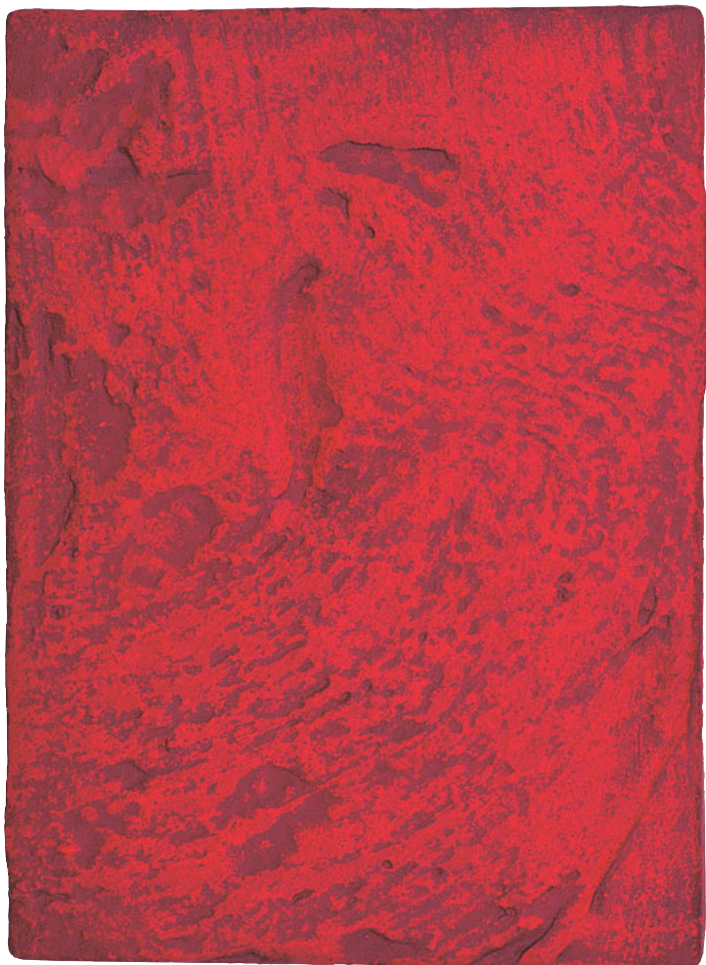


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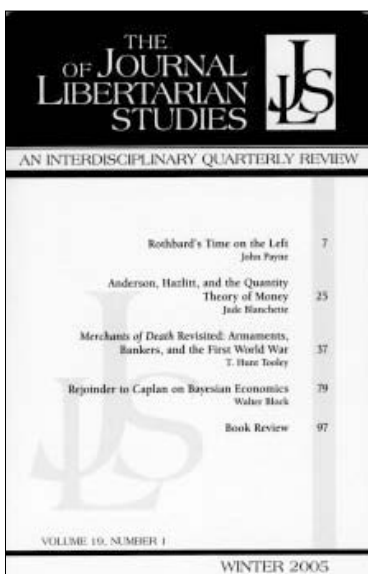
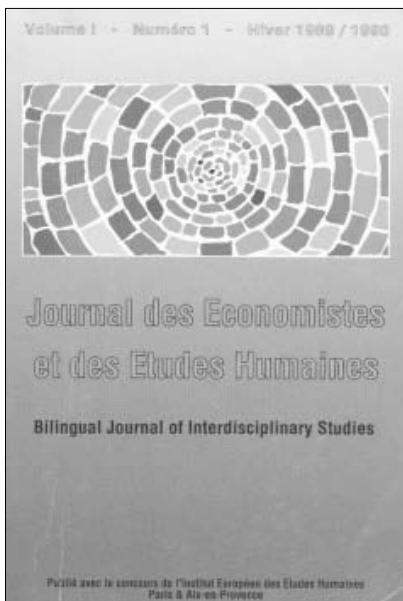


Procesos de Mercado

Yeso y pigmentos sobre tela y madera

Julio Toquero, 2005

“Subyace en este cuadro una reflexión relativa al cambio, a la energía —acción vigorosa— y a la consciencia: realidades fundamentales en los procesos de mercado y en el arte”.



PROCESOS DE MERCADO

REVISTA EUROPEA DE ECONOMÍA POLÍTICA
VOLUMEN III, NÚMERO 2, OTOÑO 2006

REVISTA SEMESTRAL PUBLICADA POR UNIÓN EDITORIAL,
CON LA COLABORACIÓN
DE LA FACULTAD DE CIENCIAS JURÍDICAS Y SOCIALES
DE LA UNIVERSIDAD REY JUAN CARLOS

HIMNO

Dio, che nell'alma infondere
amor volesti e speme,
desio nel core accendere
tu dei di libertà.

Giuramo insiem di vivere
e di morire insieme.
In terra, in ciel
... congiungere ci può,
ci può la tua bontà.

Ah! Dio, che nell'alma infondere
amor volesti e speme,
desio nel core accendere
tu dei di libertà.

Dios, que has querido poner
en nuestra alma el amor y la esperanza,
debes alumbrar en nuestro corazón
el deseo de libertad.

Juramos juntos vivir
y morir juntos.
En la tierra, en el cielo
... reunirnos podrá,
podrá tu bondad.

¡Ah!, Dios, que has querido poner
en nuestra alma el amor y la esperanza,
debes alumbrar en nuestro corazón
el deseo de libertad

Don Carlo (1884), GIUSEPPE VERDI
(Dúo de Don Carlo y Don Rodrigo,
final de la Escena Primera,
Acto Segundo)

© 2004, Jesús Huerta de Soto
© 2004, Unión Editorial, S.A.
ISSN: 1697-6797
Depósito legal: M-17.229-2004

Administración *Procesos de Mercado*:
c/o Jesús Huerta de Soto
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Correo: info@unioneditorial.net
www.unioneditorial.es

Diseño y Maquetación: JPM GRAPHIC, S.L.
Correo: jpm@jpm.es

Impreso por TECNOLOGÍA GRÁFICA, S.L.

Impreso en España • *Printed in Spain*

PROCESOS DE MERCADO
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Artículos

THE LIMITS OF NUMERICAL PROBABILITY: FRANK H. KNIGHT AND LUDWIG VON MISES AND THE FREQUENCY INTERPRETATION

HANS-HERMANN HOPPE*

Resumen: En este trabajo, 1) volveré a plantear brevemente los principios de la interpretación frecuencialista de la probabilidad tal y como fueron formulados originalmente por Richard von Mises; 2) mostraré por qué Frank H. Knight y Ludwig von Mises deben ser considerados teóricos de la interpretación frecuencialista, y 3) discutiré y evaluaré los argumentos proporcionados por F. H. Knight y L. v. Mises en contra de la posibilidad de aplicar la teoría de la probabilidad en el área de la previsión económica (ya sea a nivel microeconómico o macroeconómico).

Palabras clave: teoría de la probabilidad, previsión económica, distribución de frecuencias.

Abstract: In the following I will (1) briefly restate the principles of the frequency interpretation of probability as originally formulated by Richard von Mises; (2) show why Frank H. Knight and Ludwig von Mises must be considered frequency theorists; and (3) discuss and evaluate the arguments provided by F. H. Knight and L. v. Mises against the possibility of applying probability theory in the area of economic forecasting (whether on the micro or the macro level).

Key words: probability theory, economic forecasting, frequency distribution.

Clasificación JEL: B41, B53.

(*) Professor of Economics at University of Nevada, Las Vegas.

Both Frank H. Knight and Ludwig von Mises are recognized as founders of intellectual traditions: the Chicago School and the neo-Austrian School of economics, respectively. During their lifetime, Knight and Mises were engaged in controversies regarding the nature of socialism and capital.¹ My focus here, however, will be on a systematic yet rarely noted *similarity* in the works of Knight and Mises. In particular, both are representatives of the frequency interpretation of probability and share a similar view concerning the limitations of probability theory in economics and the social sciences generally.² In the following I will (1) briefly restate the principles of the frequency interpretation of probability; (2) show why Knight and Mises must be considered frequency theorists; and (3) discuss and evaluate the arguments provided by Knight and Mises against the possibility of applying probability theory in the area of economic forecasting (whether on the micro or the macro level).

I.

The principal founder and proponent of the frequency interpretation of probability is Richard von Mises, Ludwig's younger brother.³ There is no reference in Knight to Richard von

¹ See Knight (1941, 1936 and 1938) and Ludwig von Mises (1966 [1949]).

² Interestingly, however influential Knight and Mises otherwise have been in shaping their respective schools, neither Knight nor Mises have been entirely successful in convincing their followers of *this* part of their doctrines. Similarly, while they were skeptical about the use of probability, Knight and Mises were also proponents of «a priori» economic theory, and in this regard, too, neither Knight nor Mises has been entirely successful with their students. See Frank H. Knight (1940); Ludwig von Mises, *Human Action*, chap. II.

³ Richard von Mises (1883-1953) was Professor of Mathematics at the University of Strassburg (1909-1919). In 1921 he was appointed Professor of Mathematics and Director of the Institute of Applied Mathematics at the University of Berlin. When the National-Socialists dismissed him from this post in 1933, Mises went first to Istanbul, Turkey, and in 1939 he emigrated to the U.S., where he finished his career as Gordon McKay Professor of Aerodynamics and Applied Mathematics at Harvard

Mises, and insofar as Knight's work of primary interest here is concerned – his 1921 *Risk, Uncertainty, and Profit* – nothing else can be expected (though Knight read German).⁴ More surprising is the fact that there is also no mention of Richard von Mises and his frequency interpretation in Ludwig von Mises's systematic treatment of probability in his 1949 work *Human Action. A Treatise on Economics*.⁵ Nonetheless, I assume Richard von Mises's interpretation as the starting point in the following discussion. It will become apparent that Knight is groping toward the solution provided by Richard von Mises, and that Ludwig von Mises was obviously familiar with his brother's work and in his own work presents what is meant to be a refinement of the frequency interpretation provided by Richard.

According to Richard von Mises, probability must be defined and the range of applicability of probability theory be delineated thus:

«1. It is possible to speak about probabilities only in reference to a properly defined collective.

2. A collective appropriate for the application of the theory of probability must fulfill two conditions: (i) the relative frequencies of particular attributes within the collective tend to fixed limits; (ii) these fixed limits are not affected by any place selection. That is to say, if we calculate the relative frequency of some attribute not in the original sequence, but in a partial set, selected according to some fixed rule, then we require that

University. Mises' groundbreaking works on the foundations of probability theory appeared in 1919 in two issues of the *Mathematische Zeitschrift*. His main work in this area, originally published in German in 1928, is *Probability, Statistics and Truth* (1957 [1939]); see also his *Positivism. A Study in Human Understanding* (1951).

