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EXPECTATIONS IN PAST AND MODERN ECONOMIC THEORY

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Expectations in Past and Modern Economic Theory¹

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This special issue of the *Revue d'Economie Politique* is dedicated to the concept and the use of *expectations in past and modern economic theory*.

This topic is not really new. Every economist or person interested by economic activity knows the crucial direct or indirect importance of the forecasts or views that decision makers hold about future prices, sales, incomes, profitability or other key microeconomic or macroeconomic magnitudes. As many commentators (see, for instance, Leijonhufvud 1986:4) mentioned, the central difference between economics and natural sciences precisely lies in the forward-looking predictions and decisions made by economic agents since certainty and determinism do not often prevail in the working of the economic system. Therefore, the analysis of the contents and the impact of expectations on the micro- and the macro-economic variables is complex and often requires sophisticated reflections and tools as well as the use of the contributions of other natural (mathematics, physics) or social (psychology, sociology, philosophy) sciences. This is the reason why expectations provide a basic building block of economic theory. Notably they lie at the core of economic dynamics as they usually determine, not only the behavior of the agents, but also the main properties of the economy related to the evolution of such behavior in time. A central aspect of economic theories is indeed that expectations influence the time path of the economy, and conversely the time path influences expectations.

This central theoretical importance of expectations played an increasing role throughout the XIXth century. Expectations were already present during the first half of this century especially in the discussions in France and in Great Britain of empirical issues related to money, credit and public policy however, these developments were partial and related to specific observed mechanisms and phenomena. In France things changed in the end of the XIXth century with the works of Clément Juglar and Léon Walras and for two different reasons. Juglar was the first author to focus on the transition from crises theory to business cycle theories and this transition was supposed to imply “the

¹ This paper was written to introduce the various papers that make up a special issue published with the *Revue d'Economie Politique* « Expectations in Past and Modern Economic Theory », n°3 mai-juin 2021, pp. 323-608.

succession of the same facts, at any point of time but in specific circumstances”, (Juglar, 1862: xiii), in different periods and regimes; this changing periodicity applied specifically to expectations which Juglar tried to characterize, even without founding his remarks on a real theory. Walras built a theory of General economic equilibrium referring to static expectations and to-day there is still a debate to understand if this equilibrium was a static one or a rest point of a genuinely dynamic process. After Juglar and Walras, the issue of the role of expectations in the implementation of a general equilibrium naturally emerged and developed. For instance, Alfred Marshall was credited with the notion of ‘static expectations’ of prices but his distinction between very short, short and long periods led to a more substantial reflection various types of expectations and their relations with different equilibria.

Little by little, several issues were introduced which stressed the theoretical importance of expectations (see Shackle, 1948): let us refer for instance to (i) the nature of the kinds of evidence or data which play a part in the decision maker’s task; (ii) the set of rules used by any decision maker in this task; (iii) the role of elements of judgment, of invention, inspiration, or creativity which enter into this task; (iv) the type of valuation and ordering when the outcomes imagined for any action scheme are plural and mutually exclusive; (v) the type of expectations learning and revising processes.

Obviously, this special issue cannot cope with all the contributions which were developed in the past but had to make some choices. We will first refer here to three views of the relations between expectations and economics which differ from both the Walrasian and the Marshallian ones and were often developed in various contributions.

The first one concerns the Stockholm School of economics (“Taking expectations seriously: a leitmotiv in Stockholm School economics”) and was written by Hans-Michael Trautwein. It refers to the contributions of the different authors belonging to this school and shows that they have a common core in their direct or indirect Wicksellian heritage which totally differs from the Walrasian one because of his insistence on economic dynamics especially. The author emphasizes the role played by the starting point of these Swedish contributions, namely Myrdal’s 1927 dissertation. This contribution showed how the inclusion of expectations under imperfect foresight helped to transform the static framework of general equilibrium theory into a dynamic one, dealing with three main problems: the transformation of an initial structure of prices into another; the nature of the effects that changes have back in time on prior expectations; the integration of risk into the conceptualization of expectations. It also refers to the other leading members of the Stockholm School (before its founders): Lindahl and Lundberg who criticized Myrdal’s views and developed a preliminary approach to rational as well as endogenous expectations; and who made intertemporal and temporary equilibria distinct; Hammarskjöld who related expectations to entrepreneurial strategies; Ohlin who stressed the importance of expectations in regard to profitability of investments and drew attention to the role of these expectations in relation to the uses of the concepts and the method of ex ante and ex post in the

Stockholm School type of dynamics.; Johansson who related expectations to sectoral disproportionalities; and Svernilson who introduced the concept of intertemporal planning under uncertainty.

