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**KEYNES'S *GENERAL THEORY, TREATISE ON MONEY*
AND *TRACT ON MONETARY REFORM*:
DIFFERENT THEORIES, SAME METHODOLOGICAL
APPROACH?**

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KEYNES'S *GENERAL THEORY*, *TREATISE ON MONEY* AND *TRACT ON MONETARY REFORM*:
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Abstract

In trying to assess the content and significance of Keynes's attempted revolution in economic methodology, historians have almost exclusively focused on the *General Theory*. By highlighting the legacy of the *Treatise on Probability* for Keynes's economic writings, this paper provides evidence of strong methodological continuity between the *Tract on Monetary Reform*, the *Treatise on Money* and the *General Theory*, despite radical differences in the theories. We argue that the novelty of Keynes's approach lies in offering a method of analysis requiring cooperation on the part of the reader, in the effort to tackle the complexity of the economic material.

Keywords: John Maynard Keynes, economic methodology, economic theory, complexity, interdependence

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1. Introduction

John Maynard Keynes was perfectly and proudly aware, even before completing it, that his new “book on economic theory” – *The General Theory of Employment, Interest and Money* – was destined to “revolutionise ... the way the world thinks about economic problems” (*The Collected Writings of John Maynard Keynes*, hereafter referred to as CW, Vol. 28, p. 42). “When my new theory has been duly assimilated and mixed with politics and feelings and passions, I can't predict what the final upshot will be in its effects on action and affairs. But there will be a great change” (ib.), he wrote in a letter of 1935 to George Bernard Shaw. As known, history proved that Keynes was right. The emergence, with the *General Theory*, of modern macroeconomics itself was obviously a watershed in the history of the discipline, and Keynes evidently changed the way politicians used to think about economic problems in the golden decades of the Keynesian era, until the advent of stagflation and a theoretical counter-revolution led by Monetarism and later New Classical Economics. Still, despite considerable divergences in measuring the distance between Keynes and the Keynesians, historians of economic thought are aware that Keynes's work in economics cannot be reduced to Samuelson's Keynesianism (see Davidson 2009) and the IS-LM model sketched out by Hicks in 1937. Nor can Keynes's revolution be identified as one in policy. As Dimand (2010: 297) observes, this “has led to all too many reported sightings of precursors of Keynes, whenever someone is found to have proposed public works as a response to unemployment”. More, the post-war made Keynes's revolution coincide with Keynesian fine-tuning, but Keynes never advocated such policies and was certainly not a supporter of their mechanicism. The Keynesian revolution has not coincided, in sum, with Keynes's desired revolution. Despite encouraging premises (a number of mainstream economists turned to Keynes, in the years immediately following the subprime crisis, while addressing the failed state of macroeconomics), even the ephemeral Keynesian resurgence of 2008-2009 confirms the difficulty to grasp the revolutionary essence of Keynes's analysis. A “Keynes comeback” (as distinct from traditional Keynesian policies, however fashionable again) aiming at throwing light on the crucial novelty of Keynes's economics has materialized only in the heterodox literature.

Still, as late as 1999, the economist who first emphasized the gulf between Keynes and Keynesian economists, Axel Leijonhufvud, could still observe that “no general agreement was ever reached on what specific idea or ideas made [the *General Theory*] so

revolutionary” (Leijonhufvud 1999: 16). The Post-Keynesian literature (Shackle 1967; Davidson 1972; Eichner and Kregel 1975; Minsky 1975) has long insisted on uncertainty as a key aspect of Keynes’s economics, and argued that Keynes had eliminated a relevant classical axiom, namely the “ergodic” axiom. By accepting this latter, the classical theory assumes the future to be predetermined by existing parameters, or “market fundamentals”, to which the economist can apply statistical probability analysis with a view to predicting future economic trends. The neoclassical synthesis did very little to avoid falling victim of the same criticism Keynes had addressed to the classical theory (which he saw as “one of those pretty, polite techniques which tries to deal with the present by abstracting from the fact that we know very little about the future”; CW 14: 115). While criticising Laidler’s (1999) view of Keynes’s contribution as a new and manageable synthesis of earlier ideas, Dimand argues, however, that by singling out one out of four “building blocks” of the *General Theory* as the core of Keynes’s revolution, one “obscures the powerful synthesis that they jointly comprise” (Dimand 2010: 306). Keynes would have provided a fundamental contribution to each of them (goods market equilibrium condition, with income as a key variable bringing saving and investment into equality; money market equilibrium condition, with the theory of liquidity preference; volatility of private investment, a fundamental role being assigned to uncertainty; and a theory of why labour markets do not clear).

This paper wants to identify a possible way out of the tension between the temptation of looking for a specific “revolutionary” trait and the need to avoid obscuring the multifaceted character of Keynes’s contribution to economic theory. In particular, it aims at suggesting an interpretation of Keynes’s “revolution” as primarily a methodological revolution, where “method” refers to the way itself of thinking in economics and of doing economic theory, rather than in specific aspects of this latter. To this general end, the following discussion of Keynes’s way of treating the economic material adopts an epistemological rather than ontological perspective. As O’Donnell (2011) has recently argued, the two perspectives identify two distinct Post-Keynesian approaches to Keynes’s concept of uncertainty but also contiguous issues such as his meaning of probability and the relation between uncertainty and the nature of the world under investigation. Leaving aside the ontological approach (based on a view of the state of reality as non-ergodic) and rather adopting the epistemological perspective, we choose to concentrate on Keynes’s logical, objective theory of probability, on his view of

probability as a guide to form reasonable beliefs to act in cognitive conditions of partial rather than complete knowledge. Developed by the so-called “Keynes-philosophy” literature (with seminal contributions by Lawson and Pesaran 1985; Carabelli 1988; O'Donnell 1989), the approach highlights the epistemological foundations of uncertainty in Keynes's thought. Uncertainty derives from ignorance (absence of reasons or evidence, unknown probabilities), and low weight of argument (that is, confidence in probability assessment). But it also results from intrinsically unmeasurable probabilities and economic magnitudes, such as those Keynes identifies as inherently complex in chapter IV of the *General Theory* (e.g. real income and real capital) and in the *Treatise on Money* (general price level; see, in general, Carabelli 1992).

The epistemological perspective brings to the fore Keynes's reflections on the specific “method” economists should adopt to treat the economic material. The Keynes-philosophy literature retraced in *A Treatise on Probability* both the distant roots of the emphasis posed by the mature Keynes on decision-making under conditions of uncertainty and, above all, the *loci* where to discover the methodological foundations of his economics. As Dow (2010: 269) writes, “it is now conventional to read the *General Theory* bearing in mind that it was written by the author of *A Treatise on Probability*”. On such bases, a recent wave of studies (Carabelli and Cedrini forthcoming, Marchionatti 2010, Dow 2010, Togati 2006, Chick 2003, Chick and Dow 2001) has generally referred to complexity as a keyword of the *General Theory*, and emphasized the seminar role played by Keynes as a thinker of complexity in the history of economic thought. Keynes (and Marshall) did not make use of that “rigorous language that allows complicated concepts to be written in relatively simple, abstract terms”, helping the economist “to strip away complexity”, as Lazear (2000) would argue to explain the “imperialism” of economics over social sciences. While in the mainstream view “complexity may add to the richness of the description, but it also prevents the analyst from seeing what is essential” (ib.: 99-100), complexity seems conversely at the heart of Keynes's economics.