⁴ There are a few references to F. Y. Edgeworth, whose views on probability are rather eclectic.

⁵ The two Mises brothers were long estranged and reconciled only during their common exile in the U.S..

the relative frequency so calculated should tend to the same limit as it does in the original set.

3. The fulfillment of condition (ii) will be described as the Principle of Randomness or the Principle of the Impossibility of a Gambling System.»⁶

For the purpose of this article, only three observations regarding Mises's frequency interpretations are in order. First, there is Mises's emphatic insistence that the application of the term probability to single events, such as the «probability» of Mr. X dying in the course of the next year, for instance, is «utter nonsense.»⁷ «The theory of probability can never lead to a definite statement concerning a single event.»⁸ Second, Mises is equally insistent that the probabilities of the probability calculus are objective, empirical properties and magnitudes

⁶ Richard von Mises (1957 [1939]), pp. 28-29 & 24. Mises further explains the meaning of condition (ii) (randomness) by means of a contrary example. «Imagine, for instance, a road along which milestones are placed, large ones for whole miles and smaller ones for tenths of a mile. If we walk long enough along this road, calculating the relative frequencies of large stones, the value found in this way will lie around 1/10. ... The deviations from the value 0.1 will become smaller and smaller as the number of stones passed increases; in other words, the relative frequency tends toward the limiting value 0.1.» That is, condition (i) is fulfilled. However, absent in this case is condition (ii), because «the sequence of observations of large or small stones differs essentially from the sequence of observations, for instance of the results of a game of chance, in that the first sequence obeys an easily recognizable law. Exactly every tenth observation leads to the attribute 'large,' all others to the attribute 'small.'» (pp. 23-24) «The essential difference between the sequence of the results obtained by casting dice and the regular sequence of large and small milestones consists in the possibility of devising a method of *selecting the elements* so as to produce a fundamental change in the relative frequencies. – We begin, for instance, with a large stone, and register only every second stone passed. The relation of the relative frequencies of small and large stones will now converge toward 1/5 instead of 1/10. ... The impossibility of affecting the chances of a game by a system of selection, this uselessness of all systems of gambling, is the characteristic and decisive property common to all sequences of observations or mass phenomena which form the proper subject of probability calculus. ... The limiting values of the relative frequencies in a collective must be independent of all possible place selections.» (pp. 24-25)

⁷ *Ibid.*, p. 17/18.

⁸ *Ibid.*, p. 32.

(rather than subjective beliefs or degrees of confidence). They are based on experience, and further experience may lead to revised measurements or the re-classification of various singular events into various collectives. However, only in referring to objective probabilities can the probability calculus ever be of any practical use.⁹ And third and by implication, Mises rejects categorically the notion of «a priori» probability. (See also footnote 20 below) No such thing as *a priori probability* exists.¹⁰

«In a problem of probability calculus», according to Richard von Mises, «the data as well as the results are probabilities.»¹¹ «From one or more well-defined collectives, a new collective is derived. (..) The purpose of the theory of probability is to calculate the distribution of the new collective from the known distribution (or distributions) in the initial ones.»¹² As in the case of algebra, «there are four, and only four, ways of deriving a collective and all problems treated by the theory of probability can be reduced to a combination of these four fundamental

⁹ Regarding subjectivist interpretations of probability, Mises first remarks that subjectivists such as J. M. Keynes, for instance, fail to recognize «that if we know nothing about a thing, we cannot say anything about its probability», and he then notes that «the peculiar approach of the subjectivists lies in the fact that they consider 'I presume that these cases are equally probable' to be equivalent to 'These cases are equally probable,' since, for them, probability is only a subjective notion.» *Ibid*, pp. 75-76.

¹⁰ It is frequently held, explains Mises in this connection, that «if one plays with a 'perfect' ('correct') coin heads or tails and makes sufficiently large numbers of throws, it is almost certain that the proportion of heads will deviate by less than 1 promille from one half of all cases. With regard to this we only note: The transition from the arithmetic proposition to this empirical proposition can be made *only* in declaring a 'perfect' coin to be one for which the probability of both outcomes is 1/2 and thus *defining* probability precisely in the way suggested by us, i.e., as relative empirical frequency in long sequences.» *Lehrbuch des Positivismus*, p. 267. «How is it possible to be sure», Mises asks the proponents of a priori probability, «that each of the six sides of a die is equally likely to appear. .. Our answer is of course that we do not know this unless the dice have been the subject of sufficiently long series of experiments to demonstrate this fact.» *Probability, Statistics and Truth*, p. 71.

¹¹ *Ibid*, p. 33.

¹² *Ibid*, p, 37.

methods.»¹³ New collectives are derived from known initial ones by means of either *selection* (unchanged distribution), *mixing* (addition rule), *partition* (division rule), and/or *combination* (multiplication rule).¹⁴

II.

As economists, Frank Knight and Ludwig von Mises come upon the subject of probability indirectly, in conjunction with the question concerning the source of entrepreneurial profits and losses. Why, Knight and Mises ask, do profits and losses not *disappear* as the result of entrepreneurial competition? Why does competition not bring about a state of affairs where the sum of the prices paid for all input factors equals exactly the price of the output, such that the product sum can be apportioned perfectly among its contributing factors?¹⁵ Knight and Mises both give the same answer: because of «uncertainty.» Uncertainty concerning the future constellation of demand and supply is the ultimate and ineradicable source of entrepreneurial profit and loss (see section III below). And it is in conjunction with their attempt of explaining the nature of uncertainty, then, that both Knight and Mises introduce the concept of «risk», as a contingency categorically distinct from uncertainty.¹⁶

¹³ *Ibid*, p. 38.

¹⁴ *Ibid*, p. 57.

¹⁵ Knight's and Mises's views concerning backward imputation (apportioning) differ significantly. In equilibrium, according to Knight each production factor is paid in accordance with its marginal value product, whereas according to Mises each production factor is paid in accordance with its *discounted* marginal value product, i.e., its marginal value product discounted by the ordinary rate of interest. This difference does not affect any of the arguments presented here or below, however.

¹⁶ See F. H. Knight (1971), chaps. 7 and 8; L. v. Mises, *Human Action*, chap. 6, and pp. 289-294.

Explains Knight: «If all changes were to take place in accordance with invariable and universally known laws, they could be foreseen for an indefinite period in advance of their occurrence, and would not upset the perfect apportionment of product values among contributing agencies, and profit (and loss) would not arise.»¹⁷

However, perfect foresight need not involve the ability to forecast *every singular event* and the absence of *any* kind of contingency (or surprise) for profits and losses to disappear. As Knight explains: «It is unnecessary to perfect, profitless imputation that particular occurrences be foreseeable, if only all the alternative possibilities are known and the probability of the occurrence of each can be accurately ascertained. Even though the business man could not know in advance the result of individual ventures, he could operate and base his competitive offers upon accurate foreknowledge of the future if quantitative knowledge of the probability of every possible outcome can be had. For by figuring on the basis of a large number of ventures (whether of his own business alone or that of business in general) the losses could be converted into fixed costs.»¹⁸ Thus, for example, «the bursting of bottles does not introduce an uncertainty or hazard into the business of producing champagne; since in the operations of any producer a practically constant and known proportion of bottles burst, it does not especially matter even whether the proportion is large or small. The loss becomes a fixed cost. ... And even if a single producer does not deal with a sufficiently large number of cases of the contingency in question .. to secure constancy in

¹⁷ *Risk, Uncertainty and Profit*, p. 198. Similarly, Mises writes: «If everybody is correct in anticipating the future state of the market of a certain commodity, its price and the prices of the complementary factors of production concerned would already today be adjusted to this future state. Neither profit nor loss can emerge for those embarking upon this line of business.» *Human Action*, p. 290.

¹⁸ *Risk, Uncertainty and Profit*, pp. 198-199.

its effects, the same result may easily be realized, through an organization taking in large numbers of producers. This, of course, is the principle of insurance, as familiarly illustrated by the chance of fire loss. No one can say whether a particular building will burn, and most building owners do not operate on a sufficiently large scale to reduce the cost to constancy. .. But as is well known, the effect of insurance is to extend this base to cover the operations of a larger number of persons and convert the contingency into a fixed cost.»¹⁹

With this definition of «empirical-statistical probability» as «insurable» contingency or «risk», Knight is in complete accordance with Richard von Mises's frequency interpretation. At times, he seems to deviate from Mises's interpretation, as when he assumes also the possibility of *a priori* probability (in addition to empirical-statistical probability). But not only does Knight ascribe no importance to *a priori* probability in the conduct of business, his deviation turns out little more than a minor if unfortunate slip.²⁰ In any case, Knight deserves credit for strictly separating *a priori* probability from *empirical-statistical* probability, which alone is of practical importance (and where *a priori* considerations play no role whatsoever), and in particular for excluding «risk» (insurable contingencies) as a possible source of profit and loss and delineating it strictly from «uncertainty», as two categorically distinct sorts of contingency.

¹⁹ *Ibid.*, pp. 212-213; similarly *Human Action*, pp. 291-292.

²⁰ According to Knight, «there are two fundamentally different ways of arriving at the probability judgment of the form that a given numerical proportion of X's are also Y's. The first method is by *a priori* calculation,.... as an illustration of the first type of probability we may take throwing a perfect die. If the die is really perfect and known to be so, it would be merely ridiculous to undertake to throw it a few hundred thousand times to ascertain the probability of its resting on one face or another.» *Ibid.*, pp. 214-15. Richard von Mises's reply to this definition can be inferred from the quote provided in footnote 10 above: Precisely. But this definition only shows that there is no such thing as *a priori* probability. Because in order to classify a die as perfect, one must *first* show this to be true and that cannot be done other than by means of long-run observations.

Ludwig von Mises reaches the same conclusion. Yet writing four decades later, his treatment of the subject, contrary to that of Knight, is in full awareness of Richard von Mises's frequency interpretation.

Ludwig von Mises first presents a general (wide) definition of probability: «A statement is probable if our knowledge concerning its content is deficient. We do not know everything which would be required for a definite decision between true and not true. But on the other hand, we do know something about it; we are in a position to say more than simply *non liquet* or *ignoramus*.»²¹ Within this general category of probabilistic statements, Mises then distinguishes two categorically distinct subclasses. The first one – probability narrowly understood and permitting the application of the probability calculus – is termed «class probability (or frequency probability).» «Class probability means: We know or assume to know, with regard to the problem concerned, everything about the behavior of a whole class of events or phenomena; but about the actual singular events or phenomena we know nothing but that they are elements of this class.»²²

²¹ *Human Action*, p. 107.