The second paper of this special issue is related to Keynes's theory ("Why Keynes' theory of individual decisions has not to be macro- or micro-economically founded?") and was written by Richard Arena and Eric Nasica. It refers to Keynes's economic theory including all his different own contributions and not only the *General theory*. Therefore, the purpose of this second paper is also to investigate expectations in Keynes' economics - which provides another tradition of the economic analysis during the first half of the XXth century and also differs from Walras *pure economics* and its static equilibrium. It aims to analyze the impact of taking into account a truly uncertain and complex economic environment on Keynes's methodology. Therefore, it clearly excludes an interpretation of Keynes's writings that would be based on a macroeconomic equilibrium and a self-contained conception of economic rationality. Two main parts are made distinct. In the first part, the paper aims to show that the complex decision-making environment induced by Keynes' vision of the "real world" is central to his approach because it strongly conditions his analysis of individual behaviors; to do this, the paper shows how this environment is used by Keynes to build an original and coherent methodology aiming at analyzing rationality and expectations under uncertainty in a way radically different from 'classical' approaches and above all more adapted to the characteristics of an economy subject to change. It concludes that, even when an ordinal or cardinal measure of probability is impossible, Keynes provides a consistent set of tools for the analysis of the formation of economic expectations and decisions. The second part of the paper tries to show that the complex decision and expectations-forming environment described before is also related to the characterization of the individual actor himself and his economic *and* social interactions. This form of economic analysis implies a specific methodological conception open to the help to the crucial use of philosophy and psychology.

The third paper of this special issue concerns the room attributed by John Hicks in the 1930s to the development and role of expectations in his representation of the functioning of a capitalist economy ("Great expectations. Hicks on expectations from *Theory of wages* (1932) to *Value and Capital* (1939)"). It was written by Jean-Sébastien Lenfant. It covers Hicks' contributions to economic theory in the 1930s, especially the second of these two books. As we know, this book is strongly related to the Walrasian tradition. However, *Value and Capital* influenced the history of macroeconomics and not only the history of general economic equilibrium. Moreover, contrary to Walras' contribution, Hicks used the general equilibrium approach to model expectations and assess the dynamics of an economic system through time, hence contributing to business cycle theory. It also tried to generalize some of Keynes's contributions concerning the relation between economic dynamics and unemployment. It was often based on a conception of economic dynamics conceived as a succession

of short-term temporary equilibria linked by the confrontation of past decisions and new plans from period to period thanks to the use of expectations. Lenfant's paper also tries to connect Hicks's treatment of expectations in 1939 with what he wrote on this theme in the 1930s. Indeed, Hicks developed a specific conception of the microfoundations of macroeconomics, in which the heterogeneity of expectations and its relations with risk play a crucial role. This is why the paper presents first Hicks's views on expectations in various works prior to *Value and Capital* (*The theory of wages*; "Equilibrium and the trade cycle"; "A suggestion for simplifying the theory of money" and "Wages and interest: the dynamic problem"). It shows that expectations are crucial to Hicks's understanding of the functioning of a capitalist economy. Hicks's framework concentrates on the notions of temporary equilibrium and elasticity of expectations. It finally provides some insights on a more general development of a theory of expectations based on *Value and Capital*.

In this special issue, after the succession of these three first papers, history of economic thought is still present, but it reveals a different approach related to the passage of time.

If indeed we consider the second half of the XXth century, in economics, till the 1970s, a unique research program tended to prevail. Surprisingly, this program was related to the Walrasian tradition we considered earlier, even if things are more complex than it is too often argued for various reasons. On one side, the program of the General Economic Equilibrium as it is presented by authors as Arrow and Debreu (1954) strongly differs from the program of Léon Walras. It indeed totally excludes the parts of the latter dedicated to *social* as well as *applied economics* and presents *pure economics* in a genuine way. On the other side, Arrow and Debreu took expectations and dynamics into account including intertemporal equilibrium unlike Walras's initial static equilibrium conception which did not consider this type of intertemporal issue.

