

# **To What Extent is the Austrian Theory of Capital Austrian? Böhm-Bawerk and Hicks Reconsidered**

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## **Introduction**

Since its birth in the 1870s, the Austrian tradition has always been facing the problem of defining itself as a specific and identifiable school of thought, distinct from marginalism and later on from neoclassical economics. The whole story of the Austrian school is marked with internal tensions, ambiguities and misunderstandings that undermine its identity: from the outset, Menger had to underline the specificity of his approach in relation to Walrasian marginalism; Böhm-Bawerk who presented himself as a faithful follower of the Austrian founder elaborated a theory of capital and interest that Menger considered as the biggest error ever committed; in the 1930s, Hayek and Mises clashed on a methodological ground, the former rejecting firmly the excess of the apriorist approach and proposing instead some kind of falsificationist perspective; despite his contribution to the theory of economic development, Schumpeter was never considered a genuine Austrian author because of his admiration for the general equilibrium construct of Walras and his non-Hayekian cycle theory;<sup>1</sup> and so on...

Today, Austrian economics is still not constituted into a unified paradigm and the label conveys some ambiguities. The modern exponents of the Austrian ideas are divided into three streams of thought more or less compatible, the Misesian apriorists led by Rothbard, the radical subjectivists led by Lachmann and the group led by Kirzner focusing on the theory of entrepreneurship.<sup>2</sup> Things get even more complicated when 'neo' (and not 'modern') Austrians enter the scene. The term neo-Austrian was self-labelled by Hicks in his 1973 book in reference to Böhm-Bawerk's theory of capital and interest; but the modelling approach which develops later on under the impulsion of Faber in particular and referred to as 'neo-Austrian' draws on two other sources of inspiration: the work of Koopmans applying activity analysis to production theory and the work of Georgescu-Roegen applying thermodynamic principles to economic analysis.<sup>3</sup>

Modern Austrians totally ignore the work of this group of authors. The reference to Böhm-Bawerk does not seem to be sufficient to create a synergy between them and more over, the technicality of this approach clashes with the traditional reluctance of Austrians since Menger to use mathematical tools. Ultimately, modern and neo-Austrians do have very little in common and this reciprocal lack of interest is not surprising. What is more surprising however, is the cold reception and lack of enthusiasm with which Hicks' original neo-Austrian theory of capital have been received by Austrians. The objective of this paper is to investigate the reasons for such a

rejection, by focusing on the nature of the so-called Austrian theory of capital, in his Böhmian and Hicksian version.

Amongst modern Austrians, Lachmann has been the most open to dialogue, maybe this stems from the fact that both Lachmann and Hicks position themselves directly in the continuity of the research programme initiated by Menger rather than that of Mises and Hayek as Rothbardians and Kirznerians do and that their interpretation of the Austrian founder is very similar. An interesting angle from which to analyse this issue is given by Hicks himself (Hicks 1976: 145) who, very sensitive to the criticism addressed by Lachmann, see the extent of the dissension between Lachmann and himself to be of a similar nature than that separating Menger and Böhm-Bawerk. In what follows, we first show that the extent of the dissension between Menger and Böhm-Bawerk dwells mainly in the nature of the subjectivist dimension of the theory of capital and interest; in the second part, we focus on Hick's reappropriation of this theory and, following the polemical exchanges between Hicks and Lachmann, we question the legitimacy of the 'neo-Austrian' label self-arrogated to his theory by the Nobel prize.

## 'The greatest error'

Böhm-Bawerk is traditionally presented, along with Menger and Wieser, as a member of the Austrian school founder triumvirat. His objective is to pick up again the research program initiated by Menger and to complete it with his own theory of capital and interest. But, although Böhm-Bawerk presents himself as pursuing a strict continuity of Menger's logic, the latter is more than reluctant to support the Böhmian theory of capital and interest which the author of the *Grundsätze* even describes as 'one of the greatest errors ever committed'.<sup>4</sup> The reasons for this rejection stems from the way in which Böhm-Bawerk deals with the subjectivist dimension.