²² *Ibidem*. «Let us assume», Mises further clarifies, «that ten tickets, each bearing the name of a different man, are put in a box. One ticket will be drawn, and the man whose name it bears will be liable to pay 100 dollars. Then an insurer can promise the loser full indemnification if he is in a position to insure each of the ten for a premium of 10 dollars. He will collect 100 dollars and will have to pay the same amount to one of the ten. But if he were to insure only one of them at a rate fixed by the calculus, he would embark not upon an insurance business, but upon gambling. ... insurance, whether conducted according to business principles or according to the principle of mutuality, requires the insurance of a whole class or what can be reasonably considered as such. ... The characteristic mark of insurance is that it deals with the whole class of events. As we pretend to know everything about the behavior of the whole class, there seems to be no specific risk involved in the conduct of the business. – Neither is there any specific risk in the business of the keeper of a gambling bank or in the enterprise of a lottery. From the point of view of the lottery enterprise the outcome is predictable, provided that all tickets are sold. If some tickets remain unsold, the enterpriser is in the same position with regard to them as every buyer of a ticket is with regard to the tickets he bought.» *Ibid*, pp. 109-110.

With this definition of class probability, Ludwig von Mises shows himself in complete agreement with his brother. For him, too, there is no such thing as *a priori* probability. Nor is there such a thing as the probability of a singular event. Probability statements refer to «objective» probabilities of collectives (classes). They are based on empirical observations. And they are corrigible by such observations. Yet at the same time Ludwig von Mises's definition of class probability represents an ingenious simplification and refinement of Richard's frequency interpretation. On the one hand, in requiring that one know (or assume to know) everything regarding the behavior of the whole class, Ludwig von Mises circumvents the difficulties associated with Richard's notion of a *limit* and its application to necessarily *finite* sequences of events. On the other hand, in requiring of every singular event that nothing be known about it except that it is a member of a certain class, Ludwig von Mises eliminates the need for the «randomness» criterion to be added to the definition of a collective suitable to treatment by the probability calculus (see section I). Ludwig von Mises's definition of class probability already *entails* a definition of randomness (and «logical homogeneity»): to state that nothing is known about any particular event except its membership in a joint (common) class of events is to say the same as that – as far as one knows – each particular event is logically «homogeneous» (as far as the risk under consideration is concerned) to every other event and/or that one knows of no law (and consequently no method of place selection) governing the sequence of particular events.²³

²³ Ludwig von Mises was clearly aware of the advantage of this definition. Thus, he notes, «this definition of the essence of class probability as given above is the only logically satisfactory one. It avoids the crude circularity implied in all definitions referring to the equiprobability of possible events. In stating that we know nothing about actual singular events except that they are elements of a class the behavior of which is fully known, the vicious circle is disposed of. Moreover,

However, as pervasive as «risks» (insurable contingencies) are and as important class or frequency probability accordingly may be, Mises concurs with Knight that risks are *not* the source of entrepreneurial profit and loss. To account for profit and loss another, different sort of contingency (a different sort of «probability») must be postulated. What, then, is the nature of *this* contingency that both Knight and Mises consider as falling outside the realm of phenomena tractable by the probability calculus and giving rise to entrepreneurial profit and loss?

III.

Knight terms this other sort of contingency «true uncertainty» and characterizes it thus: «The probability in which the student of business risk is interested *is* an estimate, ...an estimate or intuitive judgment is somewhat like a probability judgment, but very different from either of the types of probability judgment already described [a priori and empirical-statistical].»²⁴ «The theoretical difference between the probability connected with an estimate and that involved in such phenomena as are dealt with by insurance is, however, of the greatest importance. ... Take as an illustration any typical business decision. A manufacturer is considering the advisability of making a large commitment in increasing the capacity of his works. He 'figures' more or less on the proposition, taking account as well as possible of the various factors more or less susceptible of measurement, but the final result is an 'estimate' of the probable outcome of any proposed course of action. What is the 'probability' of error (strictly, of any assigned degree of error)

it is superfluous to add a further condition called the absence of any regularity in the sequence of events.» *Ibid*, p. 109.

²⁴ *Risk, Uncertainty and Profit*, pp. 223-224.

in the judgment? It is manifestly meaningless to speak of either calculating such a probability *a priori* or of determining it empirically by studying a large number of instances. The essential and outstanding fact is that the 'instance' in question is so entirely unique that there are no others or not a sufficient number to make it possible to tabulate enough like it to form a basis for any inference of value about any real probability in the case we are interested in. The same obviously applies to the most of conduct and not to business decisions alone.»²⁵ Business decisions «deal with situations which are far too unique, generally speaking, for any sort of statistical tabulation to have any value for guidance. The conception of an objectively measurable probability or chance is simply inapplicable. ... It is this third type of probability or uncertainty which has been neglected in economic theory, and which we propose to put in its rightful place... that higher form of uncertainty not susceptible to measurement and hence elimination. It is this *true uncertainty* which by preventing the theoretically perfect outworking of the tendencies of competition gives the characteristic form of 'enterprise' to economic organization as a whole and accounts for the peculiar income of the entrepreneur.»²⁶

Noteworthy about Knight's argument is his emphasis on *unique* events. Indeed, if the probability calculus is applicable only to *classes* or *collectives*, then it follows logically that it *cannot* be applied to events which are a member of *no* class (or, as Ludwig von Mises would say, events that form a class by itself) and are thus *unique*. However, Knight is less forthcoming as regards the immediately following question: What is it that makes certain events *unique*, such that they *cannot* be (or cannot be conceived as being) in a class with other events; and how

²⁵ *Ibid*, p. 226.

²⁶ *Ibid*, pp. 231-232.

do we identify and distinguish such events from events which *can* be class(ifi)ed?²⁷

Ludwig von Mises, writing later and in recognition of his brother's frequency interpretation, provides further clarification in this regard. According to Mises (and there is little doubt that Knight would have agreed with this), two categorically distinct types of empirical events exist: on the one hand natural events or what might be called *accidents*, and on the other hand human *actions*. Class (or risk) probability is applicable exclusively to the first type of event, i.e., accidents; and it is impermissible to apply it to human action. Rather, human action is the source of «true», non-quantifiable (Knightian) uncertainty and responsible for the emergence of profit and loss. States Mises, «(t)here are two entirely different instances of probability; we may call them class probability (or frequency probability) and case probability (or the specific understanding of the sciences of human action). [On case probability see section IV below.] The field for the application of the former is the field of the natural sciences, entirely ruled by causality; the field for the application of the latter is the field of the sciences of human action, entirely ruled by teleology.»²⁸

Unfortunately, in the relevant chapter VI of his *magnum opus* Mises is less than outspoken in explaining *why* human actions

²⁷ Knight is keenly aware of the unsatisfactory character of his explication of uncertainty-probability (vs. risk-probability). Thus, he notes (*ibid*, p. 225) that «this form of probability is involved in the greatest logical difficulties of all, and no very satisfactory discussion of it can be given, but its distinction from the other types must be emphasized.» Further, «the ultimate logic, or psychology, of these deliberations is obscure, a part of the scientifically unfathomable mystery of life and mind.» (227) And yet, «it is indisputable that this procedure is followed in fact to a very large extent and that an astounding number of decisions actually rest upon such a probability judgment, though it cannot be placed in the form of a definite statistical determination. That is, men do form, on the basis of experience, more or less valid opinions as to their own capacity to form correct judgments, and even of the capacities of other men in this regard.» (228)

²⁸ *Human Action*, p. 107.

(choices) are intractable by probability theory (in the frequency interpretation). His answer can be inferred, however.

The question is: Is it scientifically legitimate to assign quantitative probabilities to the performance of certain actions (whether by individuals or groups of individuals)? Is there a numerical probability that I will watch basketball on TV tonight, that I spend \$ 5 on beer and \$ 10 on red wine at Von's grocery store on First Street today, that Bush will be reelected in 2004, that 1 million German tourists will spend 3 to 3.5 million Euros on about 3 million Bratwursts in Mallorca in 2003, that Linda will divorce George, that Alan Greenspan will create 5 billion paper dollars next week, that more people will watch MTV than Fox next Christmas night?

For the frequency theorist, the answer to these questions is a clear no. To be sure, we constantly make predictions concerning action-events such as these, but probability calculations do not – and legitimately cannot – play any role in these predictions.

First off, the frequency theorist will remind us that the application of the term probability to a single event – and all above-mentioned action-events are single events! – is, in Richard von Mises's words, «utter nonsense.» «The theory of probability can never lead to a definite statement concerning a single event.» «It is possible to speak about probabilities only in reference to a properly defined collective.» «The definition of probability .. is only concerned with 'the probability of encountering a certain attribute in a given collective.'»²⁹

What, then, are the corresponding collectives or classes to which the above mentioned single events belong as members? What, for instance, is the class to which the event «I watch basketball on TV tonight» belongs; what is the collective of which «1 million German tourists spend 3 to 3.5 million Euros

²⁹ *Probability, Statistics and Truth*, pp. 18, 32, 28, 12.

on about 3 million Bratwursts in Mallorca in 2003» is a member; and what is the appropriate collective for «Linda divorces George?» Without a specified collective and a (assumedly) full count of its individual members and their various attributes no numerical probability statement is possible (or is, if made, arbitrary).

From a formal-logical point of view, no difficulties arise in meeting such request. For every single event one (or more) corresponding class(es) can be defined. For instance, «I watch basketball on TV tonight» can be considered a member of the class «people watching/not watching basketball on TV tonight» or «American males» doing so. Or it can be considered an element of the class «I watch basketball on TV nightly.» The one million German Bratwurst eaters on Mallorca can be considered a member of the class «annual per capita Bratwurst expenditure by German tourists on Mallorca.» «Linda divorces George» can be an element of «females divorcing/not-divorcing males», or «Lindas divorcing/not-divorcing Georges», etc.

However, to have a well defined – and actually counted and surveyed – collective is only one of the requirements that must be fulfilled to allow the use of numerical probability statements. The second condition to be fulfilled is that of «randomness.» In Richard von Mises's words, «only such sequences of events or observations, which satisfy the requirement of complete lawlessness or 'randomness' (are) true collectives.» In order to employ the probability calculus, it must be impossible to devise «a method of selecting the elements so as to produce a fundamental change in the relative frequencies.» «The limiting values of the relative frequencies in a collective must be independent of all possible place selections.»³⁰ Or as Ludwig von Mises expressed the same requirement: for every element of a class it must hold that nothing is known about its attributes

³⁰ *Probability, Statistics and Truth*, pp. 24, 25; see also footnote 6 above.

under consideration but that it is an element of this class (and that everything is known about the relative frequency of specified attributes for the class as a whole).