Keynes's anti-positivistic conception of economics sees it as a “moral” rather than a pseudo-natural science, as he wrote in the introduction to the Series of Cambridge Economic Handbooks of 1922-23. Economics deals with introspection and ethical values, with “motives, expectations, psychological uncertainties”, so that “one has to be constantly on guard against treating the material as constant and homogeneous” (CW 14:

300). As he wrote in his 1926 *Essay on Edgeworth*, “in psychics”, that is in social sciences, “we are faced at every turn with the problem of organic unity, of discreteness, of discontinuity – the whole is not equal to the sum of the parts, comparison of quantity fails us, small changes produce large effects, the assumptions of a uniform and homogeneous continuum are not satisfied” (CW 10: 262). The epistemological perspective on Keynes’s economics throws light on his concern for the problem of detecting a peculiar method suitable for the analysis of complex issues, and more in general, of how to make science in a complex, organically interdependent world.

In this sense, the *General Theory* seems a perfect illustration of Keynes’s belief that “the theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions” (CW 12: 856; see Carabelli and Cedrini forthcoming). Keynes wanted to “raise a dust”, “because it is only out of the controversy that will arise that what I am saying will get understood” (CW 13: 548), and in so doing, he literally “created the notion of an established orthodoxy” (Moggridge 1986: 357). Such orthodoxy should be challenged not only on the aspects of content, but also, perhaps in the first place, on methodological grounds, by throwing light on the inability of the classical theory to allow for the organic interdependence on which – a direct legacy of the *Treatise on Probability* – Keynes’s economics is built. His is a “general” theory because it avoids introducing tacit hypotheses of independence between variables (see Carabelli 1991).

Full recognition of the complexity of the economic material, and the resulting elaboration of a peculiar method to tackle it, may be the element that makes the *General Theory* so revolutionary. But this implies that the novelty of Keynes’s methodological approach to economics stems directly from conceiving economics itself, along lines established in *A Treatise on Probability*, as a way of reasoning, in the form of a non-demonstrative logic, about an economic material shaped by complexity and epistemological uncertainty. Despite radical differences in the theories, which reflect Keynes’s gradual abandonment of the orthodoxy but also the different *quaesita* of the analyses and changing circumstances, we should therefore detect evidence of strong methodological continuity between Keynes’s works of economic theory (the *Tract on Monetary Reform*, the *Treatise on Money* and the *General Theory*). This paper wants to provide such evidence, and claims that what Keynes’s theory of economics offers in truth

is therefore a method of analysis, one which expressly requires cooperation on the part of the reader, in the effort to emulate the author in coping with the complexity of the economic material. We thus paradoxically conclude by stressing that (part of) the revolution of the *General Theory* does not truly belong to it. Yet, for this same reason, future revolutionaries in economics would gain a whole method, in exchange for a book.

2. The *General Theory* (in the light of the *Treatise on Probability*): Keynes's method versus the classical theory

Keynes's conception of economics as a "moral" science, and a "method rather than a doctrine" has deep roots in his thinking, dating back to the *Treatise on Probability* (originally drafted in 1907-1908 and finally published in 1921), and cannot be fully appreciated without realizing the methodological legacy of this latter on Keynes's work in economics. In the *Treatise on Probability*, Keynes rehabilitates probable knowledge as the general and commonest case of knowledge, as against determinism and the positivist attempt to found knowledge upon certainty. Therefore, in developing a logical approach to probability, one in which logical relations have an objective nature, Keynes focuses on arguments of non-demonstrative and non-conclusive character, which nevertheless provide reasons for holding probable beliefs. Economics itself, in this view, is an apparatus of probable reasoning, where "probable" refers exactly to the logical conception of probability exposed in the *Treatise*. It is a non-demonstrative way of reasoning, wherewith one cannot obtain infallible answers nor settled conclusions. More precisely, as Keynes argued in a letter to Harrod, economics is "a branch of logic" (CW 14: 296), of probable logic, where logic means a contingent (to cognitive circumstances) form of non-demonstrative reasoning relative to contexts of shifting reality. Consequently, Keynes thought it was a necessary requisite of economics being conceived as a "method" that economic theory must be logically correct: it is a duty of the economist, so to speak, to avoid logical fallacies in reasoning.

The *General Theory* wants to demonstrate that the "classical theory" suffers of logical fallacies. The proclaimed "self-adjusting character of the economic system" (CW 7: 257) requires "assum[ing] fluidity of money-wages" (ib.). In so doing, the classics are bound to transpose demand and supply schedules for different products of a given industry to "industry as a whole". But this would be an "invalid" procedure, unless one further assumes absence of changes in aggregate effective demand. "Yet this assumption

reduces the argument to an *ignoratio elenchi*" (259): what Keynes means by this reference to one of the 13 types of fallacy of argument listed by Aristotle in *Sophistical Refutations* is that the premises of the argument are irrelevant to, and incapable of, establishing the truth of the conclusion. In the *Treatise on Probability* Keynes attacked the classical theory of probability, in particular Bernoulli's principle of indifference, and the empirical approach to induction and statistical inference (see Carabelli 1988). Mathematical probability, he argued, should respect the limits of valid reasoning, and in particular, it should avoid introducing tacit assumptions of independence and homogeneity to a material whose nature does not permit their use (CW 8: 66). Keynes's criticism of the fluidity-of-money-wages argument in the *General Theory* rests on similar bases: it is a criticism of logical relevance. The classics filled their theory with judgements of "logical irrelevance", taking the form of tacit assumptions of independence and homogeneity that have the characteristic of universality in space and time. The theory tacitly assumes independence of the real variables of the economic system from changes in the value of money; it tacitly presumes the system to be always operating to its full capacity, and tacitly postulates independence from changes in the level of community income when passing from the individual to the general level. Keynes's carefully distinguishes his own criticism from that of the "heretics" (CW 13: 488) of his days, who pointed their finger at the presumed empirical unrealisticness of the assumptions of the classical theory. It is a logical test, on the contrary, that the theory should pass; one, however, which is not of logical consistency. "If orthodox economics is at fault, the error is to be found not in the superstructure, which has been erected with great care for logical consistency, but in a lack of clearness and of generality in the premisses" (CW 7: xxi), writes Keynes: the theory must pass a test of logical relevance.