### The nature of capital

Böhm-Bawerk distinguishes between two concepts of capital: social capital and private capital. Social capital, a key concept in his theory of production, brings together all the means of production such as installations, warehouses, machines, tools, stock, raw materials and draft animals. The concept of private capital, at the heart of his theory of interest, refers to capital as a specific source of income and consists of all goods composing social capital and first order goods not used for consumption.<sup>5</sup> Böhm-Bawerk (1889: 70) lists the content of these two concepts in detail, thereby arriving at a generic classification of goods according to their very nature. At this stage of the analysis, subjectivism is set aside; the role of individual judgement in the characterisation of goods has vanished. Böhm-Bawerk provides a narrow definition of capital goods and in particular, a close definition which is meant to be exhaustive for each category of good. The relationship between items and human needs is no longer the main determinant factor for an object to acquire the character of capital good as in Menger's definition of higher order goods. An objective dimension has been introduced into the analysis. Menger explicitly and sharply criticises the idea that goods derive their character of capital goods from their intrinsic nature. The author is most eager to

define open concepts of goods and capital, whose content is continuously changing according to the conditions of the production process and to the nature of the individual plans having originated that process.

### The period of production

In the first book of his *Positive theory of Capital*, Böhm-Bawerk's objective is to grasp the essence of capital. Like Menger, the author focuses upon essential causes of complex phenomena rather than on their manifestations. For instance, Böhm-Bawerk explains that capital is not the fundamental cause but the symptom of the phenomenon of higher productivity of more roundabout production processes. The introduction of capital into a process is the result of a deliberate choice by economic agents to undertake more and more advantageous (i.e. longer) production processes. The use of capital in a process results from individual judgements. Individual behaviour is at the beginning of the causal chain explaining the complex phenomenon of capital; it represents the essential cause of its economic existence. However, the introduction of the concept of average period of production leads Böhm-Bawerk away from Menger's essentialism and at the same time away from a dynamic subjectivist perspective.

The concepts of period of production synthesises the principle of higher productivity of more roundabout processes of production which bring together two variables: duration and productivity of processes. It leads the whole capital structure of a process to be represented by one single objective figure. At this level, Streissler (1972) emphasises the one-dimensional nature of Böhm-Bawerk's analysis which definitely contrasts with Menger's subjectivism based upon the infinity of dimensions produced by the human mind. Here, on the contrary, only the technical aspect of production matters, irrespective of any human appraisal. Böhm-Bawerk focuses upon the material point of view of production whereas Menger always maintains a subjectivist foundation of production in his analysis by using a definition of productive activity considered as an economic relation between human needs and means at one's disposal.

### The theory of interest

Böhm-Bawerk's theory of interest is torn between two competing directions; the first, which is compatible with Menger's subjectivist foundation, presents interest as a phenomenon of exchange - the expression of individual preference for present goods as compared with future goods. The other, which is the one finally asserted, tends toward the traditional theory of marginal utility, according to which interest is a mere technical consequence of productivity of roundabout production processes.

Book IV of *The Positive Theory* is devoted to the theory of interest. It begins as follows: '*Present goods are as a general rule worth more than future goods of equal quality and quantity.* That sentence is the nub and the kernel of the theory of interest which I have to present' (Böhm-Bawerk 1889: 259). Interest is directly depicted as a phenomenon of exchange, resulting from the difference in evaluation between present and future. The theory of value thus plays a central role here and its scope is widened to future goods. Böhm-Bawerk lays the foundations of the inter-temporal theory of value

as Fisher was to develop it. More precisely, interest stems from the fact that production takes time: Böhm-Bawerk described production as an inter-temporal exchange of present production goods with future consumption goods. The entrepreneur is considered as ‘[...] *a merchant who offers present goods for sale*’ (Böhm-Bawerk 1889: 337). The ownership of capital goods is equal in value to the holding of a stock of future consumption goods: ‘[...] *means of production, when compared in value with present goods, are equal in value to a smaller number of units of the consumptible end product than can be produced from those means of production*’ (Böhm-Bawerk 1889: 300). This difference in value represents interest and its level is determined using the same principle governing all evaluation phenomena. At least, this is the result Böhm-Bawerk plans to reach. However, as soon as he attempts to analyse the case of the producer in greater depth, the author suddenly veers towards a different conception of interest which has little to do with the subjective field of exchange. ‘We said above that in his subjective circumstances the capitalist as a rule places the same valuation on a sum of present goods as on an equal sum of future goods’ (Böhm-Bawerk 1889: 353). In other words, Böhm-Bawerk is explaining here that the former proposition concerning individual preferences for present goods over future commodities, a proposition which was indeed supposed to lay the foundations for the phenomenon of interest, no longer plays any role. The only determinant for interest turns up to consist in the difference in productivity brought about by additional investments. There is no longer any room for subjective factors: ‘- On which figure is the capitalist to base his valuation? The answer might well be “according to the product that is turned out when that method of production is adopted which is economically the most reasonable” ’ (Böhm-Bawerk 1889: 353). The only remaining determinant for interest is thus a mere technical element.

