Hicks' thread (out of the equilibrium labyrinth)

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Abstract

The work of John Hicks is an unending source of inspiration for many economists and an unsolved dilemma for most historians of economic thought. In these pages, a reconstruction of the continuity principle, the red thread of his evolution as a theorist is proposed. Hicks's research was inspired by a program of analyzing a process of change from an out-of-equilibrium perspective. Non-measurable risk and the time-to-build being the natural issues at stake in actual economic behavior, he made the transaction costs the kingpin of his technique of thinking. These allowed him to dispense with any essential reference to equilibrium conditions and to revolve around the sequential relationship of learning and planning, which lays at the core of his "Continuation theory". In fixing its building blocks, he was primed to allow for equilibrium assumptions as far as a vantage point on out-of-equilibrium dynamics was attainable.

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Nature is wont to hide herself.
Heraclite, fr. 10

1   John and the Johns

John Richard Hicks, "one of the last great generalists in a discipline that is more and more balkanized into pointed specializations" (Dostaler 2001: 22), has been a source of inspiration for many economists and an unsolved dilemma for most historians of economic thought. In 1972, "with mixed feelings", he received the Nobel Prize for his contributions to general equilibrium theory and welfare economics, i.e., for that district of his work that had become "part of the standard literature of what is called in modern controversy 'neoclassical economics'" (1977a: v). Albeit in a joking tone, the intimate chagrin he had had to repress in such a solemn occasion broke free after what he judged to be an umpteenth improper interpretation of his own oeuvre:

> Clearly I need to change my name. Let it be understood that *Value and Capital* (1939) was the work of J.R. Hicks, a 'neoclassical' economist now deceased; while *Capital and Time* (1973) – and *A Theory of Economic History* (1969) – are the

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work of John Hicks, a non-neo-classic who is quite disrespectful toward his 'uncle'.
The latter works are meant to be read independently, and not to be interpreted ...
in the light of their predecessor. (1975f: 365)

Considerable literature about his work having grown, an important part of it has
suitably questioned the coherence over time of Hicks's theoretical production. The au-
thority of several commentators, Solow (1984) and Pasinetti (2008) among them, has
suggested the case to single out two Hickses, the elder (John) deviating from that main-
stream the younger (J.R.) had contributed to set into motion. This version was enforced
by the occurrence that Hicks himself, by the mid of the '60s, actually changed his edito-
rial name from J.R. to John. Yet, athletic examiners have remarked how "Unfortunately
this division ..., which should have been understood as subtle, has been taken literally
by the profession to represent a strict dichotomy" (Hamouda 1993: xiv). As a matter
of fact, "Hicks's intellectual output shows a surprising continuity in what he came to
recognize as the distinctive features of his identity as an economist. The causal struc-
ture associated with decision-making and with the implementation of decisions has been
central to his theoretical work" (Scazzieri and Zamagni 2008: 4).

Let Hicks himself pose our issue; he was referring to his first journey to the U.S.
in 1946, as he met the new generation of American economists (Samuelson, Arrow,
Friedman and Patinkin):

> I did not know them, but they knew me; for I was the author of *Value and Capital*,
> which was deeply influencing their work. They regarded it as the beginning of their
> 'neoclassical synthesis' ... But I am afraid I disappointed them; and have continued
> to disappoint them. Their achievements have been great, but they are not in my
> line. (1979b [1983a]: 361)

These pages are devoted to an attempt at identifying and qualifying the line his research
path, from the beginning to the end, is related to: the continuity principle, the red thread
of his evolution as a theorist. As much as possible and convenient, Hicks's thread is traced
in its chronological (or 'vertical') development. Be this reconstruction judged honest,
historians approaching Hicks 'horizontally', i.e., with reference to particular themes or
'seasons', may have at disposal a sort of yardstick for comparing possible deviations in
their interpretations of Hicks's many explorations. Having this in mind, I shall suggest
a bird's-eye interpretation of present-day different versions of the Hicksian legacy.

2   Paradise Lost

Without sacrificing his literary passions for *La Divina Commedia* and *Paradise Lost*,
Hicks graduated in "Philosophy, Politics, and Economy" at Oxford in 1925. He wrote his
dissertation, an empirical study on determination of wages, unblessed by a Marshallian
baptism, which was, at the time, the canon for English students of political economy.
Although his best notes were in philosophy and politics (Hamouda 1993: 7), in 1926 (at
22) a larger demand for economists led him to the LSE to keep on working on applied

labour matters. As the veteran of the Italian front H. Dalton met this a-Marshallian young scholar able to read Italian, French and German, Hicks was exhorted to study Pareto's *Manuale*, whose theory of value, with its important technical innovations, looked rather coherent with their department's prevailing ideology, championed by E. Cannan, of the faith in 'Paradise': let the price-mechanism work, a decentralized economic system shall briskly produce optimal upshots.

Things did not look that simple any more when, in 1929, Robbins joined the LSE and directed him on Böhm-Bawerk, Wicksell[1], and Knight's *Risk, Uncertainty and Profit* (1921), which inspired Hicks's first important paper, 'The theory of uncertainty and profit' (1931c). In those pages, we can take notice of a declaration of intent for a research program inspired by Knight's point that the definition of the state of knowledge marks the beginning—not the end, of the relevant uncertainty:

> If it is maintained that the doctrine of measurable risks gives a fair approximation to the truth, that may be admitted; but an approximation is of little use when it is no simpler and less illuminating than the truth itself. ... the grouping of measurable risks is simply a limiting case, and not a very important one, of the general principle of reduction. (ib.: 175n)

Hicks looks skeptical about the utilitarian focus on measurable risk (from D. Bernoulli's *Specimen* on) and enlightened by Knight's ex ante non-measurable risk: the "Risk"[2] that can be measured only ex post, *in consequence of learning*. One may thereby expect him to suggest some way to analyze economic change as a learning process. Too hard a task, yet: he admitted "unmeasurable risks" to be relevant at a micro level but, not to leave things in vacuo, he posed the law of large numbers giving sufficient grounds for an aggregate Investment-Savings equilibrium hypothesis (1931c: 187f).