The logical fallacy of composition affecting the fluidity-of-money-wages classic argument provides an example of unwillingness to make explicit those *tacit* assumptions introduced to support the generality and validity of the arguments of the classics (see Carabelli 1991). The problem is that "if the classical theory is not allowed to extend by analogy its conclusions in respect of a particular industry to industry as a whole, it is wholly unable to answer the question what effect on employment a reduction in money-wages will have. For it has no method of analysis wherewith to tackle the problem" (CW 7: 260). The classics' "tacit assumptions are seldom or never satisfied" (378), and the restricted validity of the classical premises ends up with severely limiting the validity of

the conclusions and the generality of the theory itself. This is why Keynes call his theory “general”: “I mean by this that I am chiefly concerned with the behaviour of the economic system as a whole ... I argue that important mistakes have been made through extending to the system as a whole conclusions which have been correctly arrived at in respect of a part of it taken in isolation” (xxxii). In chapter 19, he explicitly characterizes the “difference of analysis” separating him from the classics as a methodological dissimilarity (“my own method”, 257). As against the “simplicity” of the classical theory, Keynes's theory does depends on “roundabout repercussions” (ib.), that is it avoids introducing tacit assumptions of independence, and rather allows for different levels of dependence among the variables, posing change and variability at the very core of the analysis. Keynes forged a two-stage methodology, whereby “after we have reached a provisional conclusion by isolating the complicating factors one by one, we then have to go back on ourselves and allow, as well as we can, for the probable interactions of the factors amongst themselves” (297).

That Keynes believed this to be “the nature of economic thinking” – “any other way of applying our formal principles of thought (without which, however, we shall be lost in the wood) will lead us into error” (ib.) – needs explanation. Behind both his peculiar criticism of the classical theory and the proposal of this two-stage methodology lies the discussion of the logical foundations of probability, analogy and inductive reasoning Keynes exposed in *A Treatise on Probability*. There, he restricted the validity of analogical reasoning to cases in which the amount of “independent variety” made up by the system’s constituents and the laws connecting them one to another is “limited” (CW 8: 280), that is inferior to the number of the system's members. The “atomic hypothesis” supporting mathematical calculus assumes a “material universe” made up of “legal atoms”, each of them exercising “its own separate, independent and invariable effect”, “which does not change with changing circumstances (...) Each atom can (...) be treated as a separate cause and does not enter into different organic combinations in each of which it is regulated by different laws” (276–7). Yet social scientists investigate a material that does not lend itself to the atomic assumption, nor to all those – hypotheses of continuity, uniformity, measurability, homogeneity, proportionality, and so on – Keynes listed in the *Essay on Edgeworth*. The economic material makes no exception: as early as 1913, Keynes ended his *Indian Currency and Finance* warning readers of the “complexity and interdependence of fact” and “the coherence of the [Indian financial] system”, which

requires “the constant attention of anyone who would criticise the parts”, CW 1: 181-2). *The Economic Consequences of the Peace* are a shining example of how to tackle organic interdependence between economic variables without reducing the complexity of the material under investigation (see Carabelli and Cedrini 2010). However, in the purely theoretical work of the *General Theory*, organicism becomes a serious problem (see Chick 2003). The two-stage methodology directly expresses Keynes’s criticism of the abuses of mathematical formalisation, which “assume strict independence between the factors involved and lose all their cogency and authority if this hypothesis is disallowed” (CW 7: 297). Hence his preference for ordinary rather than mathematical language. But it is also a reflection of the unsatisfactory concept of interdependence used in general equilibrium theory: in constructing a theory of the economic system as interdependent, the algebraic system of simultaneous equations of general equilibrium theory positively assumes multicausality, but grounds it on connections between ultimate atomic factors, i.e. a sort of atomic interdependence.

More, and finally, it suggests a rejection of the Marshallian partial-equilibrium analysis, because of the assumptions of independence this latter – though the rules of the game are explicit – is bound to introduce. In Keynes’s view, the economist must use the *ceteris paribus* condition only to reach provisional conclusions. S/he must soon afterwards deliberately repudiate such results, to allow for roundabout (“probable”) repercussions between variables heretofore enclosed in the schematism of a seemingly rigid causal structure. If applied to the money-wage fluidity argument, this method requires answering to two questions: “(1) Does a reduction in money-wages have a direct tendency, *cet. par.*, to increase employment, '*cet. par.*' being taken to mean that the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest [which are referred to as the three “independent variables” of the *General Theory* in chapter 18] are the same as before for the community as a whole? And (2) does a reduction in money-wages have a certain or *probable* tendency to affect employment in a particular direction through its certain or *probable* repercussions on these three factors (260, emphases added)?”.

After answering negatively to question (1), Keynes enumerates seven “probable repercussions” which the classical theory fails to consider. The reduction of money-wages induces in fact a reduction of prices and a redistribution of real income from entrepreneurs to rentiers, which diminishes the propensity to consume (repercussion

#1). The introduction of the international dimension causes the reduction of money-wages to induce a raise of investments (#2) and a worsening of the terms of trade (#3), with an increase in the propensity to consume as the final result. Moreover, reduced money wages will be favourable to investment via increased marginal efficiency of capital if it is expected to be a reduction relatively to money-wages in the future (#4), while it will have the opposite effect if the community expects money-wages to further diminish in prospect. In any case, it will reduce the schedule of liquidity-preference for the community as a whole, thus raising investments (#5), though expectations may alter this result. Repercussions #6 and #7 deal respectively with the effects of reduced money-wages in terms of the general tone of optimism or pessimism they can produce on entrepreneurs and workers, and the negative influence of a greater burden of debt on the former. Moreover, Keynes adds that this list of possible repercussions is not “a complete catalogue of all the possible reactions of wage reductions in the complex real world” (CW 7: 264).

This same two-stage methodology, which Keynes uses in chapter 19 to deal with the problems raised by interdependence between only presumed independent variables, is applied in chapter 20 as concerns the hypothesis of proportionality. However, it is chapter 21 to provide a vivid illustration of this methodology. In discussing “the theory of prices”, Keynes initially adopts the “simplification of assuming that the rates of remuneration of the different factors of production which enter into marginal cost all change in the same proportion, i.e. in the same proportion as the wage-unit (CW 7: 295). Then he “simplif[ies] our assumptions still further, and assume (1) that all unemployed resources are homogeneous and interchangeable in their efficiency to produce what is wanted, and (2) that the factors of production entering into marginal cost are content with the same money-wage so long as there is a surplus of them unemployed (ib.). Nevertheless, the economist, writes Keynes, must not content her/himself with a theory that assures changes in employment (prices) “in the same proportion” (296) as the quantity of money so long as there is unemployment (when there is full employment). Rather, he must concern himself with those “possible complications which in fact influence events” (ib.), that is lack of proportionality between causes and effects, heterogeneity and incommutability: “(1) Effective demand will not change in exact proportion to the quantity of money; (2) Since resources are not homogeneous, there will be diminishing, and not constant, returns as employment

gradually increases; (3) Since resources are not interchangeable, some commodities will reach a condition of inelastic supply whilst there are still unemployed resources available for the production of other commodities; (4) The wage-unit will tend to rise, before full employment has been reached; (5) The remunerations of the factors entering into marginal cost will not all change in the same proportion” (297).

Remarkably, Keynes feels the necessity to warn readers that although each of such “possible complications” will be considered “in turn. But this procedure must not be allowed to lead us into supposing that they are, strictly speaking, independent” (ib.). He then provides specific examples of how any of these complications affects each other. He admits that one could easily argue that the main effect of a change in the quantity of money is through its influence on the interest rate, and derive this effect from the schedule of liquidity-preference (a), the schedule of marginal efficiencies (b) and the investment multiplier (c). Yet, he observes, “this analysis, though it is valuable in introducing order and method into our enquiry, presents a deceptive simplicity, if we forget that the three elements (a), (b) and (c) are themselves partly dependent on the complicating factors (2), (3), (4) and (5) which we have not yet considered”. For instance, he notes, “the schedule of liquidity-preference itself depends on how much of the new money is absorbed into the income and industrial circulations, which depends in turn on how much effective demand increases and how the increase is divided between the rise of prices, the rise of wages, and the volume of output and employment” (298-9). As in the case of the roundabout repercussions of a reduction in money-wages in chapter 19, Keynes adds that this list of possible complications is not complete (299).