It is obvious that Menger could not subscribe to such a result. Ultimately, Böhm-Bawerk views interest as an equilibrium variable flowing from the confrontation between supply and demand for available resources; not only is equilibrium the very reference, but also there is no room for any disruptive force such as uncertainty or error making. All subjective criterion have been permanently put aside and interest is mechanically determined according to technical and purely objective criteria.

### The subjectivist dimension

Menger’s well-known criticism of the Böhmian theory of interest consists in a punctual attack which concerns a definite field of economics. However, the origin of divergences between the two authors is much deeper and all the sorer as Böhm-Bawerk presents himself as a faithful follower of Menger. No doubt that the starting point of his developments is Austrian in its very essence, but the results he reached could not be supported by Menger. At the hart of the dispute is the treatment of the subjectivist dimension, key feature of the Mengerian originality, which Böhm-Bawerk’s theory fails to carry on.

Mengerian subjectivism is not limited to theory of marginal value but is rather involved in the explanation of all economic phenomena, human behaviour being the primary essential cause. The value of goods, but also their character of first and higher order goods, as well as the set of prices and the structure of production are the results of individual actions guided by human needs and desires, knowledge and interpretations of

the surrounding reality. It would be misleading to limit Menger's contribution to the theory of subjective value which only represents one of the many manifestations of human behaviour. Menger's originality stems from his systematic subjectivist vision of economic phenomena.

Austrian subjectivism, as Menger introduces it, is much more radical than the marginalist conception: it is not limited to preferences but is rather enlarged to expectations, costs, the conception of time (Bergsonian), knowledge perception. Austrian subjectivism considers human choices in terms of means-ends framework. Individual choice is the result of a two step process: the adoption of a specific objective and the laying down of a plan of actions intended to best satisfy the objective. This scheme is much more general than the marginalist one in which individual objectives are limited to maximisation of utility and individual choice results from the comparison within a closed set of alternatives of all available possibilities. Austrian subjectivism challenges such a mechanical conception of human behaviour, limited to mere calculation.

The kernel of the differences stems from a distinct conception of time: the marginalist *Homo Economicus* takes his decision in a neutral temporal setting; the passage of time leaves his objective and preferences unchanged, his answer is mechanically function of his tastes and of the quantitative constraints of his environment. Austrians reject this static conception of subjectivism and advocate a dynamic view: the agent takes his decisions within a continuously changing environment; the passage of time is the cause for the evolution of individual perceptions. Decision making takes into account the creative activity of human mind and becomes a non deterministic process.

The Mengerian conception of subjectivism is from many points of dynamic nature: the means-ends framework is at the core of Menger's definition of 'economizing'; agents are engaged in a process of information gathering in order to modify and improve their plans of action; information depends on the knowledge agents could acquire about causal connection between their desires and economic goods; the Mengerian agent lives in a world of uncertainty where occurrence of errors is indeed possible; decisions should be based upon expectations agents make about an unknown future, leaving a room for their creative abilities.

## The 'Greatest error' once again?

If we now turn to the relationship between Hicks and the modern Austrians and with Lachmann in particular, the scenario looks very similar: Hicks claims the analytical continuity with the work of Menger and Böhm-Bawerk but his self-labelled 'neo-Austrian' theory of capital is rejected by the 'official' modern Austrians. The subjectivist dimension of his theory is once again at the centre of the dispute.