The final draft of the article dated 1930, so as his friendship[3] with D. Robertson (1973c [1977a]: 136f), whose influence on Macmillan (1973c [1977a]: 136) convinced Hicks to put temporarily aside his Knightian concerns and, in order to move ahead in career, arrange into a book his earliest works. With *The Theory of Wages* (1932b), Hicks "started more or less where the 'new' macroeconomics is now, although in that book he was concerned with stationary states and correct foresight rather than with steady-state growth and rational expectations" (Hahn 1990: 544). When dealing with 'The working of competition', however, he proclaimed of being perplexed with this "Elementary economic

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[1] And Walras, albeit for mere didactical reasons, due to his Paretian pedigree.

[2] His concern with Knight's distinction and terminology was tackled in the appendix to his last book (1989a). Knight's book being the starting point of his pivotal concern with the prudential management of a learning process (cf. ib.: 141f), he finally declared his dissatisfaction with his terminology, which he found rather "confusing". That is why in preceding years Hicks often called 'uncertainty' what economists, following Knight, are used to name 'risk', and viceversa: "Risk" was non-measurable risk, "uncertainty" measurable risk (cf. e.g. 1973c [1977a]: 137, 147; 1974b: 37f).

[3] Reasonably, Hicks gained the respect of the Cambridge master with his Knightian solicitude, which is visibly linked to Robertson's precept that "Disputes about the meanings of Saving and Investment may appear to be arid, but they are in reality of immense importance, because they involve decisions about definition which determine the whole course on which theory will subsequently proceed" (1942b [1982a]: 128).

analysis, which culminates in the determination of the conditions of equilibrium ... [as it] assumes, when it does deal with change, that the change has not been foreseen, but that, when it takes place, everyone can count on the new conditions being maintained. Such an assumption naturally leads to paradoxes" (1932b: 59).

Being used to see their forecasts disappointed, actual agents are instead accustomed to manage the flow of information in such a way as not to consider any new information to be conclusive. "When we come to deal with 'economic dynamics'—the theory of change" (ib.: 58), Hicks conjectured agents not attuning to equilibrium conditions but to the "costs of transference" (ib.: 58f). Whereas ordinary analysis assumes them away (spreading them over an indefinite period), in non-routine (learning) conditions, i.e.,

> When a market is not in equilibrium, costs of transference cannot be spread over an indefinite period. Even if it is certain that the change will be a change for the better, it is not certain (and indeed it is highly improbable) that the new position will long continue to be the best attainable. It would be highly imprudent to change unless the cost of changing would be covered by the gain within quite a brief period. Costs of change, therefore, become a vastly more important influence on action that they would be under conditions of stationary equilibrium. (ib.: 59)

Yet, still incognizant of monetary theory, he was immature for devising a theory of learning-induced behaviors based on transaction costs. Hayek's LSE seminars on *Prices and Production* were vastly enhancing his views, though. Setting the stage for monetarism, Hayek (1928) had devised a perfect foresight equilibrium, compatible with variations in relative prices but not with monetary disorders, evoking monetary policy as a major constraint to the self-regulation of an economic system. Having the mere fact of non-measurable risk in mind, however, such an equilibrium and an alleged neutral monetary policy looked too hard to be even conceived.

Due to his agreement with Macmillan, it was only after the drafts were delivered that he could work for a non-equilibrium hypothesis based on (non-measurable) "Risk". In his earliest view, summed up in a letter to Robertson, it is of the essence of money to be conveniently hoarded to finance learning-induced behaviors. If all risks were actually measurable, holding money would be unnecessary, as any sum exceeding planned current expenditure (and insurance) would be lent until it comes the day of the transaction scheduled to be financed with that sum. Equilibrium requiring perfect foresight, "The use of money is inconsistent with economic equilibrium" (1973c [1977a]: 137).

3   First steps

> That economic fluctuations arise, is sufficiently explained by Imperfect Foresight [non-measurable risk], that they take the form that they do is to be explained largely by the close connection between imperfect foresight [i.e., the use of a Store of Value] and the use of a Means of Payment. (1933b [1982a]: 41)

This was the point of his first monetary piece ('Gleichgewicht und Konjunktur'), published in German in 1933 and made available to English readers ('Equilibrium and the

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Cycle') only in 1980, thanks to R. Clower. In Hicks's view, disequilibrium was due not to a monetary artificium (as in Hayek's), but to the natural fact of Risk: disequilibrium being ineradicable, "even a [Hayekian] system of pure *laisser-faire* would be subject to monetary disturbances", and *"Monetary theory, in the strict sense, falls outside [stationary] equilibrium theory"* (ib.: 35).

A crucial reading for his evolution as a theorist was the German translation (1933) of Myrdal's (1931) book on 'the monetary equilibrium'. Myrdal rejected Wicksell's natural equilibrium, conceivable in a stationary environment only. Myrdal's aim being to bring out a monetary policy criterion for pursuing the monetary stability in a dynamic environment, the kingpin of his period analysis was instead a *temporary equilibrium*, "a momentary market equilibrium in which price-expectations are taken as data" (1979b [1983a]: 360)[4]. As in a dynamic environment and with a plurality of goods one can stay content ('in equilibrium') by realizing the expected rate of monetary yield, Myrdal recommended an indirect strategy to monetary stability: to abstain prices from volatility, so to provide speculative markets with expectational anchors (Myrdal 1931 [1939]: 135; cf. Hicks 1934e [1982a]: 44).

Hicks's ensuing monetary work, 'A Suggestion for Simplifying the Theory of Money' (1935b) – the *Simplification* hereafter – "is usually read as a foundation of neoclassic monetary theory and a forerunner of portfolio selection theory. Undoubtedly, it is both things. Its concluding passages, however, ... show that it is something else, besides and – in my view – beyond that" (De Cecco 2008: 159). Indeed it is.

Inspired by Myrdal, and centering theory on learning-induced behaviors[5], Hicks adopted temporary equilibria, where price-expectations and total wealth were taken as data, because "present prices affect the demand for money mainly through their effect on wealth and on price-anticipations" (1935b: 14n). Unexpected variations in total wealth, themselves "accompanied by a change in anticipations" (ib.: 16), can affect an induced demand for money of opposite sign relative to that induced by unexpected variations in prices (and price-anticipations): the net effect can go either way[6]. Having this in mind—this prelude to his future distinction of flexprice and fixprice market behaviors,

> The assumption which seems to me most plausible, most consistent with the whole trend of our analysis, and at the same time to lead to results which at any rate look realistic, is one which stresses *the probable differences in the reactions* of different members of the community. (ib.: 17, *my it.*)

Depending on the constraining power of transaction costs[7] upon learning-induced demand for money, two categories of agents, "sensitives" and "insensitives", are thereby

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[4]Whereas a stationary equilibrium is an equilibrium over a period of time, a flow-equilibrium, an equilibrium of an income account, a temporary equilibrium is an equilibrium of the balance sheet, a stock-equilibrium, an equilibrium at a point of time.