3. Keynes's methodological revolution before the *General Theory*

What precedes throws light on Keynes's attempt to overcome the limitations of the classical theory by means of a methodological discontinuity, with the resulting proposal of a more *general* theory – or a truly general one (see Togati 2006 for a recent discussion of the controversy on the generality of the *General Theory*). Since Keynes scholars have, quite obviously, focused on the *General Theory* as a revolution in both economics and Keynes's economics, this methodological discontinuity tends to be indissolubly associated with the *General Theory* itself: nearly all accounts (with the relevant exception of Hoover 2006) of Keynes's “revolution” in economic methodology concentrate almost exclusively on the *General Theory*. Yet one may legitimately ask the question whether

this discontinuity is a true novelty in Keynes's own work as well. After all, the *General Theory* is the result of a theoretical journey that began with the *Tract on Monetary Reform* in 1923 and passed through the *Treatise on Money* in 1930. This connection with Keynes's earlier works in monetary theory might provide in truth a certain force to the arguments surrounding the aforementioned bias of the literature in favour of the *General Theory*.

The *Tract on Monetary Reform* was explicitly written under the influence of the “orthodoxy” of Alfred Marshall and Arthur Pigou. In the *Treatise on Money*, Keynes describes the new “fundamental equations” as “alternative” to the “real balance quantity equation” he had employed in the *Tract*. He also criticises the use he had made of the term “consumption units” for real balances, that is the explicit suggestion that cash deposits are used for consumption only, with consequent neglect of the abundance of possible “business and personal purposes” (CW 5: 200). As to the *Treatise*, although Keynes had certainly regarded, at the epoch of writing, as his *magnum opus* (Clarke 2009), the *General Theory* itself finally dethroned it. In the *General Theory*, Keynes identified the cause of “the outstanding fault of the theoretical parts” (CW 7: xxii) of his previous book in the “lack of emancipation from preconceived ideas”. In the *Treatise*, Keynes failed to deal with changes in the level of output (“my so-called 'fundamental equations' were an instantaneous picture taken on the assumption of a given output”, *ib.*) and with the fundamental characteristic of a “monetary economy” (*ib.*), namely, the enormous influence of changing views about the future on the volume, not only the direction, of employment.

Moreover, as Patinkin noted in 1975, Keynes's trilogy in monetary theory is heterogeneous in substance, form and purpose. The *Tract on Monetary Reform* mainly derives from the articles Keynes had published in the “Reconstruction Supplements” of the *Manchester Guardian Commercial*. The title leaves little room for doubt: in the book, Keynes concerns himself with currency reforms, their effects, and practical remedies. The *Treatise on Money*, on the contrary, is divided into two volumes, devoted respectively to the “pure” and “applied” theory of money. The book addressed “a professional audience whose major concern was with the latest developments in monetary theory” (Patinkin 1975: 254). In this sense, the *Treatise* is truly an intermediate step towards the “almost exclusively” (*ibid.*: 255) theoretical work of the *General Theory*.

At the same time, there are strong connections between the three volumes, and

the use of the term “trilogy” is justified. The most debated continuity, the one between the *Treatise on Money* and the *General Theory* – as Dimand (1986: 431) has rightly observed, with respect to the theories embodied in the two works, “the *General Theory* would have been a different book had Keynes not written the *Treatise* first” – is stressed by Keynes himself in the preface to the *General Theory*. There, he wrote that although the reader could consider it as a “confusing change of view” (CW 7: xxii), the *General Theory* represented “a natural evolution in a line of thought which I have been pursuing for several years”. Exception made for the aforementioned problems resulting from “lack of emancipation from preconceived ideas” in the *Treatise*, in fact, the *General Theory* does not repudiate in truth its predecessor. As Cardim de Carvalho (2012) argues relating to the role of banks and central banks, the *Treatise* material enters the *General Theory* as “technical monetary detail” which “falls into the background” (CW 7: xxii) of the *General Theory* analysis. True, the *Treatise* takes output as given, which is simply wrong for the Keynes of the *General Theory*. But Keynes seems eager to warn his reader that the author's *quaesitum* has changed – the book, he significantly wrote, “has *evolved* into what is primarily a study of the forces which determine changes in the scale of output and employment as a whole” (xxii, emphasis added).

Two apparently opposite factors of change are therefore involved. The author may in fact reformulate earlier *quaesita*, owing to technical or conceptual (ex post recognised as) errors. For instance, in the *Treatise on Money*, Keynes argues that in the *Tract on Monetary Reform*, “*p*, being the price of a consumption unit, represents our *quaesitum*, the purchasing power of money” (ib.), whereas in truth, he admits, it only measures the cash balances standard. But *quaesita* vary also, and obviously, due to varying economic times and circumstances, and theories change accordingly. Still, if economics is to be understood as a way of thinking, helping the economist to avoid logical fallacies, one might reasonably expect that *all* Keynes's theoretical writings in economics, from the *Tract on Monetary Reform* to the *General Theory*, share (at least some key features of) a common methodological approach to the economic material. A methodological analysis of the theoretical cores of the *Tract on Monetary Reform* and the *Treatise on Money* may actually reveal that the methodological revolution of the *General Theory* has in truth solid theoretical bases in Keynes's own previous works.

3.1 The *Tract on Monetary Reform*

The only chapter of the *Tract on Monetary Reform* deriving from previously unpublished material is the central and most theoretical one (“The theory of money”). Patinkin (1975: 254) sees it as “not really necessary for the book: its deletion would interfere very little with an understanding of the argument of the *Tract* at other points, as indeed Keynes indicated (*Tract*, p. 61n)”. In the author’s intentions, however, the chapter lays “the theoretical foundations for the practical suggestions of the concluding chapters” (CW 4: 61).

As known, the Keynes of the *Tract on Monetary Reform* believes that the quantity theory of money is “fundamental. Its correspondence with fact is not open to question” (ib.). Yet he also thought that the theory “is often misstated and misrepresented” (ib.). In particular, the “error often made by careless adherents of the quantity theory” (64) would rest on the introduction of tacit “further assumptions” (65) of independence, of the same kind of those the Keynes of the *General Theory* saw at work in the classical theory. In the *Tract on Monetary Reform*, Keynes explains the quantity theory of money recurring to the equation $n = p(k + rk')$, where n is the number of currency notes in circulation and p is the index number of the cost of living, that is the price of each of k “consumption units”. The public holds the equivalent of k consumption units in cash and a further k' in deposit accounts at their banks, while these latter keep liquid a proportion r of their liabilities k' . The fundamental problem with the theory is that it “has been often expounded on the further assumption that a mere change in the quantity of the currency cannot affect k , r , and k' – that is to say, in mathematical parlance, that n is an *independent variable* in relation to these quantities” (65). Keynes is therefore criticising the introduction of a tacit assumption of independence in the “simple” (69) equation of the quantity theory of money. Supporters of the theory take as independent variables whose value is affected by alterations in the quantity of currency notes in circulation: the term “simple” applies therefore to the theory as well, exactly because it does not take such repercussions into account. The tacit assumption thereby introduced holds true in the long run only, writes Keynes, but “*in the long run we are all dead*” (ib.; emphases in the original): economists should adopt, both practically and theoretically, the short run optic as a guide to current affairs.