Furthermore, besides this program, in 1961, John Muth made the assumption of 'rational expectations' known and contributed to put it at the center of the post-war and the XXIth century reflections on expectations. The three following papers of this special issue can be considered as a development of this perspective.

The fourth paper of this special issue concerns Muth's contribution to the elaboration of the concept of rational expectations ("When Muth entrepreneurs meet Schrödinger's cat") and was written by Rodolphe Dos Santos Ferreira. This paper connects from its very beginning this concept and the general equilibrium approach considering the former as an 'ingredient' of the latter. Moreover, it connects expectations formation with beliefs and predictions of other's conduct when agents act strategically. With this in mind, the author reminds that Muth built his conception of rational expectations in a simple model of a competitive market for a homogeneous good produced under random shocks where fundamental uncertainty combines with coordination issues. However, the paper does not limit its approach to the traditional Marshallian expectational conception of price equilibrium

investigated at the beginning of the text. Its purpose is not mainly however to relate expectations and beliefs but rather to pay attention to the importance of predictions of others' behavior when agents act strategically. Agent coordination therefore is at the center of the approach. This is why the author favors a Cournot equilibrium type of model in which uncertainty is reinforced by the existence of oligopolistic competition. Within this framework, agents are also supposed to identify each competitor's type ('dove' or 'hawk'). This identification is not predetermined however but only revealed at equilibrium. The paper compares this contribution to Schrödinger's cat thought experiment where a hypothetical cat which may be considered simultaneously both alive and dead as a result of its fate being linked to a random event that may or may not occur. It also concludes that the combination of a Cournot model assuming oligopolistic competition with rational expectations may imply some form of attractive indeterminacy which is not a symptom of 'bad modelling'.

The fifth paper of this special issue concerns expectational coordination within an 'eductive' framework ("Understanding expectational coordination as a major intellectual challenge: the 'eductive' guideline"). It was written by Roger Guesnerie. The starting point of this paper is that the concept of rational expectations cannot be considered as the simple and direct extension of the hypothesis of rational choice to expectations since it is rational to have rational expectations only if others also have rational expectations. Therefore, the purpose of the paper is to investigate the theoretical assessment of the validity of the rational expectation hypothesis. A standard assessment of such validity is associated with the success of real time learning when agents have adaptive expectations. The viewpoint taken in this paper, "eductive" learning, which has developed from the end of the XXth century, has a game-theoretical flavor, referring to mental processes associated with 'common knowledge', the success of which reflects a simple intuition, i.e the fact that the elasticity of realizations to expectations is not too high. The first part of the paper introduces the research from two polar examples: the textbook partial equilibrium model – also considered in the previous paper – which was used by Muth and the infinite horizon general equilibrium RBC model the genuine origin of which is also the Arrow-Debreu neo-Walrasian model. For both models, the paper stresses the argument and results associated with a collective and instantaneous thought process; and compares this "eductive" viewpoint with the real time learning viewpoint. The second part of the paper provides a random walk of the lessons of the "eductive" approach for understanding the quality of expectational coordination in a variety of contexts, going from partial to general equilibrium. The models and questions under scrutiny concern trade – how does a trade agreement affect expectational coordination? – market performance – do prices robustly transmit expected information? why are the standard justifications of the efficient market hypothesis very weak? -macroeconomics, - how and why is it the case that the Keynesian multiplier affects expectational coordination?, how to revise the Taylor rule for "eductive stability ? - finance- why and when does speculation strongly disturb

coordination ?-Industrial organization –how to separate allocational and expectational effects of competition policies ?

Finally, the exploration of the plausibility of robust expectational coordination stressing rationalizability and educative learning is part of a more general landscape of research on expectations which is briefly evoked.