[5]"If I am right, the whole problem of applying monetary theory is largely one of deducing changes in anticipations [learning] from the changes in objective data which call them forth" (1935b: 13).

[6]The extension of the Wicksellian process to the dark side of the quantities had been a major concern both for Keynes (1930) and Hayek (1931). On the wealth-effects of non-equilibrium transactions in part of Hicks's works in the '30s, see Donzelli (2010: 25ff).

[7]"The costs of transforming assets from one form to another" (1935b.: 6). In the *Theory of Wages*

told apart. When such costs are unimportant relative to an operator's total wealth, induced demand can be expected to vary in a sensitive way. If, as more generally is, disposable wealth is not so large as to make transaction costs negligible, induced demand for money is bound to be rather insensitive. Admittedly, transaction costs lead agents to refrain from price-effects and to release wealth-effects on buffer stocks (ib.: 17f).

Trades between sensitives induce wide price-effects which can, if cumulative, blow bubbles; hence, as in Myrdal, it is "the insensitive people who preserve the stability of capitalism" (ib.: 18). Price rigidities playing a stabilizing role in anchoring expectations, "we must not be led aside by a feeling that . . . all would go well if we reverted to free trade and *laisser-faire*. In doing so, we are no better than the Thebans who ascribed the plague to blood-guiltiness" (ib.). It was for blazoning a pivotal aspect[8] of his thread that Hicks was touching on Sophocles.

4   The muddle

The belief that a temporary equilibrium method would have allowed to analyze economic change as a learning process was one of the key aspects of interwar economics. This method was thereby tested with disparate hypotheses about learning. Using adaptive price-expectations, Lindahl (1929, 1930) had elegantly modeled a single-market Wicksellian process driven by expectational errors and adaptive learning. The *Value and Capital* (*VC* hereafter) project was precisely an attempt at generalizing Lindahl's model[9] to n markets.

Although without dispensing any theory of those markets behaving differently than perfectly competitive ones, hardly available at the time, Myrdal (1931, ch.6) had remarked the momentousness of those markets where current prices are *not* immediately affected by current trades. Hicks' *Simplification* – with its emphasis on the behavioral constraints imposed by disposable wealth – was also inspired by Myrdal's hint that the "Inflexibility of these administered prices may not be merely evidence of time lag but also of a different type of behavior" (Myrdal 1931 [1939]: 134). The author of *VC* (§21.6) was all but unconscious of the importance of such markets; its project, however, consisted in an exploration of quite another hypothesis: that Lindahl's adaptive learning

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they were named "costs of change" (1932b: 59), "cost of changing" (ib.), "costs of movement" (ib.: 60ff). "This is of exactly the same character as the cost of transfer which acts as a certain impediment to change in all parts of the economic system; it doubtless comprises subjective elements as well as elements directly priced" (1935b: 6).

[8]In presenting *Markets, Money and Capital. Hicksian Economics for the Twenty-First Century* (2008), a collection of papers by a number of very distinguished economists (three Nobel laureates among them), the co-editors R. Scazzieri, A. Sen and S. Zamagni have much correctly emphasized that, in Hicks's oeuvre, "An important unifying theme was the attention to economic rationality 'in time' and his acknowledgement that apparent rigidities and frictions might exert a positive role as a buffer against excessive fluctuations in real and nominal magnitudes. This emphasis on the virtue of imperfection significantly distances him from both the Keynesian and monetarist approaches" (p. i).

[9]Lindahl is in London looking for someone to translate his works (Lindahl 1939): he picks out Ursula Webb, scholar of public finance and future Mrs. Hicks.

hypothesis were robust enough to hold up a general equilibrium. That is why, this time, he started not with learning-induced behaviors, but with market aggregation.

The first step was an article with R. Allen (1934a), which secured aggregation through a restatement of the Paretian value theory. The first half of *VC* and twenty-three of the twenty-five pages of its mathematical appendix—all that was going to found the neoclassical synthesis, stemmed from this paper. The second step was 'Wages and interest: the dynamic problem' (1935f), where he managed to sort out learning in a three markets barter system; this model—the prototype of IS-LM and of the last half of *VC*, was intended to cope with "the way in which the firm's production plan ... will be affected by changes in the prices and price-expectations which govern it" (1935f [1982a]: 73). Be it as it may, he promptly realized that for a comparison of two historically successive temporary general equilibria to be consistent, no learning might have occurred between them: 'false' trading, and its out-of-equilibrium wealth-effects, had to be ruled out (Keynes will have to make an analogous abstraction). For bridging two successive positions a *perfect transparency* hypothesis being indeed required,

> it is very important to be clear first of all that the changes with which we are concerned are *purely hypothetical changes*. We are still on our first Monday; we are examining the differences between the production plan actually adopted and that which would have been adopted if prices or price-anticipations had been different. (ib.; *my it.*)

This same restriction to *counterfactual logic* applies to *VC*: under perfect transparency, price-expectations cannot be strictly adaptive. His initial presumption that Lindahl's adaptive learning hypothesis were strong enough to hold up a general equilibrium being brutally falsified, in *VC* (ch.20) Hicks had had to force price-expectations to be 'elastic' to current prices, i.e., in a perfectly competitive market system, to current learning! This implying a preposterous combination of past ignorance (learning process) and present omniscience (general equilibrium), his attempt at dealing with aggregation *before* learning proved aporetic. So to speak, he had put the cart before the horse; in the *Simplification* approach, where learning came first, things were set to rights.

To see how he fell into this aporia, it is worth to consider that Keynes's *General Theory* (1936) had a roaring impact on the author of the *Simplification*. Being the best on the market to valorize the Liquidity Preference doctrine, Keynes asked Hicks to write the first review of his new book (see 1973c [1977a]: 142). Yet, Keynes's speculation that Hicks (1936b) would have reserved a major attention to his monetary side was upset; holding this to be a simpler version of his *Simplification*, Hicks went into the Multiplier.