## Mister Hicks and the Austrians

The Austrian influence which appears in the work of Hicks might be traced back to his participation to the seminar held by Hayek at the LSE from 1931 to 1935. There is evidence from the Austrian influence as soon as 1939, in *Value and Capital*, even though Böhm-Bawerk's theory of capital and interest is taken from a critical point of view rather than a constructive perspective. In *Value and Capital* indeed, Hicks critically considered and rejected the concept of average period of production and along with it the whole 'Austrian' theory of capital and interest, without contemplating the possibility of taking some of Böhm-Bawerk's insights as departure point for an alternative theory of interest. In the second volume of his trilogy on capital theory, *Capital and growth* (1965), the Austrian influence is not explicit and expresses itself only indirectly through the interest for the implications of time for the theory of capital. The problem of the 'traverse' is precisely concerned with the analysis of the transition from one steady state to another. The 70s were to mark the passage from the status of fellow traveller to that - in his way - of Austrian activist: in a 1970 paper in the *Economic Journal*, Hicks adapted the Austrian approach to application for time series and came up with his famous 'neo-Austrian' growth theory; in 1973 appeared the last book of the trilogy on capital theory, *Capital and Time, A Neo-Austrian Theory*, where Hicks picked up again Böhm-Bawerk's insights and deepened the implications of the temporal nature of production processes; the same year, Hicks co-edited the collected papers of a Symposium held at Vienna in June 1971 to celebrate the hundredth anniversary of the publication of Carl Menger's *Grundsätze der Volkswirtschaftslehre*; this volume, *Carl Menger and the Austrian School of Economics*, joined up a number of influential contributions that in the 70s were at the origins of the modern Austrian revival.<sup>6</sup> Still in the 70s, Hicks published a series of contributions specifying his 'neo-Austrian' approach and more generally his interest with the implications of time in economics (1973b, 1976, 1979a, 1979b).

Despite the fact that in the 70s the Austrian tradition was just emerging from long decades of disregard and was in a structuring phase, modern Austrians hardly welcomed Hicks's contribution to capital theory. Among the leaders of the modern Austrian revival, Lachmann was the privileged interlocutor. He published a review of *Capital and Growth* (Lachmann 1966), another review of *Capital and Time* (Lachmann 1973) completed a few years later by another paper on Austrian capital theory (Lachmann 1976) and answered to Hicks' rejoinder (Hicks 1979a; Lachmann 1979). Ultimately, the diatribe between the two authors summarises itself into the following question: can Hicks' theory of capital and growth legitimately be considered as part of the Austrian corpus, does the author of *Capital and Time* deserves the label of Austrian author? From the Austrian side, the answer is unambiguously no. The investigation into the causes of this snub brings into question the definition of the very essence of the Austrian tradition. As shown below, Lachmann and Hicks propose two different definitions. Following Lachmann's definition, it flows that Hicks' theory of capital is not Austrian and the author suggests an alternative Austrian theory of capital.

## The Böhmian point of departure

Hicks describes himself as an 'irregular and defective' Austrian (Hicks 1979: 51) rather than as a 'Particular' Austrian. This position is in line with the kind of methodological eclecticism that the author has often been advocating. As a matter of fact, his set of books on capital theory is a good illustration of this position: as well known, *Value and Capital*, *Capital and Growth*, *Capital and Time*, although not planned as a trilogy, show *a posteriori*, how the same object of analysis - the concept of capital - may be studied from different angles, with different approaches and tools according to the point of view the theorist wants to highlight. More generally, Hicks (1985) insists on the fact that there is no such a thing as *a method*, understood as a class or family of models, like statics or dynamics, which may win the primacy. Rather, the theorist should choose the most appropriated method according to the very nature of the object under examination. In that perspective, Hicks is 'neo-Austrian' only to the extent that his objective is to investigate the consequences of the temporal dimension of the production process.