These repercussions bring about relevant consequences, at both the theoretical and practical level. “Actual experience” (ib.) shows in fact when n changes, k , k' and r change as well, which might have a decisive influence in producing “cyclical fluctuations”

(69). Keynes cites the “conventional and arbitrary” (65) gold reserve policy of central banks prevailing before the war. Reserves were accumulated “for show rather than for use” (ib.) and their amount “was not the result of close reasoning” (ib.; echoes of *Indian Currency and Finance* are evident, see Carabelli and Cedrini 2010-11). Abundance of gold after increased output in South Africa had therefore little effect on price level: in this and other such cases, the effect of changes in n on p is therefore “[not] full proportionate” (66). Keynes also notes that, when bringing about an expectation of further change in p in the same direction, a large change in n , rubbing away the above-mentioned initial “friction”, would vice versa produce “a more than proportionate effect on p ” (ib.), for a large change in p affects “individual fortunes”. People are therefore induced to change their monetary habits, both to avoid similar losses in the future and to make gains before the new equilibrium is reached. Now, only two of the “few, definite, analysable influences” (68) on prices, namely n and r , are under the direct control of central banks. But these latter can exercise, through adequate bank rate policies, a stabilising influence on k and k' , or counterbalance their movements by acting on n and r .

This methodology of criticism provides clear continuity with the one Keynes will adopt in his 1936 work, as directly shown by his unfavourable judgement on the “purchasing power parity” theory. In the article *The Theory of the Exchanges and Purchasing Power Parity* of 20 April 1922, which constitutes the basis of the book paragraph, Keynes wrote that many used the theory “as a mere counter, a substitute, not an instrument, of thought” (70, n3). An underlying problem of “further assumptions”, in fact, transforms the “the doctrine in its baldest form” (71) into a “patter-phrase” (70, n3) of little utility. For it is true that, if exchange rates differ significantly from the purchasing power parities, “then we are justified in inferring that equilibrium is not established, and that, as time goes on, forces will come into play to bring the actual exchange rates and the purchasing power parities nearer together” (72). Yet what captures Keynes’s attention is the caveat accompanying the doctrine as generally applied – “allowance being made for transport charges and import and export taxes” (73) –, with the resulting theoretical complications.

Even leaving aside the problem of how to make allowance for such charges and taxes, a worrying difficulty arises, relative to “how to treat purchasing power over goods and services which *do not enter into international trade at all*” (74). When the aforementioned caveat is reduced to a linguistic expedient used to get rid of the potential

complexity of the dynamics of internal and external purchasing power, and the analysis is restricted to goods that enter into international trade, the theory becomes “a truism, and as nearly as possible jejune” (75), that is, not relevant and naïve. The theory ends up with assuming the absence of those possible complications that it is required to take into adequate consideration, if it is to avoid being judged as a useless truism.

Exactly like the “quantity theory of money” (75 n1), Keynes added in the 1922 article. Now, the commodities basket selected to verify the theory is the one usually taken to elaborate general purchasing power indexes. Therefore, when applied as such, “the theory requires a further assumption for its validity”. Keynes finds it expressed in Cassel's *Money and Foreign Exchange after 1914*: “in the long run the home prices of the goods and services which do not enter into international trade, move in more or less the same proportions as those which do” (75). The passage is worth quoting in full: “So far from being a truism, it is not literally or exactly true at all; and one can only say that it is more or less true according to circumstances”. To evaluate the limitations of a theory, that is to clarify the conclusions one can legitimately infer from it, the economist must therefore discover and make explicit the “further assumptions” tacitly introduced into the analysis. The assumption of proportionality between the long-run fluctuations of home prices of goods that enter and goods that do not enter into international trade depends on a long list of further assumptions: “If capital and labour can freely move on a large scale between home and export industries without loss of relative efficiency, if there is no movement in the 'equation of exchange' (...) with the other country, and if the fluctuations in price are solely due to monetary influences and not to changes in other economic relationships between the two countries, then this further assumption may be approximately justified. But this is not always the case” (75-76), as the “cataclysm” produced by the war demonstrates. In the absence of such recognition, the best one can say is that a theory is “more or less true according to circumstances”, exactly those wherewith a theory should be able to deal, thereby allowing the economist to analyse the specific economic material under consideration.

In the article, Keynes specifies: “the critical scepticism expressed above about its relation to the actual rate of exchange must not be carried too far” (77, n2). For the prices of the two classes of goods (those which do and do not enter into international trade) derive from “deep economic and psychological causes which are not easily disturbed” (78). Therefore, if divergences are “mainly” due to monetary causes, “then we may reasonably

expect that purchasing power parity and exchange value will come together again before long” (ib.). Yet, while believing that the “practical importance” of such qualifications should not be “exaggerated” (78), Keynes insists on the need to specify clearly such assumptions. The theory simply but importantly holds that internal purchasing power is a better indicator of a currency’s value than the exchange rate, for the monetary policy of the country, which is immediately reflected in the internal purchasing power, is the “final determinant” (79), he writes. But its logical validity rests upon a series of necessary assumptions, namely that “no persisting change is taking place in the basic economic relations between two countries, and (...) the internal purchasing power of the currency has in each country settled down to equilibrium in relation to the currency policy of the authorities” (79-80). The point to note is that, once brought to the light, these simplifying assumptions appear to restrict the logical validity of the theory tacitly adopting them: while the theory claims universality, such assumptions set limits to its conclusions and severely reduce its generality.

3.2 The *Treatise on Money*

Keynes had introduced the theoretical chapter 3 of the *Tract on Monetary Reform* stating that “part of this chapter raise, unavoidably, matters of much greater difficulty to the layman than to the rest of the book. The reader whose interest in the theoretical foundations is secondary can pass on” (CW 4: 61). Still, in that same chapter, Keynes establishes in truth a direct relationship with his audience. As seen, at the end of his discussion of the quantity theory of money, Keynes invokes bank rate policies aiming to prevent price disturbances by stabilising k and k' , or at offsetting their fluctuations by acting on n and r . He then apologizes for introducing a topic of chapter 5, arguing that these hints will serve to “indicate to the reader what a long way we may be led by an understanding of the implications of the simple quantity equation with which we started” (69-70). Likewise, Keynes introduces chapter 20 of *A Treatise on Money* allowing “some readers” to leave the chapter out, though not for reasons of intrinsic difficulty or high doses of technicality. The “Exercise in the Pure Theory of the Credit Cycle” proposed in the chapter is rather “somewhat artificial”, due to the “simplifying assumptions which have to be introduced in order to rule out the various complexities which are usually present in actual life”. “Moreover”, Keynes adds, the chapter “does not add to the previous argument but only illustrates it” (CW 5, p. 274). Yet, as shown below, the final lines of the chapter

directly invite readers, so to speak, to continue the exercise by themselves, by applying “the general system of thought” exemplified in the chapter “to any further interesting cases” (292).