The Multiplier was a purely-real single-period effect enclosed within two monetary (temporary) equilibria; perfect transparency being thus required ("it will often be safe to omit express reference to short-term expectations", Keynes 1936: 50), the Multiplier was *determined* as a perfect foresight effect[10]. In order for the Multiplier to be also *effective*, extra incomes of the consumption-good sector (due to wage-spending of the

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[10]Accounting excess supply as future supply, effective demand and current supply can be kept identical.

new employees in the capital-good sector) had to be reinvested, else any hoarding had entailed an *ineffective* (precautionary) demand. So far, Keynes.

Hicks (1936b [1982a]: 91, 93f) noticed that a necessary condition for the multiplier to be effective had been forgotten: the supply of consumption-goods had to be highly elastic, else the time-to-build, under Keynes's "safe" assumption of perfect foresight, had brought about a nominal adjustment. In practice, however, supply of consumables can hardly be much elastic if "the period [must be] taken short enough for us to be able to neglect changes in expectations within it" (ib.: 87n). Non-measurable risk and the time-to-build being thus both out of the picture, Keynes's new technique was on the whole "conservative: more conservative than in the *Treatise*" (ib.: 99).

Six months later (Sep. 1936) the Econometric Society met in Oxford. Hicks was invited to show how to translate Marshall's relations into Keynes's. "Since our purpose is comparison" (1937a: 148) Hicks drew the IS-LM model. Considered what he had pointed out six months before, not surprisingly he revealed himself skeptical about its application. Neglecting "all sorts of questions about the timing of the processes under consideration" (ib.: 158), its hypothetical match of marginal cost and marginal productivity ruled out – as the *General Theory* itself – both non-measurable risk and the time-to-build. IS-LM, just like its prototype (1935f) and *VC* itself, could only deal with "purely hypothetical changes". The same applied to the *General Theory*, whose method, "an admirable one for analysing the impact effect of disturbing causes", could only yield "hypothetical results" (1936 [1982a]: 87), i.e., counterfactual recommendations ('If we knew before, we you should have done this, not that'). Moderns call them stabilization policies.

> I sometimes feel, looking back, that it ought to have been my duty, after writing 'Simplifying', to have abandoned all other interests, and to have devoted myself entirely to pushing forward along the road on which I had taken first steps. As it was, nearly thirty years had passed before I got back to it. I allowed myself to be distracted, first by the writing of *Value and Capital* ... and then by the *General Theory* of Keynes. (1982a: 9)

He calls 'distractions' what the postwar general intellect deemed the best interwar works. In the succeeding years, while considering how were *VC* and the IS-LM (generally considered as an epitome of Keynes's book) used to set up the mainstream of postwar economics as a development of some coordination hypothesis, Hicks realized of having sunk into a "muddle" (ib.: 129, 217).

5 Learning and Planning

"From my own point of view, one of my most important works" was an article practically inaccessible for 26 years; with it "the 'muddle' ... was at last cleared up. At last I could go ahead" (1982a: 217)[11]. 'Methods of dynamic analysis' starts with a disambiguation

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[11] It is "a clearer and sharper statement of my new view than anything ... The later work ['Methods of dynamic economics', rephrased twice (1965a: 1-127; 1985a)] did add some useful detail, but in adding the detail the main points were obscured" (1982a: 218).

of *VC*: its object being change—not stability, its celebrated definition of a dynamic theory was to be censured[12]: dynamics is simply the "theoretical analysis of the process of economic change" (1956c [1982a]: 220). Comparative statics is not bad economics, but all we need whenever a process of change is not learning-based (a mechanical one).

Before they can affect behavior, mistakes need to be identified and interpreted. It is accordingly proper to single out two kinds of theories, approaching mistakes ex-post and ex-ante respectively, the former being however functionally necessary to the latter: the theory of economic *history* and the theory of economic *policy*. Co-ordination failures—one's mistakes due to inconsistencies with others's prospects and plans (ib.: 223), are the object of the historical theory. Errors can be counterfactually discerned using an ex-post perfect foresight performance as rod of measure of the mistakenness of actual past expectations. Being such a measure perfectly robust for a single period, Hicks called this theory the *"Single Period Theory"*.

Conversely, the political theory is "concerned with the effects of the events of a first period upon the expectations *and plans* which themselves determine the events of its successors" (ib., *my it.*), i.e., with the ways how mistakes can conveniently affect current learning and planning. In other terms, those of the *Simplification*, the political theory is for "deducing changes in anticipations [and plans] from the changes in objective data which call them forth" (1935b: 13). This theory is concerned with the *sequence* by which the measure of mistakes is transformed into new information (yet expected not to be conclusive) and finally into a strategy of capitalization on such a learning[13]:

> It was the main contribution of the Böhm-Bawerkian movement that it emphasised the consequential time-structure of economic activity even in a stationary state. For it thereby threw up the central dynamic issue – how to superimpose the pattern of change, which is one time-pattern, upon the underlying pattern of capital-using production, which is another. Though there are ways of avoiding this issue, they are bound to result in depriving the behaviour under study of its purposive character, so that the economic system is reduced to a mere mechanism. If we are not to do violence to the essential nature of the problem, a way has to be found whereby this issue can be faced. (1956c [1982a]: 221)

This "central dynamic issue" will be the basic issue at stake in his successive explorations on capital and money. The time-structure of actual economic activity being consequential, the result of a sequence of constrained and irreversible (i.e., constraining) decisions, it was theoretically crucial to revolve around the relationship between *learning* ("the time-pattern of change") and *planning* ("the underlying pattern of capital-using production"). In his attempts at dealing with this theoretical crux, as in the *Simplification*, it was up to the transaction costs to call the tune.

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[12]"I call Economic Statics those parts of economic theory where we do not trouble about dating; Economic Dynamics those parts where every quantity must be dated" (1939a [1946b]: 115). A good definition of a theory will refer to its object, not to its means.

[13]Being mistakes now relevant in an ex-ante perspective only (inescapably plunged into non-measurable risk), the outcomes of such a theory can never be perfectly unambiguous as those bragged by optimum theories.