It is in connection with this randomness requirement where Ludwig von Mises (and presumably Knight) see insuperable difficulties in applying probability theory to human actions. True, formal-logically for every single action a corresponding collective can be defined. However, onto-logically human actions (whether of individuals or groups) cannot be grouped in «true» collectives but must be conceived as unique events. Why? Because, as Ludwig von Mises would presumably reply, the assumption that one know nothing about any particular event except its membership in a known class, is false in the case of human actions; or, as Richard von Mises would put it, in the case of human actions we know a «selection rule» the application of which leads to fundamental changes regarding the relative frequency (likelihood) of the attribute in question (thus ruling out the use of the probability calculus).

IV.

The randomness (or homogeneity) assumption can be made vis-a-vis events of the accident variety. For instance, we know nothing about the attribute of any particular bottle (will it break or not?) except the bottle's membership in a class of bottles (of which we know the probability of bottles breaking or not); and we know nothing about the attribute of any particular throw of a die (will it be a 6 or not?) except the throw's membership in a class of dice throws (of which we know the probability of throwing sixes).

In the case of human actions this assumption is incorrect, however. In the case of human actions, «we know», writes Ludwig von Mises, «with regard to a particular event, *some* of the

factors determining its outcome.»³¹ (In fact, in some cases we know *all* of the factors determining its outcome.³²) Hence, insofar as we know *more* about a single event than merely its membership in a given class of events of which we know the frequency of certain attributes, we are, with regard to human actions, in a *better* position to make predictions than we are in the case of «accidents», where *nothing* about particular events – one bottle’s vs. another’s breaking – is known.

Whereas natural events – accidents – are occurrences determined by generally, time- and place-invariantly – «blindly» and «indiscriminately» – effective forces within (and constrained by) a «natural environment», we know action-events to be occurrences determined by *individually, at specific times and places held and effective value judgments, knowledge, and property* (acting as a constraint). That is, we know that human choices and actions result from individual (subjective and momentary) value judgments; that value judgments involve the ranking of valued ends and the presumably correct knowledge of how to reach these ends through some combination of means; and that the valuation of ends and the selection of means are constrained by the quantity and quality of property (possessions) at an individual human actor’s disposal.³³

³¹ *Human Action*, p. 110 (emphasis added).

³² See footnote 38 below.

³³ It is true that advocates of the positivist-falsificationist research program deny the categorical distinction drawn here between natural events (accidents) and actions and claim that one and the same methodology applies to both realms of phenomena (monism). According to them, both natural events as well as human actions are to be explained by hypothetically valid (and hence empirically falsifiable) general, time- and place-invariantly effective causes. In both cases, we «explain» by formulating causal hypotheses, which are either confirmed or falsified by actual experiences. However, if actions could indeed be conceived of as governed by time- and place-invariantly operating causes just as natural events are, then it is certainly appropriate to ask: What then about explaining the actions of the explainers, i.e. the causal researchers? They are, after all, the persons who carry on the very process of first formulating causal hypotheses and of then assembling confirming or falsifying experience. In order to assimilate confirming or falsifying experiences

Based on this general knowledge concerning the nature of human actions as opposed to accidents, then, we are in possession of a method which, according to Richard von Mises' frequency theory, we are most definitely *not* allowed to possess if the probability calculus is to be applicable: namely a method of «place selection.» We know of *no* rule how to distinguish one bottle from another as far as breakage is concerned (otherwise they would not be «classed» together). However, for any presumed collective of *action*-events (such as «men watch basketball on TV tonight» or «I watch basketball on TV nightly») we *do* know of such a rule. We do know of a method of decomposing and de-homogenizing every conceivable action-collective ultimately down to its individual elements (such as «American men, teenagers, I, you, Peter, Paul watch

– to confirm, revise or replace his initial hypothesis – the causal researcher must assumedly be able *to learn from experience*. Every positivist-falsificationist is forced to admit this. Otherwise why engage in causal research at all? However, if one can learn from experience in as yet unknown ways, then one admittedly cannot know at any given point in time what one will know at a later point in time and, accordingly, how one will act on the basis of this later knowledge. One can only reconstruct the «causes» of one's actions after the event, as one can explain one's knowledge only after one already possesses it. Indeed, no scientific advance could ever alter the fact that one must regard one's knowledge and actions based on this knowledge as unpredictable on the basis of constantly operating causes. One might hold this conception of freedom to be an illusion. And this might well be correct from the point of view of a scientist with cognitive powers substantially superior to any human intelligence, or from the point of view of God. But we are not God, and even if our freedom is illusory from His standpoint and our actions follow a predictable path, for us this is a necessary and unavoidable illusion. We cannot predict in advance, on the basis of our previous state of knowledge our future state of knowledge and our actions manifesting this knowledge. We can only reconstruct them after the event. Thus, the positivist-falsificationist methodology is simply contradictory when applied to the field of knowledge and action – which contains knowledge as its necessary ingredient. The positivist-falsificationist who formulates a causal explanation (assuming time- and place-invariantly operating causes) for some action is simply engaged in nonsense. His activity of engaging in an enterprise: research, whose outcome he must admit he cannot know in advance because he must admittedly be able to learn, proves that what he pretends to do cannot be done. See on this further Hans-Hermann Hoppe (1987, 1995).

basketball...» and «I watch basketball on Monday, Tuesday, Wednesday....»). This method of place selection – the possibility of devising a method of selecting the elements so as to produce a fundamental change in the relative frequencies of the attributes in question – is called «Verstehen» (understanding).

Ludwig von Mises characterizes this method thus: Verstehen «deals with the mental activities of men that determine their actions. It deals with the mental processes that result in a definite kind of behavior, with the reactions of the mind to the conditions of the individual's environment. It deals with something invisible and intangible that cannot be perceived by the methods of the natural sciences. ... This specific understanding of the sciences of human action aims at establishing the facts that men attach a definite meaning to the state of their environment, that they value this state and, motivated by these judgments of value, resort to definite means in order to preserve or to attain a definite state of affairs different from that which would prevail if they abstained from any purposeful reaction. Understanding deals with judgments of value, with the choice of ends and the means resorted to for the attainment of these ends, and with the valuation of the outcome of actions performed. – The methods of scientific inquiry are categorically not different from the procedures applied by everybody in his daily mundane comportment. They are merely more refined and as far as possible purified of inconsistencies and contradictions. Understanding is not a method of procedure peculiar only to historians. It is practiced by infants as soon as they outgrow the merely vegetative stage of their first days and weeks. ... – ... The concept of understanding was first elaborated by philosophers and historians who wanted to refute the positivists' disparagement of the methods of history. ... But the services understanding renders to man in throwing light on the past are only a preliminary stage in the endeavors to anticipate

what may happen in the future. ... Understanding aims at anticipating future conditions as far as they depend on human ideas, valuations, and actions.»³⁴

Unfortunately, in his characterization of the method of «Verstehen», Ludwig von Mises fails to expressly identify it *as a method of place selection*, which leaves his analysis of the categorical distinction between case and class probability in a less than satisfactory state. However, this shortcoming can be rectified by adding two closely related observations to his characterization of «Verstehen.»

First, it must be added to Mises's characterization that «Verstehen» is reached, and possibly refined, by means of verbal communication (symbolic interaction), whether actual or virtual,³⁵ with the entity exhibiting (or expected to exhibit) a certain behavior or attribute. From this two further elementary insights regarding the distinction between natural (accident) events and action-events follow.

On the one hand, it follows that we have an access to some entities: human actors, that we do *not* have to others such as dice, bottles, stones or the sun. We can communicate with – and hence understand – the former, but not (with) the latter. Accordingly, we can answer questions concerning human actions that are simply unanswerable in the case of natural events. We do not know, and have no way of finding out, *why* dice, bottles, stones or the sun behave the way they do. True, we can refer to natural laws in explaining their behavior. But we do not

³⁴ Ludwig von Mises (1978), p.48.

³⁵ Obviously, one can communicate only with *present* entities; hence, the distinction between actual and virtual communication. As far as *past* – and to some extent also *distant* – entities are concerned, only virtual communication is possible. I cannot engage in actual communication with Caesar, for instance, in order to find out why he crossed the Rubicon. But I can study Caesar's writings and those of his precursors and contemporaries in order to gain some understanding of his time, his personality, and the situation he faced when he made the decision in question.

know why these laws are the way they are. They happen to be this way rather than that, and in this sense the behavior of dice, bottles, stones and the sun is and forever remains unintelligible to us. In contrast, we *do* know, and have a method of finding out, *why* human actors behave in the way they do. Actors have *reasons* for acting the way they do, and we can *understand* these reasons, thus rendering their actions *intelligible events* (rather than mere «happenings»³⁶).

On the other hand, whereas entities such as dice, bottles, stones and the sun offer «equal access» to every observer, i.e., every person is in a position of acquiring the *same* knowledge of, and reaching the *same* success in predicting their behavior, such equality is absent in the case of human actions. To be sure, as a matter of empirical fact one person might be more successful than another in predicting the behavior of dice, bottles, stones and the sun. This may be because one observer possesses cognitive (including mathematical) abilities that another simply does not have or one person has made a new, hitherto unknown discovery. However, *in principle*, no obstacle stands in the way of anyone learning what another knows or has newly discovered about the behavior of such entities. All knowledge and every new discovery regarding them is public, open, and ready to be acquired by everyone.

In distinct contrast, the access to human actors by means of verbal communication is not equal and public but *privileged* and *private*. Each person has a privileged access to himself. That is, in principle each person is better equipped than anyone else in understanding and predicting *his very own actions*, and especially his immediately impending actions. By the same token, because every actor has privileged access to himself, the access to *other* actors – what is called *Fremdverstehen* or the understanding of «strangers» – is private. That is, each

³⁶ See Peter Winch (1970).

«other» or «stranger» may or may not communicate with someone else and reveal more or less about himself. Or put differently, human actors can reveal or keep *secrets*, and their investigators accordingly may know more or less about the behavior of this rather than that person, while entities such as dice, bottles, stones and the sun have no secrets to hide from anyone.

Second, these insights regarding the cognitive accessibility of human actors vs. non-communicative entities immediately lead to the final and decisive conclusion: that «Verstehen» via verbal communication represents a unique method of «individualization.» To be sure, in using a system of spatial-temporal coordinates we can always distinguish one die, bottle or stone from another and likewise one stone-throwing event or one sun rise from another regarding the same stone or sun. But it is precisely our inability of using *any other* method of individualization that makes it possible to form «collectives» or «classes» of different stones and bottles and of different stone throws and sun rises of one and the same stone and sun. That is, only because we are unable to distinguish one die, bottle or stone from another and one stone throw or sun rise from another, *except through their location in space and time*, are we in a position to say, in accordance with Ludwig von Mises's definition of class probability, that everything is known about the relative frequency of specified attributes for a class as a whole and nothing is known about the behavior of a particular entity but that is a member of this class.

In distinct contrast, in the case of human actors communication offers such *other* method of individualization. By means of verbal communication, we are in a position to precisely distinguish one actor from any other actor and one action of a given actor from any other, following action of the same actor. That is, verbal communication represents a method of *synchronic as well as diachronic individualization*.