More precisely Hicks investigates the consequences of a technological change on the - temporal - structure of production. In order to offer a theory that would accommodate both fixed and circulating capital he defines the production process as a flow--input and flow--output process and focuses on the investment decision to begin, continue or stop a productive process. Non viable processes will be truncated and replaced by different techniques. In a steady state, the technique which is chosen remains the same over time; and production processes having a definite length of time, the steady state is also characterised by the fact that there are as many new processes - of the same kind - that are being implemented as there are processes that arrive to end and, in a steady growth economy the number of processes beginning and ending is increasing at a constant rate. In the steady state, however, the time dimension has vanished. Such representation does not constitute the object of investigation but is only the point of departure for studying the dynamic problem of the traverse. The traverse describes the path from a steady growth equilibrium disturbed by a technological shock - the possibility of implementing a new technique - to the new steady state. It analyses the temporal transformation of the productive structure in terms of the progressive replacement of the old technique by the new one and questions the viability of this transition process.

The description 'neo-Austrian' to this theory thus stems from a general and loose reference to the work of Böhm-Bawerk. This is a 'neo-Austrian' theory simply because, like Böhm-Bawerk's analysis, it investigates the consequences of the fact that production takes time. Apart from this general premise, Hicks' theory takes its distance from Böhm-Bawerk's one.

...there is much of the traditional Böhm-Bawerk construction that must be abandoned. There is no period of production; there is no roundaboutness; [...] These are drastic excisions. If we perform such a surgery, is there anything left? [...]

What we must not abandon are Böhm-Bawerk's (and Menger's) true insights -- the things that are strength to the Austrian approach. Production is a process, a process in time. Though there are degenerate forms [...] the characteristic form of production is a sequence, in which inputs are followed by outputs. Capital is an expression of sequential production. Production has a time structure, so capital has a time-structure.

(Hicks 1973b: 193-4)

Taken at such general level, Lachmann accepts the appellation. 'It is futile to quarrel about labels. A thinker who carries on Böhm-Bawerk's work cannot be gainsaid the predicate 'Austrian' if he claims it' (Lachmann 1973: 205). At the same time however, the Austrian leader notes that the fact that production takes time is not exclusively Austrian and might well refer, with the same legitimacy, to a classical analytical framework. The problem conveyed by the theory of capital and growth proposed by Hicks consists precisely in the fact that one might ask whether it is not more classical and Ricardian than Austrian and '[...] this is more than a matter of intellectual genealogy' (Lachmann 1973:205).

Lachmann begins with underlying the problematic aspects of Böhm-Bawerk's theory of capital and interest. Faithful to Menger, he argues that Böhm-Bawerk's theory could not properly be called Austrian for several reasons: first, it is essentially macroeconomic, denying to the level of the individual action the role of primary explanatory element; second, the question raised by this theory is more Ricardian than Mengerian, it consists in justifying the profit and determining its level with the intertemporal structure of production only being a by-product of this investigation; third, this theory is bound to the same failure as the Ricardian theory as soon as the analytical framework is extended to a multicommodity world. In the same way as the conclusions holding in the simple Ricardian corn model could not be generalised to a multicommodity world, Böhm-Bawerk's theory only applies to a situation where there is only one input, labour, and one consumption good. The attempt to generalise the results collides with the impossibility of finding a system of relative prices invariant to changes in the rate of interest. Finally, the reduction of the structure of production to a single number, the period of production, does 'too much violence [...] to the diversity of the world' (Lachmann 1976: 146).

Of course these critiques only partly apply to Hicks's theory because as underlined above, Hicks substantially criticised and modified the theory of Böhm-Bawerk with in particular the passage from a stream-input and point-output to a stream-input and stream-output analysis, the abandonment of the fundamental concept of roundaboutness and of the period of production. The criticism that certainly concerns the 'neo-Austrian' approach is the macroeconomic level of the analysis, the fact that individual decision making is not the first and simplest causal element of explanation of the dynamic of the production structure. Subjectivism turns out to be the main issue at stake at the origin of the dissension between modern and neo-Austrians.

From the above discussion, it flows that the reference to Böhm-Bawerk can hardly be the criterion pushed forward for proving the legitimacy of the Austrian description of Hicks' theory for if too strictly followed, the Böhm-Bawerk reference leads to complete rejection as the continuation of the greatest error, and if too loosely followed, it leads to question any specificity at all of the approach. Rather, one might confront directly what the two authors identify with Austrian economics.

What is an Austrian theory?