The issue can be conveniently tackled via the special and simpler case of an economic activity that needs not be based on a plan of action, i.e., the *exhaustion* of existing arbitrage opportunities. This was precisely the case of the "sensitives" of the *Simplification*, who were trying to improve their position by 'beating the gun' (moving as fast as possible) as soon as any new 'measure' came into reach (information disclosed). The only imperative to be sensitive was to be free from constraints in disposable wealth, so to afford expected transaction benefits large enough as to keep transaction costs irrelevant over time. A sensitive's decisional temporal frame being a shortest possible period (the edge of a point of time), a sequence of his choices can be analyzed via the ordinary temporary equilibrium model, i.e.,

> the regular theory of price-determination *in a speculative market* ... Here, at any given moment, there are in existence given stocks of the commodity; but, over a period, these stocks are being added to by production and being drawn by consumption. At a moment of time, or *over any sufficiently short period of time*, these additions and subtractions can be taken as negligible; price is therefore determined by the Liquidity Preference of the dealer, or, in other words, by their willingness to hold stocks ... Thus, at each moment, price is determined by the condition that demand to hold equals the available supply. (ib.: 227, *my it.*)

A shortcut is here legitimate and of critical consequence: concerning future periods, wealth-effects are unimportant relative to price-effects, so that the transaction costs associated with stock disequilibria can be left out of account. As a matter of fact, provided that an operator is not wealth-constrained, he can immediately liquidate on the market his undesired stocks (i.e., his mistakes) so that, possible negative wealth-effects being not only small-scale but also ephemeral, all the stocks are *voluntarily* held. A sensitive does indeed improve via simple speculation, i.e., arbitrages on *existing* opportunities. His 'liquidity preference' can be based on price-anticipations only, and his performance analyzed via a "Flexprice" model.

Mistaken quantities being of no consequence, the time-structure of speculative activity is admittedly *not* essentially consequential. As a speculator instantly reacts to changes in available information, his strategic learning is essentially reactive. As his reactions do not imply any carry-over of undesired stocks, a sequence of 'speculative policies' can be thought to develop along a series of "self-contained periods" (1965a: 31f). For the time-structure of economic activity to be consequential, indeed, wealth-effects (mistakes) have to be managed over a sequence of decisional periods. This naturally happens in the general case of a wealth-constrained operator.

Who cannot afford the speculative way of life can improve his situation only by producing new (currently unavailable) opportunities. Inputs (spending) preceding outputs (earnings), 'productive' investments are characterized by a certain span (the time-to-build) during which new capacity is being built[14]. The associated construction costs are a kind of transaction costs, 'anticipations' having a *sinking effect* on the performance[15]:

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[14]Or, more generally speaking, 'learnt'.

[15]An anticipation is a sunk cost in an ex-ante perspective, say a *sinking cost*; indeed, Hicks called that a "crushing cost" (1970f: 276).

it is only when the capacity is ready for use that sales shall allow the 'producer' to get back on his feet and finally improve his situation.

In reason of the time-to-build, a productive activity needs to be based on planning, and in reason of the non-measurable risks pending all along the planning span, a productive activity requires a proactive learning-management. A productive activity being in all these respects antithetical to the speculative, it is manifest why in the general case of a producer a passive learning-management strategy – letting current trades determine the selling-price (with no adjustments in the capital structure) – is hardly recommendable: as the invisible hand can deadly upset his planned monetary outcomes, taking chances will be of no avail to avoid the plan's bankruptcy.

Being concerned with the prudential managing of a plan, a wealth-constrained operator would rather bear the risks of wealth-effects than of price-effects. That is why in non-speculative markets – "Q-markets" (1956c), or "Fixprice markets" (1965a) – suppliers are wont to manage their selling prices with acts of policy. The analysis of a sequence of 'productive policies' does indeed require another kind of theory, where "The determination of prices is taken right outside the model" (ib.: 78). The "characteristic nexus" of such a model is a quantity-based "chain of causation, working from sales via stocks to inputs" (1956c [1982a]: 228).

In both steps, the effects of mistakes have to be carried over beyond the single period: whenever actual sales differ from desired (planned) sales, 'mistaken stocks' pile up, and whenever such an accumulation calls for a new productive strategy, the sinking effects of new anticipations have to be carried over beyond the time-to-build. Undesired stocks can be carried over until the associated wealth-effects become so pressing as to induce a revision of expectations and plans. Whereas expectations can be revised for free, the revision of a plan is bound to be rather 'insensitive'. A ruling plan can be changed when the costs of (dis)investment are valued less than their benefits, i.e., following a costs-benefit analysis of the wealth-effects relative to a given policy.

Both investment and disinvestment taking time, the 'policy valuation' needs to involve a conjecture about the extent to which future learning episodes and relative wealth-effects can, within the planning span, affect its course. As a matter of fact, induced wealth-effects can prevent a producer from disposing of what is required to keep his planned activity viable. The continuation of a planned activity actually being what the general agent is essentially interested in, Hicks named the theory of the economic policy by a wealth-constrained operator the *"Continuation Theory"*.

> The essential difference, when we pass to Fixprice theory, is that the position in which the firm finds itself at a point of time (at significant points of time) does not have to be [as in Flexprice theory] a position that is *chosen* ... it is by the absence of stock equilibrium that disequilibrium itself is carried forward. And it is the carrying forward of disequilibrium that is the interesting thing. (1965a: 86)

In dealing with wealth-constrained operators, both the positive and normative powers of a Flexprice model are weak: "Where the *Value and Capital* analysis goes wrong is that it treats an exceptional type of market as if it were the normal case" (1956c [1982a]:

225); a temporary equilibrium method can only apply to operative periods so short as future information (non-measurable risk) can be safely left out of account (e.g., present-day High-Frequency Trading). In the general case of operators who can afford slower strategies only, that method can do the job only when non-measurable risk is not an issue, i.e., with a mechanical process of change (steady state).