The sixth paper of this special issue is also related to rational expectations and favors its temporal aspect (the ‘changing world’) (“Rational expectations in a changing world”) and was written by Alan Kirman. The purpose of the paper is not to argue that the predominant use of the assumption of rational expectations is unrealistic and inconsistent with the empirical evidence. It is to investigate the compatibility of this assumption with the non- ergodic evolution of economic systems and their complexity. The originality of Kirman’s paper is therefore related to his view of economic dynamics which differs from the different frameworks of the general economic equilibrium theory. The first half of the paper focuses on the limits of the assumption of rational expectations. They include a very poor conception of time which is sometimes associated with “comparative statics” and often uses a stochastic conception of expectations based on risk and probability which neglects the past debates related to the notion of uncertainty. Moreover, the predominant conception of equilibrium supposes a considerable degree of knowledge about the future and imposes heroic assumptions as the capacity of people to calculate and understand not only their local situation but that of the economy as a whole. Here again the paper shows that many past debates are under-estimated (for instance Hayek’s and Keynes’s contributions). The assumption of rational expectations is questionable in this context. It is incompatible with herd behavior, different algorithms using the same information, wrong beliefs, ... without introducing some type of stationarity. The second half of the paper focuses on real phenomena related to economic dynamics and crises in a ‘changing world’: the emergence of phenomena implying new behavior and new properties; non ergodicity excluding extrapolations from the past; radical uncertainty; complexity and feed-back effects; difficulties related to economic policy. This why for the author an alternative approach of economic expectations and dynamics has to be considered. Several possibilities can be considered: simulated models, animal behavior and agent-based macro-models provide the main options for the present and the future according to the author.

Finally, we turn to the four macroeconomics and economic policy papers. Expectations were considered a key feature of pre-Keynesian economics and they became an important element of early business cycles and growth models. In the context of the great depression, few economists started to question the existence of a full employment equilibrium. In their paper (“Expectations and full employment: Hansen, Samuelson and Lange“), Michael Assous, Olivier Bruno, Vincent Carret and Muriel Dal Pont Legrand examine this debate which started in the 1930s when Hansen and Samuelson, inspired by Roy Harrod, proposed a new understanding of the accelerator-multiplier relation. Alvin Hansen argued that a full employment equilibrium may not exist for a positive interest

rate in a context of secular stagnation. His statement was challenged fiercely by Arthur Pigou but entry to the debate of Paul Samuelson, a former student of Hansen's, moved discussion from existence of a full employment equilibrium to the issue of the stability of this equilibrium. The Hansen-Samuelson-Lange connection highlighted the possibility of economic collapse as a third possibility based on neither growth nor business cycles theories. The authors built on the emerging evidence from the correspondence between Samuelson and Oskar Lange and show that Samuelson believed expectations were a fundamentally important factor which could generate the instability of full employment equilibrium: its stability depends on how the expectations are formed. Although Samuelson's analysis of that instability is implicit, his correspondence with Lange reveals that he had urged Lange to examine it in more depth. Lange presented his results in his 1944 Monograph published by the Cowles Commission. Although his approach resonated with Hicks's analysis of the role of expectations in equilibrium stability, Lange proposed a different method involving revisions to expectations throughout the adjustment process. Revisiting this debate in light of the Samuelson-Lange correspondence, Assous, Bruno, Carret and Dal Pont Legrand show that the way in which Samuelson tackled the problem of wage and price flexibility contributed to the progressive exclusion of expectations and reminds us that (once ?), expectations were at the core of macroeconomic instability.

Sylvie Rivot traces Milton Friedman's gradual reincorporation of the formation of expectations in his analysis of macroeconomic disequilibria ("Information and expectations in policy-making: Friedman's changing approaches to macroeconomic dynamics"). In his early work [1948-63] the focus was on static expectations; in the mid-1960s Friedman began to analyze how agents gradually adjusted their forecasts to the new informational context and finally introduced forward-looking behavior only in the 1970s. This chronology mirrors how Friedman's thinking evolved but also reveals the strong anchoring of his understanding of economic policy in his conception of decision theory. Rivot demonstrates how Friedman's policy writings were related to his early work with Savage, and led him to propose the idea of subjective uncertainty rather than mechanical adaptive expectations. Rivot's paper contrasts the quite lengthy incorporation of those elements with their tenuous relationship with Friedman's views on monetary policy. Almost 50 years after the rational expectations hypothesis (REH), Rivot reveals the ambiguous reception of this concept. Friedman never completely subscribed to the REH – mostly because it meant that "the same unit, relatively brief, is relevant to anticipations for all variables" (1982: 145 fn. 9). In fact, Friedman and Schwartz considered that the core adjustment process dynamic relied precisely on delays in the revisions to agents' expectations (ibid: 65).