In synchronic perspective, it is impossible to form any actor «collective» made up of Peter, Paul, John, Jim, etc., because it is manifestly untrue to say that we know nothing about their particular actions but that they are the actions of men, American men or American teenage males, for instance, of which we know the relative frequency of some specified attribute such as buying a six-pack of beer today, for instance. We can communicate with Peter, Paul, John and Jim, and thus find out about *Peter's* value judgments, knowledge and property constraints, *Paul's* value judgments, knowledge and property constraints, *John's*, and *Jim's*. Each of them is faced by *his own* property constraints and has *his own* reasons for acting the way he does.

Likewise, in diachronic perspective it is impossible to form any actor «collective» made up of me and my actions performed over time or of Peter and his actions, because it is also false to claim that I know nothing about my actions or Peter's actions today, tomorrow, in one week or one month from now but that they are *my* actions or *Peter's* actions and I know everything about the relative frequency of certain attributes within the class of all of my actions or all of Peter's actions. To say so is untrue for a twofold reason.

On the one hand, it is untrue because I know more about my actions or Peter's actions today, tomorrow, in one week, and so on, than that they are *my* actions or *Peter's* actions. I know that my and Peter's actions today are the result of my and Peter's *present* value judgments, knowledge and property constraints, and that my and Peter's actions tomorrow or in one week are the result of my and Peter's *future – tomorrow's* and next *week's* – value judgments, knowledge and property constraints. I know further that regardless of the outcome – success or failure – of my and Peter's *present* actions, my and Peter's *future* value judgments, knowledge and property constraints will be *changed* as a result of our present actions, such

that my and Peter's future actions will be performed by a *different* me and a *different* Peter under *different* constraints. Moreover, I know that the change effected in me and in Peter and our circumstances as a result of our present actions cannot be predicted by us in advance but only be reconstructed *after* the event, thus requiring continuously renewed efforts of «Verstehen.»³⁷

³⁷ In contrast to the behavior of non-communicative entities, then, which is time-invariant, human actors vary in time and we must communicate with them again and again in order to predict their actions. If man proceeds, as positivists say he does, to interpret a predictive success as a confirmation of his hypothesis such that he would, given the same circumstance, employ the same knowledge in the future, and if he interprets a predictive failure as a falsification such that he would not employ the same but a different hypothesis in the future, he can only do so if he assumes – even if only implicitly – that the behavior of the objects under consideration does not change over the course of time. Otherwise, if their behavior were not assumed to be time-invariant – if the same objects were to behave sometimes this way and at other times in a different way – no conclusion as to what to make of a predictive success or failure would follow. A success would not imply that one's hypothesis had been temporarily confirmed, and hence, that the same knowledge should be employed in the future. Nor would any predictive failure imply that one should *not* employ the same hypothesis again under the same circumstances. But this assumption – that the objects of one's research do not alter their behavior in the course of time – *cannot* be made with respect to the very subject engaging in research without thereby falling into self-contradiction. For in interpreting his successful predictions as confirmations and his failed predictions as falsifications, the researcher must necessarily assume *himself* to be a learning subject – someone who can learn about the behavior of objects conceived by him as non-learning objects. Thus, even if everything else may be assumed to have a constant nature, man as a researcher cannot make the same assumption with respect to *himself*. *He* must be a different person after each confirmation or falsification than he was before, and it is *his* nature to be able to change over the course of time. See also footnote 33 above. Consequently, whereas in the case of non-communicative entities the meaning of predictive success and failure is unambiguous: success means «so far your hypothesis has not been falsified, thus apply it again» and failure means «your hypothesis as it stands is wrong, thus change it», in the case of human actors the meaning of predictive success and failure is necessarily ambiguous. Because the value judgments, knowledge and property constraints of a given actor can change in the course of time, we might repeat a specific prediction even if it had proved wrong before or change it even if it had turned out right. That is, we can never rest on our past laurels but must always start again fresh and judge the applicability of our past knowledge anew; and hence, we can never accumulate a stock of knowledge that we may blindly rely upon in the future. See also Hans-Hermann Hoppe (1997). pp. 60-61, 73.

On the other hand and by the same token, we cannot say that we know nothing about the attributes of a particular event but everything about the relative frequency of the same attributes for the entire class of my and Peter's actions, because the possible attributes of our actions constitute an «open» or «unending» class. For entities such as dice and bottles, for instance, we know all possible attributes. A throw of a die has six possible outcomes and a bottle can either break or not break. And it is only because the number of possible outcomes is thus «closed», that the notion of a «sufficiently long» series of observations (Richard von Mises) can assume any operational meaning. Only because the number of possible attributes is definite can we reasonably claim that a series of observations has been «sufficiently long» for all attributes having had a chance of showing up and thus allowing us to calculate the relative frequency of any one of them. However, if man can learn in unforeseeable ways and the potential attributes of his actions are open-ended, then no series of observations can ever be considered «sufficiently long», and hence, it becomes impossible to calculate the relative frequency of any given attribute within a class of events.

* * *

This, then, brings us to our final conclusion. Frank H. Knight and Ludwig von Mises are entirely correct in insisting that the use of numerical probabilities is impossible in our daily endeavors of predicting our own and our fellow men's actions. As Richard von Mises, the originator of the frequency interpretation of probability, has unambiguously stated: the application of the term probability to a single event is «utter nonsense.» It is possible to speak about numerical probabilities only in reference to a properly defined collective.

But ontologically, no such collective exists as far as human actions are concerned. Each human action must be considered a unique event, constituting a class of its own. The method of «Verstehen» through verbal communication represents a technique of synchronic as well as diachronic individualization. By means of «Verstehen» each actor (and each group of actors) can be de-homogenized from any other actor (or group) and every given actor (or group of actors) *today* can be de-homogenized from the same actor (or the same group) *tomorrow*. Or in the words of Richard von Mises, «Verstehen» provides us with a «selection rule» which prohibits every use of «relative frequency» statements, because, by definition, *relative* (numerical) frequencies require a class made up of more than just *one* element.³⁸

³⁸ While Ludwig von Mises is exclusively concerned with *probability* statements and the categorical distinction between class probability (risk) and case probability (uncertainty), his analysis can be extended to *deterministic* propositions as well, i.e. to statements regarding which our knowledge concerning their content is *not* deficient such that we *do* know everything which would be required for a definite decision between true and not true. In the same way as there exists a categorical distinction between class vs. case *probability*, so there also exists a categorical distinction between class *determinism* (event- or accident-certainty) vs. case *determinism* (action-certainty). For instance (in synchronic perspective), I am certain about what will happen if a stone is thrown into the air: that it will fall to the ground. In fact, *every* stone will do so, and insofar my certainty extends to every single stone-throwing event. Likewise (in diachronic perspective), I am certain that I will see the sun rise and set in the same constant pattern every day, and insofar my certainty also extends to particular events: to the sun on Monday, Tuesday, Wednesday, etc.. However, despite my certainty regarding the outcome of particular events, it still holds true what Ludwig von Mises defines as the *characteristicum specificum* of class probability: namely, that nothing is known about any particular event except its membership in a given class, while everything is known about the behavior of the whole class of events. The objective probability of the events under consideration, based on long-run frequency observations, is 1; hence, my certainty regarding each singular event. I can be certain regarding each actual, singular event, *because* I am certain about the behavior of the class, but I have no means to distinguish between the singular events. They are homogeneous as far as the attributes in question are concerned. Each singular event is the outcome of the same general (deterministic) law. In distinct contrast are the following examples: I am certain that my left arm will rise in a second. I am certain that I will drink a beer tonight. I am certain that

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I will get out of my bed tomorrow morning. As far as the certainty of these events is concerned, it is no less than that regarding the behavior of stones or the sun. Indeed, one might say that my certainty regarding the former events is even higher than that concerning the latter. After all, the validity of the deterministic laws on which the latter certainty rests is only a hypothetical one, whereas in the former cases it is what one might call a voluntarist-constructivist certainty: I am *making* the events in question certain; their occurrence depends solely on my will (plus the fact that I am not paralyzed, that I am in possession of a beer, that I own a bed, etc.). However, as Ludwig von Mises notes regarding probability statements, just as «case probability has nothing in common with class probability but the incompleteness of our knowledge», (*Human Action*, p. 110) so case determinism (action-certainty) has nothing in common with class determinism (event- or accident-certainty) but the completeness of our knowledge. In every other regard the two are entirely different. For one, whereas I do not know *why* stones and the sun behave the way they do (I may say that they do so *because* of the law of gravitation or the Newtonian laws of motion, but there is no further answer, then, as to the question why these laws are the way they are: they are the way they are without anyone understanding *why* this is so), regarding my own actions (lifting my arm, drinking a beer, getting out of bed) I *do* know their ultimate cause: they happen, because that is the way I want things to be. Moreover, whereas my certainty regarding the behavior of stones and the sun is based on long-run frequency observations (and the fact that these observations have so far revealed only one and the same result, without any exception), my certainty regarding my arm-lifting, beer-drinking, and getting out of bed is solely based on my present understanding of myself and my present circumstances. However, from my certainty regarding this particular case of arm-lifting, beer-drinking, and getting out of bed nothing follows as regards my future acts of arm-lifting, beer-drinking, and getting out of bed. Rather, any certainty regarding any such future acts of mine must be based on another, future act of understanding myself and my circumstances. In contrast, from my certainty regarding the behavior of one particular stone-throw and the behavior of the sun on Monday it follows that I am just as certain about the result of the next stone-throwing event and the behavior of the sun on Tuesday. (Incidentally, apart from these two types of empirical (aposteriori) certainty, there also exists a third type: of logical and praxeological (apriori) certainty.)

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ON HAYEKIAN TRIANGLES

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WALTER BLOCK**

Resumen: El triángulo es una parte integral de la historia del pensamiento económico. Ha sido utilizado por escritores como Jevons (1871), Taussig (1896), Wicksell (1934, 1969) para ilustrar y ayudarnos a comprender la teoría del capital. Desde Hayek (1931) esta figura geométrica se ha utilizado como un instrumento pedagógico básico para explicar la teoría austriaca del ciclo económico. El propósito de este trabajo es sostener que el triángulo es altamente problemático, sino fatalmente defectuoso, por lo que si deseamos que la teoría austriaca del ciclo económico sea comprendida debemos desecharlo completamente, o complementarlo fuertemente con una lista de sus limitaciones. Además, en algunos casos el triángulo ha sido responsable de la relativa falta de desarrollo de la teoría austriaca del ciclo durante un periodo de medio siglo.

Palabras clave: Economía austriaca, teoría del ciclo económico, praxeología, geometría económica, triángulos.