The "central dynamic issue" calls thus into question the analytical role of equilibrium when dealing with learning processes. Here we come to a parting of the ways, depending on an assumption about the *initial position*. If a stock equilibrium, the flow equilibrium conditions (correct foresight) would ensure its maintenance at the end of the period. But if we wonder "what happens in the more important case when we do not start from stock equilibrium" (1965a: 93), this non-equilibrium position is bound to be managed over time:

> This is a situation which continually arises in practice ... The adjustment of stock to a fluctuating demand will need quite a bit of steering. There is always the double problem: in the one hand he must estimate what the course of demand will be [learning], and on the other he must correct the excesses and deficiencies of stock that result from past mistakes [moving]. (ib.: 95)

A producer's actions is then "continually" composed of two moments, learning and moving, the former chronologically and thus methodologically preceding the latter. Both moments were key topics in Hicks's explorations on money and capital. In monetary theory he played up the aspect of learning, in capital theory that of moving.

6   Money and Learning

The muddle being thus cleared up, Hicks resumed his monetary path in 'Liquidity' (1962a). In comparison with the *Simplification*, "it was not easy to recover the insights that I had then possessed. There is practically nothing in it about costs of making transactions – costs of switching assets from one form to another – costs ... it is fatal to neglect when one's subject is money" (1982a: 236). An overstatement, perhaps, as he there exhumes the liquidity notion that he will evoke in all his ensuing monetary works and that is precisely based on transaction costs: an asset is more liquid than another if it is *"more certainly realisable at short notice without loss"* (Keynes 1930: II, 67), i.e., the minor "the difference between the current market price of the asset and what it might fetch if it were to be disposed of at an unfavourable moment" (1989a: 62).

The liquidity of an item is a quality relative to the moment when a pitfall is forcing the operator to consider not to hold that item anymore. Moreover, liquidity is not an absolute quality: an item is more liquid than another if, at that moment – whenever it comes – its liquidation involves less transaction costs than the other.

As an unfavorable moment can arrive at any time—the time-pattern of pitfalls obviously being ex-ante non-measurable, "What Keynes is saying is that if the price is very variable, the asset is still imperfectly liquid—because ... the risk of loss remains" (1974b: 43). This accent on the risk of *loss* is noteworthy not so much to highlight

the benefits of nominal stability, rather to question the capacity of an equilibrium-based theory to model the behavior of a wealth-constrained operator:

> [To him] a worse than 'expected' outcome must be dreaded more than a better than 'expected' outcome is desired. This is not because of any abstract 'law of diminishing marginal utility'; it is because of the impact which such unfavourable outcomes may have upon the non-liquid elements in the situation (things that may happen on the side of liabilities or on the side of other, non-liquid, assets). (1962a: 793f)

The assets he holds can be categorized as (1967: 38f): (A1) *Running Assets*, "required for the current running of the business"; (A2) *Reserve Assets*, "held for emergencies that may arise in the future"; or (A3) *Investment Assets*, "held for the sake of the profit which it is expected to earn in due course". In order to show the essential feature of liquidity (and the nature of the money institution), following Hicks (ib.), let us focus on two assets, one liquid (money: M), the other non-liquid (productive capacity: T).

Be (T1) the capacity "geared to current output", (T2) the surplus capacity "available as a reserve against emergencies", and (T3) "the plant and machinery, designed for some new venture, which is under construction, or on order" (time-to-build). Whereas T2 can protect a planned T1 against some specific, measurable risk (implicitly defined by its technological properties), the need to hedge against non-measurable risks definitively calls into question the (relatively more) liquid asset.

Hicks starts singling out (M1) "the money requirement for ... the general pattern of production (or consumption) on which the unit is engaged" (ib.: 40), i.e., the money required to liquidate that pattern's contractual *liabilities* (wages, etc.). This *"transactions requirement"* (ib.: 37) is not exactly "a voluntary demand, like the demand for commodities, which could be forced—even with an effort—into the mould of marginal utility theory ... in its nature [M1] is a disequilibrium, not an equilibrium phenomenon" (ib: 14f): being what is needed (not simply desired) for a plan to be financially sustainable, M1 is not an equilibrium phenomenon as it is bound to be rather insensitive to learning episodes. Variations in M1 can only follow changes in planning, and not all learning episodes are liable to affect planning:

> A practical investor ... does not in fact spread his 'bundle' over [anything like] the whole gamut of securities with positive probable yield, as the [equilibrium] theory would seem seem to have instructed him to do ... The reason why he does not do so is clear; it is simply the cost of making transactions, which economists so easily leave out ... Obviously it is transaction cost which limits [risk] 'spread'; but it does much more than that. It introduces another qualification which transforms the whole theory ... If transaction costs were zero, it would in fact be only necessary for the investor to look ahead to the 'next decision point' ... He could behave, all the time, as if there were only one investment period of which he needed to take into account. (ib.: 31f)

Let us consider Hicks's views on risk (learning) and liquidity (money) by examining first, as before, the special case of a speculator. His job is to exploit faster than others the existing arbitrage opportunities; being unconstrained by transaction costs (and its

associated wealth-effects), he can afford a special management strategy that, at the same time, makes the value of the portfolio the most protected in the most profitable way (to the extent allowed by the quality of information). Being in condition to react 'specularly' – as a mirror image: unconditionally (free from contractual liabilities) and without delay – the speculator can afford not to care about non-measurable risk and simply attend to the expected probable outcomes of the moment. A speculator's portfolio is indeed ideally managed in a perfectly *"fluid"* manner (1982a: 258ff), "as if there were only one investment period of which he needed to take into account", i.e., as if he intended to go into cash at the end of the period, and so on for ensuing periods, each separated by new information disclosures[16]:

> The portfolio selection theory is [essentially] concerned with ... a single choice; and that is the point, I maintain, where liquidity slips through. For liquidity is not a property of a single choice; it is a matter of a sequence of choices, a related sequence ... There is an element in risk-bearing over time which escapes from the conventional presentation, [whether] the choice admits of flexibility ... the flexibility that is given by the market. (1974b: 37-41)

Whereas portfolio selection theory can grip on the special case of a speculative portfolio (an investment fund, M3), it is inadequate with the general case of a 'producer'. Being a producer primarily interested in preserving the availability of M1 all along the planning span, liquidity is 'a matter of a related sequence of choices': "The Liquidity theory—Liquidity theory *proper*—will tell the story entirely in terms of financial running assets [M1] and financial reserve assets [M2]" (ib.: 49).