Aurelien Goutsmedt investigates how and why explanations of the 1970s US stagflation changed over the years ("From the stagflation to the great inflation: explaining the US economy of the 1970s"). The paper contrasts the dominant explanation of stagflation developed in the 1970s as based mainly on supply-shocks and inflation inertia, with the explanations that emerged in the 1990s. Those later

approaches were developed with little reference to the earlier explanations. Goutsmedt proposes a consistent history of this progressive drift in the explanations of stagflation. The originality of this paper is its mixing of the history of economic analysis with quantitative assessments. The author creates an original dataset which gathers all the references to the US stagflation episode [1975-2013]. He uses bibliometric tools to identify communities of papers (and authors) and to provide an accurate overview of the approaches to stagflation that predominated in different periods. Goutsmedt shows that despite their increasing importance in the field, before the 1990s the leading monetarism (Friedman) and New Classical School (Lucas and Kydland and Prescott) authors were rarely cited in works on stagflation. It was not until the late 1990s when a new strand of work emerged that the focus changed and their contributions were referenced more systematically in attempts to explain stagflation. This new strand of the literature proposed various explanations which centered on the role of monetary policy and the major contribution of expectations. The paper provides several interesting results which directly question common narratives that run through the recent history of macroeconomics, and especially the nature and timing of revolution driven by the REH. While the 1970s tend to be depicted as the time of a major revolution in the discipline, and the 1990s as years of consensus, the author shows that the methodological battles in the 1970s contributed only marginally to the crucial stagflation debate, and that the apparent macroeconomic consensus in the 1990s hides some divisions. There is no doubt that those findings will work to stimulate the new (still emerging) interest in an approach which combines the history of economic thought with bibliometric tools.

Starting from the observation that REH analysis not only assumes an unrealistic degree of agent rationality but also does not explain how equilibrium is achieved, George Evans's paper ("Theories of learning and economic policy") focus attention on boundedly rational approaches in which Rational Expectations are assessed through the lenses of adaptive learning: economic agents predict key aggregate variables using econometric forecast rules, the parameters of which are updated over time. The subject is introduced in the first Section by considering a forward-looking univariate linear model of asset pricing. Attention is focused on the connections between the perceived law of motion and the actual law of motion. A sequence of temporary equilibria is then generated in which agents use least square learning, to revise their expectations, a sequence hopefully converging asymptotically to the (here unique) Rational Expectations Equilibrium (or a noisy version of it if agents use constant gains learning processes, rather than declining gains occurring with least square learning). This line of research, also associated with the name of Sargent and some of his co-authors, has benefited from George Evans' previous important contributions, and particularly of his joint work with Seppo Honkapohja, (other co-authors are Branch, McGough, Mitra, and Guesnerie in papers comparing E-stability of learning and eductive stability).

The present paper put emphasis on a number of chapters of economic policies. *Monetary policy* is first examined in a canonical New Keynesian model, with forward- looking Taylor- type interest rate rules.

Such a rule, even if meeting the Taylor condition on the response of interest rates to inflation, should not respond too aggressively to expected output shocks, in order to generate convergence of learning to the required equilibrium. *Neo-Fisherian policies* are examined, and the expectational analysis associated with adaptive learning suggests that such policies are likely to lead to instability and recession. *Increasing the inflation target* has been proposed to cope with the situation of zero lower bound (ZLB). Adaptive learning considerations stress the possibility of persistent learning dynamics, so that increases in the inflation target can lead to temporarily self-fulfilling but unstable learning dynamics. The learning viewpoint is essential for the analysis of policies the discussion of which requires *non-linear models* with multiple steady states. For example, the learning dimension sheds an original light on *hyperinflation* episodes and on the connections between *ZLB situations and stagnation*, and in such a class of cases, the reflection on the design of economic policies differs when expectations are not too far from the targeted steady state or outside its basin of attraction.

Echoing other papers in this special issue, this paper underlines the importance of the nature of expectations for equilibrium analysis and demonstrates that an equilibrium concept cannot be evaluated independently of an analysis addressing how agents would come to coordinate on the so-called equilibrium. To assess the relevance of rational expectation construct, the adaptive learning approach, grounded in temporary equilibrium and bounded rationality, triggers relevant stability insights, as suggested by its strong policy implications.

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- 2021-30 MATTHIEU RENAULT
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- 2021-31 GÉRARD MONDELLO
Uncertainty and Information Sources’ Reliability
- 2021-32 RICHARD ARENA, MURIEL DAL PONT LEGRAND & ROGER GUESNERIE
Expectations in Past and Modern Economic Theory