Contrary to Lachmann whose objective is to precisely characterise the essence of Austrian economics and to propose a research agenda, Hicks did not spend a lot of time in defining the specificity of the tradition whose label he claims to borrow for his own theory of capital and growth. He simply singles out two main doctrines of the Austrian

tradition: the insistence on subjectivism or what he calls the ‘Supremacy of Demand’ or the ‘Supremacy of Marginal Utility’ (Hicks 1979a: 51), and the insistence on the temporal nature of the production process. As a result of his participation to the intellectual effervescence of the LSE in the 30s, Hicks focuses on the second doctrine and admits having neglected the first one. What is questionable from an Austrian perspective is that according to Hicks these two doctrines are independent from one another. ‘There are relations between these two doctrines, but they are separate. It is possible to hold to one without attaching much importance to the other’ (Hicks 1979a: 51). The fact that production takes time is not exclusively Austrian but to insist on the nature of production as a process of time without a subjectivist foundation is certainly not Austrian in essence. Ultimately, the whole quarrel between Hicks and Lachmann stems from this neglect of the subjectivist dimension. Production takes times, Lachmann certainly agrees, but this is not enough: the aim of the (Austrian) theorist is then to make the structure of production intelligible in terms of human actions and the pursuit of plans. This prerequisite has far-reaching analytical consequences, the most important concerning the role of the concept of equilibrium in the analysis, a point on which the two authors clash openly.

Basically, if one follows the Lachmannian subjectivist research program, the very concept of equilibrium becomes irrelevant. On the contrary Hicks remains attached to the reference to equilibrium, even though the author gives a very broad definition to this concept, equilibrium being simply understood as a condition in which norms are unchanging. Here lies the kernel of the discussion between the two authors: according to Hicks, economists cannot dispense with models and equilibrium concepts for any extrapolation stems from some assumed normality; according to Lachmann, economists should accept to reduce the degree of abstraction of their models and stop making predictions, economics having the task of making phenomena intelligible in terms of human actions.

This quite extremist position, close to theoretical nihilism, is the natural consequence of the continuing deepening of the subjectivist dimension of the analysis and in particular of the extension of subjectivism to expectations. The subjective dimension attached to expectations illustrates the fact that a particular economic situation gives rise to different expectations according to the individual. In the same way that Hayek defines knowledge as the subjective interpretation of past experience, expectations represent the result of a necessarily subjective interpretation of the situation. The subjective dimension is, to a certain extent, accentuated by the fact that the expectation is, in a forward looking perspective, directed towards an ‘unknown but not unimaginable future’. In as much as they are a creation of the individual mind, expectations are unpredictable and cannot be formalised. Lachmann thus rejects all kind of adaptive, extrapolative, static or rational expectations, to the extent that the individual would then be reduced to the condition of an automata, leaving no space for the freedom of choice.

In this way, the Misesian category of human action is enriched by an explicit development of the speculative dimension which Mises mentions but does not deepen. The process of forming expectations is then raised to the rank of ‘mental act’ (Lachmann [1966] 1977 (ed.): 56); the divergence of expectations is the illustration of an individual’s free will when faced with a choice. It represents ‘a manifestation of spontaneous action’ (Lachmann 1986).

## An Austrian theory of capital

According to Lachmann, the problem with the theory of capital and interest developed by Böhm-Bawerk is that it belongs more to a Ricardian research program than to a Mengerian one. The main question Böhm-Bawerk raises is typically a Ricardian question: what justifies the profit and what determines its level? All the remaining theoretical considerations and in particular the intertemporal nature of the structure of production, are just by-products of this inquiry. In order to rectify Böhm-Bawerk's greatest error and pick up again the Mengerian agenda, Lachmann proposes to reverse this logic and to make the capital structure the primary object of analysis.

Our main task is to lay the foundation for a theory of the capital structure. Our theory, unlike Böhm-Bawerk's, is not devised to serve as a basis for an interest theory. Its purpose is to make the shape, order, and coherence of the capital structure intelligible in terms of human action.