It is the costs of changing the structure of liabilities, i.e., the costs of *transforming plans*, to make the M1 not significantly sensitive to learning and incentives. At least, not immediately nor directly: as any financial windfall, "like surplus stocks of materials, automatically becomes a reserve asset" (1967: 40), so any pitfall is best financed out of a *reserve fund* (M2, be it actual or potential, e.g., an overdraft facility). A sequence of pitfalls causes an accumulation of an undesired (unplanned) stock of T2; this induces, as a wealth-effect, a fall in M2. It is precisely this financial wealth-effect to deteriorate the ability of the wealth-constrained operator to respond to further pitfalls and thus sustain his plan, i.e., the flexibility[17] of his position facing the current structure of his liabilities:

> stocks may be allowed to pile up, until they become intolerable. But it is not the stocks themselves that become intolerable ... it is the financial effect of accumulating them that is the crux. More and more of the seller's capital becomes locked up

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[16]A speculator looks to behave as if he intended to go into cash at the end of the period because, being wealth-unconstrained, he is unconcerned with planning (M1) and non-measurable risk (M2): all his demand is speculative (M3, cf. 1982a: 261), utterly sensitive to 'exogenous' market liquidity shifts and totally free of 'endogenous' (sequential) liquidity concerns.

[17]Whereas optimality is a property of final positions, "Flexibility is a property of initial positions. It refers to the cost, or possibility, of moving to various second period positions" (Jones and Ostroy 1984: 16). Amendola (1991) gives a synthetic account of Hicks's thread in monetary theory, on the basis of which Hicks's notion of 'liquidity as flexibility' is explained and extended, in a direction which calls into question the complementarity of his monetary theory and his neo-Austrian capital theory. See §8, infra.

in the unsold stocks, so his financial reserves continually fall. Even if he borrows to finance his holdings, his liquidity deteriorates. (1979g: 92)

In managing a process of change it is essential to be able to dispose of liquid assets. M1 are *necessary* to improve a wealth-constrained's operator's position. M2 are *necessary* to have an easier life with non-measurable risk. Liquidity affords *time-to-learn*—the costs to notice mistakes, to interpret them as co-ordination failures, and finally conjecture opportune reactions. Liquidity also affords *time-to-move*—the (dis)investment costs of actually taking action to 'gain' a portfolio position whose prospect looks more favorable or promising. In short, liquidity affords *Time*.

7   Money and Movement

Whereas Hicks's monetary theory was primarily dealing with learning, i.e., "the time-pattern of change", his capital theory was meant to take charge of "the time-pattern of capital-using production". After a critical discussion in *Capital and Growth* (1965a) of Keynesian and Walrasian approaches – both variations of the "Method of Sectoral Disintegration", by which "The accounting distinction between Consumption and Investment is converted into an industrial division" (1973d: 5) – he returned, with his third book on capital theory, *Capital and Time* (1973d), and a number of related articles, to the Austrian field that, though uncultivated from *Value and Capital* (1939a: chs. 15-17), he kept on deeming the best for tackling "the central dynamic issue".

Fixing attention on the 'horizontal' (sectorial) structure of activity, the Walrasian concept of capital as a capital-good is at home in economic *history*, "whenever our interest is in the horizontal structure of production, structure by industry, the kind of interest for which the facts are provided in a production census" (1970f: 257). The 'vertical' (temporal) structure of a productive process can be played up only indirectly, by derivation from a lagged production function: since "From the Realist [Materialist (1974a)] viewpoint, the process is lost to sight" (1973d: 13), the Walrasian concept of capital is, in a sequential perspective, "very hard to handle" (1970f: 257).

To all intents and purposes, capital is "an expression of sequential production. Production has a time-structure, so capital has a time-structure" (1973a [1983a]: 100). The Austrian bent is to accent this structure. The Austrian image of a technique being a n-periods duplex flow of a homogeneous input a and a homogeneous output b:

$$(a_0, \ a_1, \ \ldots, \ a_n; \ b_0, \ b_1, \ \ldots, \ b_n),$$

via a slight amendment, Hicks's neo-Austrian principle – a productive process is capital-using if $b_0 = 0$, i.e., if based on capital-anticipation – did convert the Austrian technique[18] into the neo-Austrian plan, where a temporal stream of financial requirement $(\vec{a_t})$ yields a temporal stream of productive capacity $(\vec{b_t})$. In accounting terms, there is investment until capacity is under construction (as long as $b_t = 0$), disinvestment (consumption) when capacity is being used (1973d: 5).

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[18] $\vec{b_t} = (0, \ldots, 0, 1)$.

This representation of a plan, which is stopping in its track the sequential causality relation going from an inter-temporal vector of transactions requirement to an inter-temporal vector of productive capacity (an actual plan being precisely based on the inter-temporal complementarity of such vectors), calls into question the whole structure of a balance-sheet: $\vec{a_t}$ are liabilities, $\vec{b_t}$ assets. Though neo-Austrian, the nature of capital is the same as in the 'classical' old-Austrian theory: capital is a Wage-Fund, i.e., a monetary fund to honor the liabilities of a business. The Walrasian concept of capital goes awry:

> Even to this day, accountants are Fundists. It is not true, accountants will insist, that the plant and machinery of a firm are *capital*; they are not capital, they are assets. Capital, to the accountant, appears on the liabilities side of the balance-sheet; plant and machinery appear on the assets side. Capital, accordingly, is a Fund that is embodied in the assets. (1974a [1977a]: 154)

Capital is a fund committed to the finance of first and last resort of the business risk. Risk and liquidity, however, play no explicit role in *Capital and Time* (*CT* hereafter); the model is ruled (1973d: 52-55) by a Full Performance hypothesis (economy working at the highest level of activity that can be maintained), which obviously entails perfect foresight; no question of non-measurable risk and learning; money being inessential, output is the standard of value. Still, this narrow focus is all he needs to confirm his early objection to Hayek's protomonetarist view (cf. §3, supra): "It is not true that by getting rid of money, one is automatically in 'equilibrium'" (1973d: 133)—however equilibrium is conceived.