Abstract: The triangle is an integral part of the history of economic thought. It has been used by writers such as Jevons (1871), Taussig (1896), Wicksell (1934, 1969) to illustrate and to help us understand capital theory. Since Hayek (1931) this geometrical figure has been used as a basic pedagogical device to explain the Austrian Business Cycle Theory (ABCT). The purpose of the present paper is to argue that the triangle is highly problematic, if not fatally flawed, and that if ABCT is to be made intelligible this tool of analysis must be either completely jettisoned, or heavily supplemented with a list (see below) of its shortcomings. Moreover in some ways the triangle has been responsible for the relative lack of development of ABCT for over a half century.

Key words: Austrian economics, business cycle theory, praxeology, economic geometry, triangles.

Clasificación JEL: E3, E32.

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A triangle¹ was first employed by Hayek (1931) to illustrate the Austrian Business Cycle Theory (ABCT).² Since then economists have utilized it for this purpose on numerous occasions.³ Hayek (1935, 38-40, footnotes added) states:

...I find it convenient to represent successive applications of the original means of production⁴ which are needed to bring forth the output of consumers' goods accruing at any moment of

¹ Bellante and Garrison (1988, n. 13) state: «Jevons (1970, pp. 229-36) had earlier employed a triangular construction for similar purposes. Attempting to characterize the economy's capital structure in terms of the dimensions of a triangle is what qualifies *Prices and Production* as an outline. In Hayek's more formal – and more formidable – *Pure Theory of Capital* (1941), many of the heuristic assumptions of his earlier efforts were relaxed. This volume was to serve as the basis for a more comprehensive treatment of monetary theory (Hayek, 1941, p. v-vi), but no follow-on volume was ever written.»

Nevertheless, the triangle continues to be used in ABCT; moreover, Hayek's explication in that volume does not deal with most of the issues raised in this paper, and when it does, it leaves much to be desired.

² There had been prior uses of triangles or triangular type relationships with regard to capital theory. Jevons, 230, 231, 237; Taussig, 1896, 23; Wicksell, 1969, 113; 1934, 152, 159 used them for this purpose.

³ This listing is by no means complete, but includes at least the following: Abrams, 1934, 25, 28; Bellante and Garrison, 1988; Block, 1998, 154-157; Cochran and Glahe, 1999, 117; Durbin, 1933, 54; 1935, many pages; Gaitskell, 1933, 285; 292-294; Garrison, 1978, 172; 1994, 110, 112; 2001, numerous pages; 2004, 325, 338; 2005, 476, 481, 496, 498, 502, 505, and 511; Hayek, 1931, numerous pages; 1934A, 154; 1934B, 210, 214, 215, 218, 220; 1939, 10, 27; 1941, 105, 110, 117, 131, 195, 197, 200, 208, 211, 213, 278, 289, 290, 363; 1948, 23, 25, 29, 31, 33, 35; Horwitz, 2005, 21, 22; Huerta de Soto, 1998, 34, 35; Hughes, 1997, 109; O'Driscoll, 1977, 71; Pamini, 2002, 35, 38, 45, 47, 53; Rothbard, 1962, 282, 286, 314; Salerno, 2001, 55; Skousen, 1990, many pages; 1991, 35, 86, 93, 94, 111; Snowdon, Vane, and Wynarczyk, 1994, 357; Wein-Claudi, 1936, pp. 147, 149; White, 1977. Further, Macfie, 1934, 45-103 and Saulnier, 1938, 213-300, focus on the Hayekian triangle, but do not depict it. In addition, there are several authors who utilize triangle-like, or triangle-ish or quasi triangular diagrams, for purposes only indirectly related to ABCT, or, indeed, capital theory; included under this rubric are Boulding, 1966, 675 and Strigl (1934) [2000], 10. The keen reader will note that the name of one of the authors of this present paper appears on this list. It is reasonable that Menger, Bohm-Bawerk, Weiser not be included; they did not concern themselves with the business cycle. But one Austrian who devoted a lot of his thinking to this topic also cannot be found here – Mises. The authors thank Richard Ebeling for aid with this bibliography.

⁴ «When I mean land and labor, I shall speak of *original means of production* (Hayek, 1935, 36, emphasis in original).

time, by the hypotenuse⁵ of a right-angled triangle, such as the triangle [in figure 1].⁶ The value of these original means of production is expressed by the vertical projection of the hypotenuse, while the horizontal dimension measured in arbitrary periods from left to right, expresses the progress of time, so that the inclination of the line representing the original means of production used means that these original means of production are expended continuously during the whole production process. The right side of the triangle represents the current output of consumers' goods. The area of the triangle thus shows the totality of the successive stages through which the several units of original means of production pass before they become ripe for consumption. It also shows the total amount of intermediate products which must exist at any moment of time in order to secure a continuous output of consumers' goods. For this reason we may conceive of this diagram not only as representing the successive stages of the production of the output of any given moment of time, but also as representing the processes of production going on simultaneously in a stationary society.

In either way of interpreting it, the pecuniary value⁷ of consumers' goods⁸ at the moment of sale from the producer(s) to the consumer(s), *C*, is measured along the vertical axis.

⁵ Throughout, we use the term «hypotenuse» to refer to the side opposite the right-angle in any three-sided figure in a Cartesian plane that has such an angle.

⁶ We reproduce Hayek's (1935, 39) figure 1 as our figure 1. The authors thank Gabriella Guevara, a student at Loyola University New Orleans, for the assistance with drawing most of the diagrams in this paper. We have placed all figures in appendix 5.

⁷ The output of consumers' goods at a specific point in time must be taken to mean their pecuniary value. (It certainly cannot refer to the physical output, else we encounter inherently unsolvable problems involved in attempting to aggregate heterogeneous goods. And, of course, we cannot use the subjective values of the goods, if for no other reason than that subjective values are necessarily ordinal and therefore impossible of summation.) Yet that requires that for a specific set of consumers' goods produced using the exact same production processes, the structure of production as illustrated by the triangle not be independent of the price level, however measured, or of the structure of relative prices.

⁸ The triangle is used to illustrate both the production of a particular consumers' good, individually, and also the production of all consumers' goods, collectively.

Interestingly, in the first interpretation, either time (figure 1) or stages of production (figure 2) may be measured along the horizontal axis,⁹ whereas in the second, only stages of production may be measured along that axis (figure 2). The Hayekian triangle, then, is a right triangle located entirely¹⁰ in the first quadrant of a 2-dimensional, Cartesian space.

This paper is concerned only with the first interpretation, as the other necessarily involves the use of stages of production, a concept that is fatally flawed, as is explained in section 10, below.

The triangle may then be constructed such that one terminus of the hypotenuse is at the origin and one leg is coincident with the horizontal axis, terminating at a point, t_1 , for the time at which the consumers' goods are sold. Production commences at $t = 0$ and the value of the goods in process at any time t_1 , where $t_1 > 0$, is measured by the vertical distance between the t -axis and the hypotenuse, thereby illustrating that production is a process that occurs through time, and that the value of the

⁹ Because it is much more common currently to rotate the frame 90 degrees counterclockwise, as is done herein, from the way Hayek did, the quotation from Hayek immediately following this paragraph appears *mutatis mutandis*. Standard procedure in mathematics and science is to put the independent and dependent variables on the horizontal and vertical axes, respectively. However, economists have reversed this in the most important diagrams they use, those representing supply and demand. Hayek's placement is in keeping with this oddity of economics. Garrison (1978) was thought by some (the present authors, for example) to be the first to place time on the horizontal axis and value on the vertical in order to bring this bit of Austrian geometry into greater conformity with conventional graphical depictions, although he did have time flow from right to left in this original figure, rather than vice versa, as is standard, and as he did in subsequent work. However, a footnote must be added to this view that originality can be claimed for Garrison in this regard: for Hayek (1934B, 210, figure 1; 1941 [1975], 175, 184, 189,) and Jevons (1871, 231) before him, placed time on the horizontal axis. Thus, we can amend this bit of history of economic thought and may say instead that Garrison was the first to *consistently* use a triangle for ABCT purposes with time on the horizontal axis. If there is any person who has been most closely associated with the Hayekian triangle, it is Roger Garrison. A Google search of the phrase «Hayekian triangle» yields several pages of cites, most to his work.

¹⁰ But see text accompanying figure 20.

goods in process increases during the production process until it reaches its culmination when the consumers' goods are sold at time t_1 (figure 1). The angle whose vertex is located at the origin reflects the objective rate of discount, itself based upon subjective rate of time preference; i.e., the greater the slope of the hypotenuse the higher the rate of time preference.¹¹ Garrison (2001, 46) states: «Alternatively stated, the slope of the hypotenuse represents value added (by time and factor input) on a continuous basis. The choice of a linear construction here over an exponential one maintains a simplicity of exposition without significant loss in any other relevant regard.» This assumes that, regardless of the type of triangle used, that the value added «by time and factor input» increases with a regularity that is totally alien in the real world.

INTRODUCTION

In this paper we maintain that because of 14 fundamental problems considered below, though not necessarily in the order of importance, the «Hayekian triangle» is a faulty analytical tool. First, at the conceptual level regarding all consumers' goods collectively, the aggregative nature of the triangle is

¹¹ It is well understood that the straight line hypotenuse of the form $C = C_0(1+i)^t$ (figure 1) implies a lack of compounding, and a more correct figure would not be a triangle, but rather a figure in which the hypotenuse was replaced with a concave curve of the form $C = C_0((1+i)^t - 1)$ (figure 3) or $C = C_0(e^{it} - 1)$ (figure 4), as the compounding is discrete or continuous, respectively. The slopes are given by $dC/dt = C_0(1+i)$, $dC/dt = C_0(\ln(1+i))(1+i)^t$, $dC/dt = C_0ie^{it}$, respectively, and, therefore, in each case, provided $C_0, i > 0$, the slope is either a positive constant, or it increases monotonically in t . Hayek (1934A, 153) himself was well aware of the compounding issue referring to the triangle and in subsequent works used a «curvilinear» triangle: «The curvilinear² triangle ABC represents, in the same way as the triangle I used in *Prices and Production*, the stock of capital belonging to processes already completed.» [footnote]²: «The reasons which make a curvilinear triangle of the kind shown in the text a more appropriate representation than the simplified form used in *Prices and Production* are probably obvious.»

problematical. Second, again re all consumers' goods collectively, as with most other aggregative concepts in economics, there is no coherent way to construct a measure thereof. Third, more «round-aboutness» is confounded with more time consuming; i.e., a structure of production with more stages is confounded with a lengthier period of production. Fourth, the period of production inherent in a more complex structure of production is confounded with the period of production that exists during the transition from a less to a more complex structure of production. Fifth, the concept «stages of production» is incoherent. Sixth, the vertical axis represents the value of consumer goods, not consumption. Therefore, what is needed is not a time-structure of production, which is but one of the two types of actions, but rather a time-structure of *action*, to include both types of action; to wit: production and consumption. Seventh, the triangle can be used to account either for goods in process (or circulating capital) *or*, or for fixed capital. It cannot account for both simultaneously, a serious shortcoming as it is intended to be used to explicate the time consuming process of producing consumption goods using heterogeneous fixed capital goods at different points in the process. Eighth, referring to goods in process, the triangle cannot handle post- initiation-of-production infusions of resources. Ninth, when «shifting triangles» are used the time dimension is confused, and this has two baleful consequences. Tenth, the implicit assumption of differentiability regarding the hypotenuse of the triangle is anathema to Austrianism. Eleventh, the triangle model cannot incorporate leisure. Twelfth, the triangle has not been mathematized. As a consequence of these errors, the «triangle» does *not* demonstrate that which it purports to show. Thirteenth, the triangle is the wrong geometrical figure for these purposes; if one must be used, *arguendo*, the trapezoid is preferable. Fourteenth, the triangle ignores durable capital goods. This paper consists of 17 sections. Each of the first 14 is used to consider a different

problem. The fifteenth contains a summary and the sixteenth the conclusions. The seventeenth is given over to three appendices.