With respect to the *Tract on Monetary Reform*, the *quaesitum* has changed, from the purchasing power of money to credit cycle, with the accompanying fluctuations of employment and output. The “fundamental equations” proposed in the *Treatise on Money* suggest that the price level is governed by the volume of money earnings of the factors of production and the relation between saving and investment. In particular, the price level of consumed goods exceeds (falls short of) the cost of production of such goods when the cost of production of new investment exceeds (falls short of) the volume of saving. Credit cycles originate from episodes of disequilibria of purchasing power, “the alternations of excess and defect in the cost of investment over the volume of saving and the accompanying seesaw in the purchasing power of money due to these alternations” (CW 5: 249).

Keynes saw therefore such cycles as the by-product of “changes due to investment factors” (248), resulting from divergences between the market rate and the Wicksellian “natural” rate of interest – the market rate may change due to “altered conditions in the loan market” (232) or to “the necessity of maintaining equilibrium between the rate of foreign lending and the foreign balance” (233), while the natural rate may react to “a change in the attractiveness of investment or in that of saving” (232). Now, as Hoover (2006) argues, readers may easily find, in the *Treatise on Money*, examples of causal accounts, and treatment of credit cycles makes no exception. Keynes himself declares that the task of a monetary theory is “to exhibit the causal process by which the price level is determined, and the method of transition from one position of equilibrium to another” (120). The attempt to expose the principles of a disequilibrium dynamics evidently induced him to retrace causal connections between variables on occasion of practically every “summary” of the arguments dealt with at depth in the preceding chapters. Credit cycles make no exception: Keynes exposes the “normal course” (271) by clarifying the “order of events” in a causal sequence. Despite appearances to the contrary, however, there is plenty of evidence to suggest that the fundamental issue of the book does not lend itself to rigid causal structures.

The *Treatise on Money* is highly critical of Cournot's “so many brilliant false analogies between the moral and the physical sciences” (71). Cournot is seen as the

initiator, with Jevons and Edgeworth as main followers, of the dangerous tendency to isolate two presumed distinct – in truth interconnected and inseparable – influences (“changes on the side of money” and “on the side of the things”) affecting fluctuations in the prices of individual things. In a similar vein, after describing the “fundamental equations” and before summing up his argument about the saving-investment relationship, Keynes specifies “that we are dealing with a case of multiple equilibrium in which each element affects every other element more or less” (129). Discussing the influence of public disposition towards saving and hoarding respectively on the price level of consumption and investment goods, he maintains that it is “difficult to keep the causes and the results of the two types of decision disentangled, since they act and react on one another in a most perplexing way” (130). The only valid meaning of “independence” between the excess-saving and the excess-bearish factors is in fact that “any degree, positive or negative, of the one is compatible in appropriate attendant circumstances with any degree, positive or negative, of the other” (ib.). Likewise, revamping the *Tract* analysis of the “simple and direct quantitative relationship” established by the quantity theory of money, Keynes clarifies that “in the actual world a change in [any of the factors under consideration] is likely to be accompanied by some change in everything else” (133). It is therefore illusory to suppose that “the degrees of change in the quantity of money, the velocities of circulation, and the volume of output will [...] be related in any definite and predictable ratio to the degrees of change in the fundamental price levels” (ibid.), as the acute phases of a credit cycle show.

The last chapters of book 1 of the *Treatise on Money* show a similar and equally intense concern for organic interdependence. Although credit cycles depend, for their occurrence, on disturbances produced by “investment factors”, these latter are only one of three potential sources of disturbance for purchasing power. “Monetary factors”, such as a change in the supply of money or in the requirements of the financial circulation), and “industrial factors”, such as a change in the volume of output or in its cost of production, can play a decisive role. Monetary disturbances are usually due to changes on the supply side, inducing the passage from one equilibrium price level to another, while disturbances due to investment factors derive from changes on the demand side, producing an oscillation about an “approximately unchanged” (248) price level. Yet, he also remarks that “the causes of disequilibrium [related to investment factors] are not always separated by a sharp line from [those due to monetary factors], and, after the initial stage has been

passed, they shade off into one another. For a disturbance initially due to monetary factors will soon set up some disturbance on the investment side, and similarly a disturbance due to investment factors is likely [...] to cause some modification to monetary factors” (ib.). Now, the alternation of excess and defect in the cost of investment over the volume of saving is affected by the ups and downs of costs of production, which “are unlikely to remain stable throughout the course of a credit cycle” (249). But, at the same time, divergences between the volume of saving and the cost of new investment “are likely in themselves to set up influences tending towards income inflation and deflation” (ib.), as Keynes defines respectively increases and decreases in the costs of production.

Hence, “the actual course of events observable at any time will be a complex phenomenon resulting from the combined effects of changes in the costs of production and of the phases of the credit cycle proper. In common usage the term *credit cycle* has been applied to this complex phenomenon; and it will often be convenient to follow this looser usage” (ib.). Keynes then distinguishes three types of credit cycles. Increased investments may in fact derive from i) substitution of production of capital goods in place of consumption goods, total output being unchanged; or from additional production of either ii) capital or iii) consumption goods. But he immediately adds that “those which actually occur are generally complex in type and partake of the character of all three” (252), and are accompanied by some measure of rising costs of production and rising price level of new investment goods relatively to their cost of production. Finally, both this latter factor and disequilibria between the cost of new investment and the volume of saving tend to cause strictly positive profits. But then, increased competition among entrepreneurs to secure additional inputs raises costs of production. Keynes holds that “*theoretically at least* – it is possible to disentangle from these complications the element of commodity inflation [namely, the excess of the cost of investment over the volume of saving] which constitutes a credit cycle” (ib., emphasis added). But before summing up the characteristic phases of the cycle, Keynes observes that “The possible varieties of the paths which a credit cycle can follow and its possible complications are so numerous that it is impracticable to outline all of them. One can describe the rules of chess and the nature of the game, work out the leading openings and play through a few characteristic end-games; but one cannot possibly catalogue all the games which can be played. So it is with the credit cycle. We will begin, therefore, by examining the three openings and then proceed to an analysis of the characteristic secondary phase” (253).

A key methodological aspect of the treatment of credit cycles in the *Treatise on Money* is offered to the reader's attention in the introduction to chapter 20. The exercise of the chapter's title consists in describing a particular type of credit cycle by introducing a series of "simplifying assumptions" (CW 5, p. 274) to be subsequently removed: "I propose in this chapter to take a particular type of credit cycle and to work it out in full detail. Owing to the simplifying assumptions which have to be introduced in order to rule out the various complexities which are usually present in actual life, the example taken is somewhat artificial. Since, moreover, it does not add to the previous argument but only illustrates it, some readers may prefer to leave this chapter out. The method and ideas of the preceding chapters will, however, be better illustrated in this way than if I were to cover more ground less intensively" (ibid.). As later in chapter 19 of the *General Theory*, therefore, Keynes refers to a peculiar "method" suitable for the analysis of a complex phenomenon, requiring willingness, on the part of the economist, to "abate the rigour" (280) and finally remove the "limitations" (284) accompanying the "simplifying assumptions" initially introduced. After eight "simplifying assumptions" have been introduced, Keynes allows for "complications" which may be thought of as "non-essential" (275) only in respect to the initial purpose of the analysis, which is "to set out the essential mechanism" (ibid.).

