Theory of value* (1951).

The reasons related to the history of facts are relatively easy to assess. The AEH was introduced in the 1960s to cope with the moderate and cyclical inflationary episodes of the time connected with the, then popular, stop-and-go policies. However, the acceleration of inflation since the late 1960s and the oil shocks of the 1970s determined sudden shifts in inflationary expectations that could not be accounted for by backward-looking and gradually adjusting adaptive expectations. The forward-looking instantaneous adjustment of expectations implied by the REH looked much more consistent with contemporaneous facts and favoured its success.

From the point of view of the history of economic thought, the shift of the foundational reference from the deterministic version of the general-equilibrium model to its version under uncertainty set the ground for a more realistic hypothesis of expectations formation consistent with the model. The shift from perfect foresight to RE added to the realism of the hypothesis without contradicting the main pillar of general equilibrium theory: substantive rationality. In fact the REH allows for *ex post*

errors of predictions, though only stochastic and therefore consistent with the postulates of substantive rationality (in particular that of intertemporal coherence). On the contrary, the AEH implies that the economic agents make systematic errors and correct them only asymptotically in sharp contradiction with the postulates of substantive rationality.

As for the methodological reasons of the shift from the AEH to the REH we observe that a serious problem with the REH, that was often underlined at the beginning, is that it assumes that the economy is always in equilibrium so that it is not possible to provide dynamic foundations to it. In other words, if we assume the REH we cannot provide a proof that the equilibrium is stable and the convergence is sufficiently rapid to justify the complete neglect of disequilibrium dynamics. In addition, in this case we have to neglect the systematic errors that characterize disequilibrium dynamics and the process of learning that aims to eliminate, or at least reduce, them. This huge obstacle to the acceptation of the REH was removed by the methodological argument, that however remained almost completely implicit in the debate, that the axiomatic foundations of general equilibrium theory provided by Debreu are sufficient and remove the necessity of dynamic foundations, since the empirical soundness of the models based on it is considered to be better assessed by statistical and econometric tests.

The main thesis of this paper is that the convergence of, and interaction between, the evolution of facts, economic thought and methodology explains the rapid demise of the AEH and the sudden success of the REH. However, each of these determinants raises unsolved issues that question the sustainability of the success of the REH. In addition the common reference to the REH of the classical and Keynesian macroeconomic schools restricts the terrain of debate between them and prejudges its outcome on many crucial issues. In the final part of this paper these problems are discussed and the possible ways out are synthetically assessed. The main conclusion is that it is time to free macroeconomics from the tyranny of the REH.

The rational expectations theory posits that individuals base their decisions on human rationality, information available to them, and their past experiences. The rational expectations theory is a concept and theory used in macroeconomics. Economists use the rational expectations theory to explain anticipated economic factors, such as inflation rates and interest rates. The idea behind the rational expectations theory is that past outcomes influence future outcomes. The theory also believes that because people make decisions based on the available information at hand combined with their past experiences, most of the time their decisions will be correct. Understanding Rational Expectations Theory. In science, theoretical and empirical knowledge has different fundamental pillars. In the first case, it is a detached use of rational methods and logical procedures, and in the second - direct interaction with the object. Theoretical knowledge uses intellectual abstractions. One of its most important methods is formalization - the display of knowledge in a symbolic and symbolic form. Â The empirical and theoretical levels of knowledge cannot do without them, therefore the system of artificial symbols has always played and will play a large role in science. Ordinary and expressed in colloquial language concepts seem obvious and clear. However, due to their ambiguity and uncertainty, they are not suitable for scientific research. 2. Adaptive Expectations: The second one was the result of simple, backward-looking rules. For example, people were often assumed to have static expectations, that is, to expect the future to be like the present. This assumption is used while discussing the Phillips curve and explaining investment decisions. In other words, people were assumed to have adaptive expectations. Â Most macroeconomists today use rational expectations as a working assumption in their models and analysis of policy. When thinking about the likely effects of a particular economic policy, the best assumption to make seems to be that people and firms will do the best they can to work out its implications. Â However, the theoretical effectiveness of rational expectations obviously is not enough. Adaptive expectations played a prominent role in macroeconomics in the 1960s and 1970s. For example, inflation expectations were often modeled adaptively in the analysis of the expectations augmented Phillips curve. View chapter Purchase book. Read full chapter. URL: https://www.sciencedirect.com/science/article/pii/B0080430767022452. Aggregative Macro Models, Micro-Based Macro Models, and Growth Models. David C. Black, Michael R. Dowd, in Encyclopedia of Social Measurement, 2005. Expectations. Differentiate between Rational and Adaptive Expectations and clearly explain their role in focusing on future macro-economic variables 1. Rational. Â In an economic model, this is typically modelled by assuming that the expected value of a variable is equal to the expected value predicted by the model. Example. Suppose P is the equilibrium price in a simple market determined by the forces of supply and demand. Then, the theory of rational expectations says that actual price only deviates from the expectations if there is an â€œinformation shockâ€ caused by information unforeseen at the time expectations were formed The ex ante actual price is equal to its rational expectations. $P = P^* + μ$.