1.

THE AGGREGATIVE NATURE OF THE TRIANGLE
IS PROBLEMATICAL

Central to Austrian economics is the fact that man acts in the present in an attempt to bring about a more desirable future¹² than would have obtained had he not acted. Moreover, production is a process in real, historical time through which resources are used to produce consumers' goods. In general, any particular good may be produced in more than one way, and each requires a different period of time from beginning to end. And, during any given time period, a particular good may be produced with a variety of techniques; e.g., a house may be constructed using hammers or nail guns, or both. The exact manner and sequence in which a good is produced may be referred to as its structure of production;¹³ i.e., the structure of production is the configuration of the production process as it occurs through time. It consists in the application of labor, using fixed capital goods,¹⁴ to natural resources, raw materials, and partially finished goods, in specific sequences, until completion of the last actions in the sequence, at which time the production process is completed as the finished good comes

¹² This is true whether the future that is the object of the action is immediate or remote.

¹³ Rothbard (1962, 7) tells a very apropos and charming story of a ham sandwich being produced and consumed at home.

¹⁴ One can think of certain production processes that do not directly use fixed capital goods, but they may safely be ignored without doing harm to the analysis. What we have in mind, here, is not a catalyst. Rather, it is a really simple process such as picking a piece of fruit (say, an apple or a banana) and eating it without using any tools. Even though a catalyst remains chemically unchanged after it works its magic, it would still be a fixed capital good.

into existence.¹⁵ Consequently, the time periods required for the production of a particular good using different structures of production, much less different goods, will differ. It is possible, then, to have different time periods of production for a given pecuniary value of sales of consumers' goods at a specific point in time. That is, a particular triangle represents but one structure of production among alternatives that could be used to produce the same value of consumers' goods at a given point in time.

In figure 5A, $C_1(t_1)$ and $C_2(t_2)$ are identical values of consumers' goods produced in ways that have different time-structures of production; to wit: $C_1(t_1)$ becomes available at t_1 and $C_2(t_2)$ at t_2 . In the former case, we denote the triangle marked 1 (we label the hypotenuses throughout) and in the latter case we refer to the triangle marked 2. Note that the structure of production of 1 is shorter than that of 2, and the area¹⁶ under 1 is less than that under 2, therefore, because the same value of consumers' goods is available in a shorter period of time, it is obviously a superior structure. That is, triangle 1 is superior to triangle 2 since the same level of consumers' goods is available sooner with 1 [$C_1(t_1)$] than with 2 [$C_2(t_2)$] and the sum of the present value of resources that are being, and will be, at each point in time during the production period used to produce that level of consumers' goods is lower in 1

¹⁵ Mises (1966, 479) states: «The total expenditure of time required, i.e., working time plus maturing time, may be called the period of production.»

¹⁶ The area under the hypotenuse is proportional to the sum (over each sub-period of the total period of production) of the present value of the resources used throughout the production process of the consumers' goods. The smaller is the area, then, the lesser is the commitment of resources, in terms of present value, to the production of consumers' goods. But Hayek (1934A, 153) states «The area of the curvilinear triangles $AB'C'$ (referring to figure 1 on his p. 154) shows the stock of capital.» Note that he does not refer to the *value* of the stock of capital, nor yet, even more correctly, to the *present discounted value* of this stock of capital. See Block (1990) for an emphasis on this latter issue. However, Hayek (1934B, 207, emphasis added) refers to «The value of the stock of capital conceived as the *discounted* value of the expected futures products...»

than in 2. And, yet, the slope of triangle 1's hypotenuse is necessarily *steeper* than that of triangle 2. This indicates a *higher* objective-doppelganger (the actual discount rate) of the underlying subjective, social rate of time preference for 1, vis-à-vis 2.

Alternatively, figure 5B illustrates the same point. The same value of consumers' goods, $C_1(t_2) = C_2(t_2)$, can be produced using either of two (2) different structures of production – one that commences on triangle 2 at 0 and the other on triangle 1 at t_1 . Again, the shorter structure, triangle 1 commencing at t_1 , is superior. And, the same result holds referring to the discount rate and rate of social time preference. Namely, that the more efficient or productive structure of production, triangle 1 in both cases, is compatible only with a *higher* rate of interest. This is not only counter intuitive, if flies in the face of standard ABCT. For, it is the *lower* time preference rate that is supposed to indicate a greater reliance on capital, and, hence, greater overall efficiency or productivity of the economy, particularly labor.

The difficulties with aggregation are well known, at least within Austrian circles.¹⁷ How does the triangle measure up to the stringent objections leveled by praxeologists at aggregation in other areas?¹⁸ At first glance, at least compared to the neoclassicals, pretty well. After all, the triangle distinguishes not only between consumption and production, as do all mainstream economists, but also between the different stages

¹⁷ Indeed, this has been taken so far as to have created a debate between Kirzner (1976) and Rothbard (1978) over whether or not even *homogeneous* data, such as money, can properly be aggregated, with the former maintaining it cannot be, and the latter that it can. In our view, the latter was correct. For support of our position, see Salerno, 1994, p. 78, fn. 8.

¹⁸ An important element of ABCT is that it rejects, for example, the neoclassical-Keynesian practice of interpreting capital as a homogeneous blob, and labeling it «K», or some such. In sharp contrast, the Austrian theory disaggregates capital into numerous sub categories, according to its place in the structure of production. That is but one reason why ABCT is superior to macroeconomics based on neoclassical foundations.

of production, which they most certainly do not. But this really cannot pass muster. For *each* of the stages contains a plethora of raw materials, capital goods, semi-finished products, etc. Austrian macroeconomics is properly characterized as a *microeconomic* theory of macroeconomics, but collapsing so many different things into (to be sure) separate levels in the structure of production cannot even begin to approach the usual praxeological emphasis on *individual* behavior.

2.

THERE IS NO COHERENT WAY TO CONSTRUCT A MEASURE OF THE STRUCTURE OF PRODUCTION¹⁹

Consider a set of consumers' goods each with its own triangle (1 and 2 in figure 6).²⁰ In order to arrive at the social structure of production these must be combined in some way. Of the infinite number of possible ways, only two are reasonable prospects: one is to so arrange them that the hypotenuse of each begins at the origin (figure 7A);²¹ the other is for them to

¹⁹ In our present paper, most of the examples concerning the triangle focus on the difficulties of aggregation, as they do in the present section. If we wanted to virtually double the size of the present paper, we could make every point we do regarding the shortcomings of the triangle with regard, also, to disaggregation. That is, it is no more possible to break down triangle 1+2 of figure 7C into its constituent elements found in figure 6, than it is to build up triangle 1 and triangle 2 of figure 6 into their amalgamations shown in either 7A, 7B or 7C.

²⁰ The slope of the hypotenuse of each triangle would reflect the relevant entrepreneur's discount rate. This raises another problem; to wit: as ordinarily a multiplicity of entrepreneurs will be involved in the production of any particular consumers' good, and each may have a different discount rate, inter alia, because they face different risks, and also evaluate any given risk differently. This is true even absent considerations of compounding, the side of the figure opposite the right angle (the hypotenuse) is most unlikely to be a straight line. That is, ignoring compounding, the hypotenuse of the figure for a single good is likely to be a series of connected (straight-) line segments of different slopes (figures 6, 7A and 7B).

²¹ Note that in figure 7A the value of consumers' goods at t_1 consists of $C_2(t_1)$ of goods in process, and $C_{1+2}(t_1) - C_2(t_1) = C_1(t_1)$ of consumers' goods at the time of sale to consumers.

be so arranged that the vertices of their right angles all coincide with that of the good whose right angle occurs at the greatest value of t (figure 7B).²² Even a cursory examination shows that neither of these methods is capable of providing a combined figure that has a reasonable *economic* interpretation.²³ That is, there is no coherent way to combine²⁴ the different triangles for each consumers' good into an aggregate triangle for all consumers' goods.²⁵

There are other ways triangles could be combined into non-triangles (see, e.g., figures 18 and 19), but we shall ignore them as irrelevant to economics. And, there are any number of ways that multiple triangles could be combined into a single triangle,

²² Note that in figure 7B the value of consumers' goods at t_2 consists of $C_1(t_1) + C_2(t_2) = C_{1+2}(t_2)$.

²³ As will be explained in section 9, *infra*, in relation to a different issue, had one to choose between these two methods of superimposing triangles in the same figure, the former is the more correct way for purposes of economic analysis.

²⁴ Even geometrically, what we have done in 7A and 7B is problematic. It was the best we can do, given geometrical limitations in depicting economic reality. To wit, note that in both 7A and 7B what is being combined with triangle 2, in order to derive the triangle we are calling 1+2 is *not* a right-angled triangle. Rather, the ordinate of 1 at every value of t is added to the ordinate of 2 point at the same value of t , in 7A, and it is added to every value of 2, at $t + t_1$ in 7B. The result is as if we combined a triangle with a *greater* than 90 degree (obtuse) angle (at its lower right point, precisely the place where triangle 1 in figure 6 is a right triangle) by making the leg that corresponds to the one that would have been coincident with the t -axis now coincident with the hypotenuse of 2 and the obtuse angle tangent to the hypotenuse at t_1 in 7A and t_2 in 7B. The only way to avoid this, that is to maintain the right angle of triangle 1 in figure 6 when it is combined with triangle 2 (which appears in 7A and 7B exactly as it was in 6) would be to shift 1 upward vertically until its right angle was just tangent to 1's hypotenuse (dotted lines and hypotenuse 1' in figure 7A) or to shift 1 horizontally rightward until its right angle was coincident with that of 2, at t_2 , and then to shift it vertically upward until its right angle was tangent to the hypotenuse of 2 at t_2 (dotted lines and hypotenuse 1' in figure 7B). This, of course, makes no economic sense whatever, as there would then be a vertical gap, in 7A or 7B, between the horizontal leg of 1' and the hypotenuse of 2 the magnitude of which would have to be subtracted from the sum of the ordinates of the two hypotenuses (1' and 2) in order to arrive at the value of C at any point on the t -axis.