It is not necessary, here, to provide details about the eight assumptions. But to grasp the philosophy of the exercise, it is to be noted that Keynes does not limit himself to enumerating simplifications which are necessary to draw the "standard case" (274) of a credit cycle (for instance, current savings equal net new investment; same duration of the productive process for all commodities, and so on). Some of the limitations introduced, in fact, are such that, in their absence, the case under investigation ceases to be simple and artificial and becomes complex. It is thus assumed that money costs of production are constant, and Keynes underlines that it would be possible to treat "various irregularities" in this respect, but they "do not lend themselves to a generalised description" (288). And it is assumed that "the banks create just enough additional money for the industrial circulation, after allowing for any fluctuations in the amount of the financial circulation, to allow the absorption of the unemployed factors of production into employment at a steady rate" (275). Nor can the economist always be content with removing a single limitation, since the non-fulfilment of the assumption, for instance that current savings equal net new investment, makes the cycle "more complicated, and one can only describe

its exact course if one first makes an assumption as to its exact character” (285). Finally, and remarkably, the eight simplifying assumptions are not independent one from another. For instance, the removal of the “no-hoarding hypothesis” (288) or of the assumption of equal length of process for all commodities requires the author to distinguish between a situation in which the course of the credit cycle is “correctly foreseen” and one wherein “mistaken expectations” (289) prevail. That is, between a situation in which the eighth assumption (“whatever mistakes may have been made in the past, all those concerned accurately forecast the subsequent course of the credit cycle”, 276) is met and one in which it is not.

At the end of the chapter, Keynes briefly describes, despite all the above-mentioned reservations appearing in the preceding chapters, the “normal course of a credit cycle” (271). Then, he directly involves readers in an exercise whose explicit main rule consists in removing the “simplifying assumptions” introduced “to rule out the various complexities which are usually present in actual life”, immediately after some provisional conclusions (“eight epilogues”) about the simplified problem are reached. Here too, there is a problem of generality of the theory under consideration: the “generalised case” requires in fact to be investigated by abating the rigour of such assumptions, and it is to the reader her/himself to apply Keynes's “method” to analyse non-standard cases. In Keynes's words: “Evidently the possible ramifications and extensions of the foregoing argument are so numerous that one could continue for many more pages amplifying, qualifying and generalising it. Perhaps, however, it has been carried far enough to enable a reader, who has entered the general system of thought here exemplified, to apply it for himself to any further interesting cases which may occur to him” (292).

4. The *Tract*, the *Treatise* and the *General Theory*

The *Monetary Reform* had criticised the simplistic formulations of the quantity theory of money and the purchasing power parity theory, and demonstrates that these latter rest on the introduction of assumptions of independence between the variables involved. By making such assumptions explicit, Keynes show the limited, rather than general, logical validity of these theories. In its essence, this criticism perfectly parallels Keynes's condemnation of the classical theory in the *General Theory*. But the analysis of the quantity theory of money in the *Monetary Reform* reminds readers of the two-stage

methodology applied by Keynes in his 1936 work. In both cases, variables are only provisionally taken as independent, to be soon afterwards allowed to react (with “probable repercussions”) to changes in other (previously taken as) independent variables. The *Treatise on Money* takes up the challenge of providing an alternative method to analyse economic issues characterized by complexity and organic interdependence. In analysing credit cycles, Keynes literally adopts the two-stage methodology, and enumerates the possible “probable repercussions” between variables previously taken as independent which allow the economist to tackle the complexity and interdependencies characterizing credit cycles. Exactly as in chapters 19 to 21 of the *General Theory*, Keynes makes simplifying assumptions, but makes them explicit, contrary to competing theories, and removes them, with the explicit aim of showing the implications of probable repercussions between variables. This method allows him to reject, in the second stage of the analysis, the initial hypotheses of continuity, uniformity, measurability, homogeneity, proportionality. As happens in the *General Theory*, “probable repercussions” are not independent one from another, although the economist must exhibit them, for sake of clarity, as if they were so. And although only some repercussions are dealt with, the economist knows, and declares, that the list s/he offers to readers is not, and cannot be, complete. The reader is rather invited to continue the exercise for her/himself: exactly as happens with the list of “probable repercussions”, the exercise on credit cycle is thus open-ended, and in truth, all this signals that Keynes conceives his theory as open-ended, and explicitly offers it as such.

Both the *Tract on Monetary Reform* and the *Treatise on Money*, therefore, provide substantial continuity with the methodological outlook of the *General Theory*. More, and crucially, the legacy of Keynes’s earlier theoretical works helps grasping his attempted revolution in economics tout court, rather than in methodology only. For the methodological continuity between the *Tract* and the *Treatise* on one side and the *General Theory* on the other sheds light on Keynes’s conception of economics as primarily and essentially a method, that is a way of reasoning about the economic material, of which the *General Theory* offers a brilliant illustration.

It is perhaps a paradox, but Keynes has been blamed (see Greenwald and Stiglitz 1987) for drawing a reductionist, “simple” (120) summary of the *General Theory* in chapter 18 of the book itself (in general, see Carabelli and Cedrini forthcoming), entitled “The General Theory of Employment Restated”. There, Keynes offers a seemingly rigid

taxonomy of the variables employed – i) given factors, such as quality and quantity of labour and equipment, the existing technique, and social and institutional elements; ii) independent variables, that is the propensity to consume, the schedule of the marginal efficiency of capital and the rate of interest; and iii) dependent variables, namely employment and income. The resulting summary seems therefore to suffer from excessive schematism. More, Keynes makes use of assumptions of independence, and implicitly employs Marshall's *ceteris paribus* condition.

There will be an inducement to push the rate of new investment to the point which forces the supply-price of each type of capital-asset to a figure which, taken in conjunction with its prospective yield, brings the marginal efficiency of capital in general to approximate equality with the rate of interest. That is to say, the physical conditions of supply in the capital-goods industries, the state of confidence concerning the prospective yield, the psychological attitude to liquidity and the quantity of money (preferably calculated in terms of wage-units) determine, between them, the rate of new investment.

But an increase (or decrease) in the rate of investment will have to carry with it an increase (or decrease) in the rate of consumption; because the behaviour of the public is, in general, of such a character that they are only willing to widen (or narrow) the gap between their income and their consumption if their income is being increased (or diminished). That is to say, changes in the rate of consumption are, in general, *in the same direction* (though smaller in amount) as changes in the rate of income. The relation between the increment of consumption which has to accompany a given increment of saving is given by the marginal propensity to consume. The ratio, thus determined, between an increment of investment and the corresponding increment of aggregate income, both measured in wage-units, is given by the investment multiplier.

Finally, if we assume (as a first approximation) that the employment multiplier is equal to the investment multiplier, we can, by applying the multiplier to the increment (or decrement) in the rate of investment brought about by the factors first described, infer the increment of employment (CW 7: 248-9).