(Lachmann 1976: 147)

A genuine Austrian theory of capital should then renew with the subjectivist paradigm, its objective being to understand the process of continuous evolution of the productive structure of a system in terms of interaction of the individual plans of actions of producers and consumers. As regards the question of cause and magnitude of the rate of return on capital, this is a typical neoclassical question which expresses the allegiance the economist makes to formalism, making his utmost to find an equilibrium figure. To Lachmann, it is meaningless to talk about an *equilibrium* rate of interest and furthermore of a *uniform* rate of interest. Indeed, the basis for an Austrian theory of capital should remain micro and break with any form of aggregation.

Capital is heterogeneous, this is the - Mengerian - point of departure of Lachmann's reconstruction. The intertemporal structure of capital of a system is the outcome of the interaction of the individual plans of investments of the producers who try to best anticipate the future needs and preferences of the consumers. The composition of the structure of capital reflects at any moment of time the complex network of past and present plans of investment, that is, the means--ends frameworks which imply capital goods (Lachmann 1986: 61). The heterogeneity of capital to which Lachmann is referring does not concern any physical property of capital goods but rather the variety of uses which it is possible to assign to capital goods according to the knowledge, experience, expectations and imagination of the producers. Beside the concept of - subjective - heterogeneity, Lachmann introduces another property of capital goods, namely their complementarity. There are technological and economic constraints on the possible modes of combining resources. The entrepreneur chooses under these constraints which combination of capital goods is better in order to satisfy the expected needs of the consumers. It stems from these properties of heterogeneity and complementarity that the relevant unit of analysis in order to study the capital structure of a system is neither the notion of capital good which, taken in isolation, does not give any information about the plan of production which originated its utilisation, nor the notion of aggregate capital which relegates the subjectivist foundation of the analysis backstage but rather the notion of 'capital combination'. A capital combination is the material manifestation of a plan of production; a good whatever its intrinsic properties are, obtains the status of capital good insofar as it belongs to a specific capital combination. At the firm level, the complementarity of resources composing the capital

combination simply expresses the internal coherence of the investment plans at its origin; the capital theory is rather concerned with the *structural* complementarity of the different combinations of capital between firms, that is, the whole coherence of the different investment plans continuously revised by the producers as their knowledge, experience, expectations and imagination change in time. Each firm with its specific capital combination, is always in disequilibrium and in the process of revising its plans, contributing in this way to the continuous reshaping of the capital structure of the system.

The above analysis has questioned the legitimacy of the Austrian appellation of the theory of capital inherited from Böhm-Bawerk and developed by Hicks. What might appear at first glance as a simple quarrel about label turns out to be the manifestation of a much deeper rift. What is at stake is the definition of the essence of the Austrian tradition and in particular, the importance of the subjectivist dimension in the analysis. It is for having neglected this dimension that the theory of capital and interest of Böhm-Bawerk had been irremediably rejected by Menger and the neo- Austrian theory of capital and growth of Hicks has been ignored by modern Austrians. These theories do not belong to the subjectivist paradigm Austrian economists have been developing since Menger. These theories convey a distinct ontology which is compatible with the logic of equilibrium. Austrian economics on the contrary has the task of continuously deepening and extending the subjectivist dimension of the analysis in order to make economic phenomena intelligible in terms of human actions. The most significant consequence of this approach is that it leads - as soon as subjectivism is extended also to expectations - to the progressive abandon of any reference to equilibrium, with the risk of proposing as Lachmann did a nihilist conception of the work of the economist.

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<sup>1</sup> See Gloria-Palermo (2001).

<sup>2</sup> See Gloria-Palermo (1999).

<sup>3</sup> See the general introduction of Faber, M., Proops, J., Speck, S. and Jost, F. (eds) (1999).

<sup>4</sup> Reported by Schumpeter (1954: 847, footnote 8) who remembers Menger's assertion: 'Time will come when people will realise that Böhm-Bawerk's theory [of capital and interest] is one of the greatest errors ever committed.'

<sup>5</sup> We are here using Menger's famous distinction between first order goods, that is consumption goods, and higher order goods, that is capital goods, the rank depending on the place of the goods within the productive process, the more upstream the good is used in the productive process, the higher the order.

<sup>6</sup> In particular Streissler (1972), Jaffé (1976), Dolan (ed.) (1976), Spadaro (ed.) (1978).