In his first step toward *CT*, he enlightened what he was aiming for: "On the Austrian approach, one can start out of equilibrium (so far as inputs and outputs are concerned) straight off" (1970f: 258). Albeit he was aiming at an out-of-equilibrium theory (i.e., based on non-measurable risk), *CT* was committed to this task only so far as the time-to-build (i.e., "inputs and outputs") was concerned: the point he made concerned the dynamic wealth-effects of anticipations ('vertical' transaction costs). These effects are "more violent and therefore more difficult" (1973d: 133) than those due to transaction costs 'horizontally' conceived as costs of market transactions; that is why his model focuses on a vertically integrated model, paying no heed to sectorial disintegration.

The political moral of Hicks's neo-Austrian capital theory is that even into Bentham's Panopticon any attempt at moving, *if a slowdown of activity is to be avoided*, needs to be buttressed by an influx of 'external' resources[19].

Although he did not provide an explicit synthesis of his capital and monetary explorations, they were meant to be radically complementary: both were based on transaction costs, and in both liquidity comes out as the kingpin of the economic performance. One can govern a learning process so long as, and to the extent that, he can count on an

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[19] "If new projects are started, without savings (or the release of reserves) to match them, capital is just transmuted from one form to another – into the capital that is embodied in the early stages of the new processes from that which was embodied in the late stages of the old. It is possible, though not inevitable, that in the new form it will in the end be more *useful*; but this does not show up during the period of construction. At this stage there is bound to be a strain" (1990b: 535).

adequate liquidity safety ring, so that the monetary wealth-effects, the 'vertical' ones in the first place, can be financially managed, avoiding to fall short of the transaction requirement. Having this in mind – and alluding to his false-hearted use of the Full Performance hypothesis – Hicks repeatedly quoted J.S. Mill's words:

> this perpetual non-employment of a large proportion of capital is the price we pay for the division of labour. The purchase is worth what it costs, but the price is considerable. (Mill 1874: 56)

8 Epilogue: Epitomes and Epigones

More than 20 years after his death, Hicks is yet considered, in first approximation, as a major 'neoclassical economist'. The present outline of his red thread also calls into question the grounds on which many commentators consider something like a "conversion" (e.g. Pasinetti and Mariutti 2008) having happened; having this in mind, his approach to economic theory should not look a "dilemma" (ib.: 69) any more. From the beginning, he simply was in the insecure hunt for a decision theory deeming the agent as a (non-measurable) "Risk"-manager, i.e., as a learning-manager. Although this called for a non-equilibrium perspective on dynamic phenomena, he was not disturbed by recourse to equilibrium assumptions to the extent that they allowed to isolate a particular issue 'without loss'.

As his monetary views, "It was through Risk that I got to Money" (1973c [1977a]: 137), so more generally his thread was based on non-measurable risk: Knight's book was "the background from which I began on the things which follow ... not yet even the Austrians" (1982a: 11). Non-measurable risk and Myrdal's hints towards the positive (stabilizer) role of non-speculative activities, are the cornerstones of his *Simplification.* Unfortunately, this piece of truly Hicksian Economics is often misread because of the overwhelming appeal as interpretive key of another element, i.e., the optimist *Zeitgeist* toward the temporary equilibrium method, which was also responsible of the basic premise of the *Value and Capital* project. This theoretical vague caught Hicks and led him into a muddle, where his primary concerns were lost to sight. After the muddle was cleared up, the temporary equilibrium as a sheet-anchor was replaced with the transactions requirement of a plan; this played the pivotal role in his later explorations in both monetary and capital theories, and – following an analytical strategy conjured up as early as the *Theory of Wages* – was managed as a transaction cost.

In my view, an Hicks's early supposition (slightly amended) – that "the whole problem of applying monetary theory is largely one of deducing changes in anticipations [and plans] from the changes in objective data which call them forth" (1935b: 13) – can stand for the theme of the whole evolution of his thought. Also, it allows to hint at the state-of-the-art of present-day alleged Hicksian Economics, where two kinds of 'Hicksian legacies' can indeed be singled out (cf. Hagemann 2009: 145f). Their premises and positions can be interpreted along the different interpretations they shall give to such 'objective data'.

On one side, those believing that existing assets cannot but be the objective data of economic theory, so that capital shall be a collection of assets to be inter-temporally allocated as per subjective preference relations, are naturally inclined to regard the sectorial disintegration of *Value and Capital* and *Capital and Growth* as the necessary complement of the vertical integration of *Capital and Time*. In my view, this stance on Hicks, which is championed by Edwin Burmeister (1974), applies if one is concerned with Single-Period Theory, with capital theory in isolation, or with Traverse analysis, i.e., the analysis of a mechanical change[20].

On the other side, those who deem Time to be original structure of human action, realize that whereas "inadequacy of [future] evidence makes probabilities not [even] comparable" (1979g: 114), the system of past evidences is liable to be dealt with as an objective datum. In this perspective, championed by Mario Amendola and Jean-Luc Gaffard (1998), monetary theory is hold to be the necessary complement of the 'vertical' capital theory. This second position best fits Hicks's pivotal concern with Continuation Theory and the "central dynamic issue".

Any attempt at change does actually have to tackle its relative costs of change. Such variations in the transactions requirement can be thought of as 'existential' transaction costs: they are much more than costs of market transactions, they are the costs of changing a plan. The monetary translation of neo-Austrian plans yields a better perspective to opt for that move whose costs and benefits, with its associated shifts in borne risk and residual liquidity, seems the best to make the continuation of a business viable, so to safeguard the 'existence', and the freedom, of an economic entity.

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[20]In the second parts of *Capital and Growth* and *Capital and Time* Hicks dealt with the traverse, i.e., the process of structural stabilization implied by the adoption of a new technique; he found that the convergence conditions can be determined for unsubstantial environments only: "convergence to equilibrium [i.e., traverse] has been shown to be dubious; but it has also shown to be unimportant. Even at the best, it will take a long time; and in most applications before that time has elapsed something new (some new exogenous shock) will surely have occurred" (1975f: 366). As a matter of fact, non-measurable risk being allowed in an ex-post perspective only (single-period theory), in traverse analysis change is pre-determined (mechanical). Chapters 13 and 14 of *Methods of Dynamic Economics* (1985a) have been however evoked as a proof of Hicks's final preference for a complementary perspective of vertical and horizontal approaches: their titles, 'Structural Disequilibrium—Traverse' and 'Traverse again: the Austrian Method', suffice to comment: they are complementary *in single-period theory*.

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