In short, chapter 18 may be interpreted as one resting on those same “neoclassical-Marshallian” (*ibid.*) bases from which Keynes wanted to distance himself. If Greenwald and Stiglitz were right, this paper would ground Keynes's methodological revolution on a betrayal of Keynes's revolution itself. Still, while declaring the factors which may be “convenient to isolate”, Keynes insists on the “extreme complexity of the events” (250), and greatly reduce the rigidity of the taxonomy by observing that none of the “independent” variables can be considered as an “ultimate atomic independent element” (247). Rather, the economist selects, “in a study so complex as economics, in which we cannot hope to make completely accurate generalisations, the factors whose changes **mainly** determine our **quaesitum**” (*ibid.*).

It is to be recalled that Keynes saw economics as a branch of probable logic, and

that this vision is responsible, as seen, for his peculiar criticism of the classical theory, which is a criticism of logical relevance (assumptions of independence introduced by the classics are in fact judgements of logical irrelevance). Now, in the *General Theory*, Keynes explicitly wants to bring to the fore “the complexities and interdependencies of the real world” (298); already in the *Treatise on Probability* had he opposed the adoption of the “atomic hypothesis” which justifies inductive reasoning and mathematical calculus. The irreducible conflict between the schematism of the summary of the *General Theory* and the declared aim and methods of Keynes’s economics is in truth only an apparent one. To avoid being an easy victim of the organically interdependent nature of the economic material, he recurred to ordinary language (as against the “symbolic pseudo-mathematical methods of formalising a system of economic analysis”, which posit “strict independence between the factors involved”, 297) and the open-ended logic of probable reasoning analysed in the *Treatise on Probability*. As he himself defined it in the 1933 draft of the book, the causal analysis of the *General Theory* is “strictly logical” (CW 29: 73): exactly as in the *Treatise on Probability*, Keynes decides to focus not on the material connection between events, but on the analysis of the cognitive conditions which surround the assertion of a causal connection. Cause, in the *General Theory*, is a cognitive concept. It acts as a rule to form propositions. It is a logical ground for believing, which is relative to particular circumstances and relies on a concept of *causa cognoscendi* – “the cause of our knowledge of the event” (CW 8: 308) – rather than one of *causa essendi* – “the cause why a thing is what it is” (ibid.).

When drawing causal connections in chapter 18, Keynes is using a “strictly logical” causal analysis, and establishing connections between arguments and propositions on the bases of notions of logical relevance, and of direct judgements of dependence or independence “for knowledge” (ibid.). True, as Hoover (2006) notes, Keynes insists on the importance of discovering the “causal nexus” of a complex of events. But the notion of “cause”, and the conception of “model” embedded in his economics have a logical nature. The object of economic models, he observed, is “to segregate the semi-permanent or relatively constant factors from those which are transitory or fluctuating so as to develop a logical way of thinking about the latter and of understanding the time sequences to which they give rise in particular cases” (pp. 296–7). As a result, Keynes avoids defining “independent variables” as “ultimate atomic independent elements”. And both in the *Treatise on Money*, as seen, and in the *General Theory*, Keynes defines independent

variables as variables whose “values cannot be inferred from one another” (CW 7: 183). Finally, a logical conception of cause is required if the two-stage methodology must open the possibility that a change in the value of an independent variable may have repercussions on variables which are also defined as “independent” in chapter 18. In chapters 19 to 21, the two-stage methodology and, more in particular, the exercise of introducing simplifying assumptions to be removed later on in order to allow for probable repercussions and complications, permit to analyse the economic material without theoretically reducing its complexity. What chapter 3 of the *Tract on Monetary Reform* helps gauging is that, contrary to the appearances, chapter 18 is exactly the loci where Keynes’s revolution takes place. Because the role of the surprising chapter 18, in the *General Theory*, is to make explicit the assumptions of independence that Keynes had tacitly introduced into the analysis of chapters from 1 to 17. It is only by making such assumptions visible that Keynes can legitimately abandon them later on, in passing to the second stage of the analysis. Chapter 18 helps therefore readers identify the rules of this probabilistic game.

In this regard, the antecedent of the *Treatise on Money* is of much importance. Despite obvious differences of *quaesita* with the *General Theory* and, consequently, in the choice of independent variables, the two works appear to share the use of a non-demonstrative logic which takes account of the variety of circumstances. But chapter 20 of the *Treatise on Money* adds a fundamental piece to our understanding of Keynes’s revolution in economics. Linguistic analyses of the *General Theory* (Gotti 2009, 1994; Henderson 1995) have in fact demonstrated that “reader involvement” is a prominent feature of Keynes’s economic writings. A number of rhetorical expedients calls upon readers to cooperate in interpreting the book: as Keynes himself writes, “an economic writer requires from his reader much goodwill and intelligence and a large measure of co-operation” (CW 13: 470). Not only the reader is constantly invited to “retrace with the author its route to knowledge” (Marzola 1994: 197); but Keynes assigns to his readers “a [...] demanding role as his collaborators in working out the final form and the exact meaning of a new economic theory” (Gotti, 2009: 298). In the *Treatise on Money*, Keynes directly invites the reader to enter his “general system of thought”, so as to be able to apply it for her/himself in continuing the analysis of credit cycles. Remarkably, and deliberately, the exercise is left up to the reader. It is this antecedent to throw light on the importance of reader’s involvement also in the *General Theory*, where the game is less explicit.

The conundrum of chapter 18 of the *General Theory* is a result of the complex nature of a book whose internal structure mirrors the structure of Keynes's argumentation (see also Fontana 2009). Like Keynes's treatment of credit cycles in the *Treatise on Money*, the whole *General Theory* presents an open-ended structure, reflected by all closures being provisional, all simplifying assumptions being temporary, and the list of probable repercussions being never complete (see also Chick 2004, Gotti 1994). The open-ended structure the book, reveals, on one side, the seriousness of Keynes's attempt to make science in, and with, a complex world, as well as the ineliminable ambiguity of the task. On the other, as the *Treatise on Money* shows, it signals the necessity of reader involvement. The only possibility for Keynes to succeed in coping with the complexity of the economic material is to offer the reader not only, and not so much, a complete theory about the economic system as a whole, but, above all, a method of analysis. Not "infallible answers" or "settled conclusions", but a method suitable for the necessarily endless, interminable analysis of the economic material, allowing the reader to apply it for her/himself and draw logically correct conclusions.

In conclusion, if theories are allowed to change, in Keynes's economics, it is because methodological continuity offers a possibility to adapt them to changing times and circumstances, to different sets of judgements of logical relevance and to different *quaesita*. In a deeper sense, economics is truly a method to Keynes. It does not furnish any "settled conclusions"; it is rather "an apparatus of the mind, a technique of thinking", one, which, owing to its peculiar nature, is designed to resist time, and may be of extreme importance at an epoch when the mainstream of the discipline is challenged by the advent of complexity sciences. What the methodological continuity between the *General Theory* and Keynes's previous works shows is that his is truly a methodological revolution; one which occurred *before* the making of the Keynesian revolution, but did not, unfortunately, survive it.

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