²⁵ This is but another example of an insolvable problem arising out of an attempt to aggregate economic data.

7C. Each such triangle has a length (time period of production), t_1 , along the time axis, a height (value of consumers' goods at the time of sale to consumers'), $C(t_1)$ at t_1 , and an area,²⁶ $A = t_1 C(t_1)/2$. To have any even remotely possible economic meaning, these variables would have to be related to their counterpart(s) in the original triangles. And, yet, there is no consistent way to do this. That is, it would be impossible to combine 1 and 2 in such a way that their combination had a time period equal either to that of 1, or 2, or their combined lengths, «1 + 2», and a height equal either to that of 1, or 2, or their combined heights, «1 + 2», and an area equal to either that of 1 or 2, or their combined areas, «1 + 2, » and have an economically plausible interpretation (appendix 1).

And, it should be noted that there is more than one way to produce a specific set of consumers' goods. (Hayek, 1934A, 157) puts it this way: «...any given demand for consumers' goods can lead to methods of production involving very different demands for producers' goods, and that the particular method of production chosen....»

3.

STAGES OF PRODUCTION

V. THE PERIOD OF PRODUCTION

The direct correlation of the number of stages of production with the duration of the production process is a commonplace in Austrian economics. For example, Garrison (2004, 324), perhaps the best-known and most highly respected Austrian macroeconomist now writing,²⁷ clearly equates them: «In its

²⁶ For the economic meaning of the area, see footnote 16.

²⁷ The term «Austrian macroeconomics» herein refers only to the problems considered. It should not be taken to mean that there is an Austrian economics of aggregated variables and/or their averages.

simplest application, the two legs of this right triangle measure consumption [sic] and the corresponding time (reckoned in the number of stages of production) for an economy that has reached intertemporal equilibrium.» See also, Garrison (2001, 47).

As there is no objective way to define a stage of production, unless «stage» is defined as a specific period of time,²⁸ there may not be a direct and consistent relationship between the number of stages and the duration of the production process. Indeed, the number of production stages may even be *inversely* related to production time.²⁹ Moreover, different ways to produce a particular good may involve different numbers of stages, one requiring many short stages and another requiring a few long stages. For example, figure 8A illustrates a few long stages, while 8B depicts many shorter ones.³⁰ Moreover, the same may be said for the relationship between stages and time in comparing the production processes of heterogeneous goods. Therefore, *nothing* may be said about the relationship between stages and time, *a priori*.

One bit of strong evidence for the truth of this contention is uncovered when we look clearly at the dimensions (Barnett, 2004) of the triangle, particularly, the horizontal axis. There, we find T, or time. But we also discover *stages of production* ranged in this direction. That is, a typical triangle will feature four or five production stages, each one of equal width, indicating that they all take up the same amount of time, say, one year, for each of them (figure 9A). However, there is absolutely no reason why each stage should require the same amount of time, regardless of how a stage is defined (figure 9B). Here we can

²⁸ In which case time, not stages, should be used if for no other reason than Occam's razor.

²⁹ For more on this point see appendix 2.

³⁰ Note that t (time), does *not* appear in our figures 2, 8A, 8B and 9. Here, instead of time, the horizontal axis depicts stages of production. On the importance of dimensions in economics, see Barnett, 2004.

see that one and the same axis is in effect being «asked» to perform two very different functions.³¹ First, to measure time, and, second, to depict stages of production. But these are very different dimensions. Each one «deserves» a unit of its own. Just as to solve for two unknowns one needs two equations, so is it true that to perform two completely separate jobs there must be two distinguishable axes. There is only one, however, in the triangle. Is there any possible reconciliation? Yes, if and only if time and stages of production are synonyms for each other. Then, our criticism will fall by the boards. But it simply will not do to assume, in effect, as use of the triangle *de facto* does, that there is no distinction at all to be made between time and stages of production. It cannot be denied that there may, in some cases, be some sort of rough correlation between the two. But to implicitly assert they are the same is incorrect from an economic perspective.

Here is another implication of the triangle as it is commonly used. Consider a given value of consumers' goods at a specific point in time. Compare multiple possible production structures each involving a different period of production: the one that results from the steeper slope (i.e., *ceteris paribus*, implies a *higher* social rate of discount) is the more or most desirable. Why? *Ceteris paribus*, the same amount of consumers' goods will be

³¹ Skousen, 1991, 93, 94, 111 is perhaps the most blatant about committing this fallacy, going so far as to label one of his axes on each of these pages: «Stages (time).» But all of those who employ the triangle (see fn. 2 *supra*) are equally guilty of this logical oversight. Yet a third function given to this axis appears in Bellante and Garrison, 1988: «depth of capital structure.» In a system of linear equations if the number of equations is greater or less than the number of unknowns the system is underdetermined or overdetermined, respectively. In the former case there is no solution; in the latter there may be any number of solutions or no solutions. Only if there are as many equations as there are variables is a unique solution possible. In a geometrical system, each variable is represented along an axis. Therefore, and for similar reasons, one axis cannot represent two (2) different variables – time and stages of production – much less a third, depth of capital structure, unless the three (3) are but one (1) in reality; i.e., or unless the time, stages of production, and depth of capital structure are but synonyms.

available sooner. However, this, also, is problematical. For example, in figure 5B, the hypotenuse of triangle 1 has the steeper slope, which according to standard ABCT is less desirable (it is less conducive to economic growth, because of a higher rate of time preference). And yet that triangle, 1, with a period of production, $t_2 - t_1$, has a shorter period of production (by the amount of time $t_1 - 0$) than triangle 2, with a period of production of $t_2 - 0$, which implies the very opposite. Obviously, if one can acquire the same value of consumer goods with a shorter period of production, *ceteris paribus*, that is more desirable.

4.

THE PERIOD OF PRODUCTION INHERENT
IN A MORE COMPLEX STRUCTURE OF PRODUCTION
IS CONFOUNDED WITH THE PERIOD OF PRODUCTION
THAT EXISTS DURING THE TRANSITION FROM A LESS
TO A MORE COMPLEX STRUCTURE OF PRODUCTION

The triangles are used to illustrate, *inter alia*, a change in the structure of production consequent upon a change in «the» interest rate. We start off with triangle 1, for illustration purposes (figure 10A). A decrease in the interest rate is shown by a new or second triangle (2) that has its vertical height (i.e., value of consumers' goods at the moment of sale to the consumers) superimposed on that of the preexisting triangle. However, 2 is of lesser height. This reflects the reduced value of consumption involved in the increased capital formation caused by the lowered interest rate, which is in turn reflected by a less steep slope of the hypotenuse (the intercept of 2 on the vertical axis, at 0, is higher than that of 1, which intersects it at a negative value). In fact, the combination of the lower vertical height and the less steep slope are drawn such that the horizontal length

is increased; i.e., the hypotenuse of triangle 2 is flattened and the horizontal axis lengthened³² compared to triangle 1.

The key to understanding the problem with all this familiar geometry is to realize that the second triangle is but a *transitory* phenomenon. In fact, changes in time preferences are manifested *not* in a desire to lengthen the period of production, but rather in a willingness to *temporarily* forego some consumption «now» in order to be able to increase consumption in the future. The temporary sacrifice is intended to be just that, temporary, and takes the form of producing relatively more capital goods³³ and relatively fewer consumers' goods,³⁴ *but only for a period of limited duration*. (Were this not so, what would be the *point* of saving?) During the period of sacrifice the structure of production is lengthened. However, it is quite possible, in fact most likely, that once the necessary sacrifices have been made such that the new capital (goods) structure and concomitant period of production are in place, so that all that is required is maintenance and replacement of depreciated capital goods, the new structure will be *shortened* relative to the old; i.e., it is likely that the period is lengthened *only during the transition* from the old to the new, and that thereafter it is, *ceteris paribus*,

³² It is true that the shorter vertical leg and the shallower slope of 2 do not *necessarily* (mathematically) result in a longer horizontal leg. However, it is always drawn that way to illustrate the lengthened structure of production that results from the lowered interest rate. This is probably a consequence of the *assumption* that a reduction in interest rates lengthens the structure of production, instead of the correct understanding, that it alters the structure of production, in ways not necessarily predictable in terms of the length of the structure, which in any case cannot be defined in an economically meaningful and correct way.

³³ And durable consumers' goods; see Mises, 1966, 480.

³⁴ In fact more of both may be produced if idle (in the engineering, not economic, sense) resources, including labor, are brought into production. That is, during this boom which occurs when we move from triangle 1 to 2, whether this occurs naturally, due only to the lowered time preference rates, or artificially, stemming from, say, governmental expansion of fiat currency, leisure will be reduced and idle plant and equipment brought on-line, allowing for increased production of goods at *all* stages of the structure of production.

shortened. That is, there is yet another triangle that replaces the transitory, second one (2). The «final» triangle, the one unseen until now, 3a (we are now on figure 10B), has a greater vertical height and, quite possibly, or perhaps even probably, a shorter horizontal length, 3b, than the original triangle, although 3a is the standard way of portraying it.³⁵ This illustrates that as a result of the temporary increase in production of capital goods and sacrifice of consumption goods necessary thereto, the future is expected to bring a greater value of consumers' goods, and those produced possibly in a shorter period of time.³⁶

In fact, if the two (2) triangles of the standard exposition are superimposed, not with their right angles coincident, but rather so that the hypotenuses intersect the time axis conterminally (figure 11), then it immediately become obvious that triangle 2 *must* be transitory. Why would 2 be preferable to 1, when from the time at which the hypotenuses intersect until the production of the consumers' goods is completed and they are sold to consumers, 1 represents a greater value than 2, especially as the important thing is the value at time of sale to consumers? As well, the goods illustrated in 1 are marketed to consumers *earlier* (t_1) than in 2 (t_2). There must be a third triangle to represent the post transition, 2, period.

Several post triangles are conceivable. That raises the issues of what these triangles look like and what, if anything, may be said regarding their ranking in terms of the quantity of goods sold to consumers and their time period of production. One possibility is that the discount rate returns to its original level after the entire transition process is completed. In that case

³⁵ Garrison (2004, 325) recognizes that triangle 2 in figure 10B is only transitional, but thinks that the third triangle must depict: «a longer consumption [*sic*] leg... and a longer production-time leg...» That is, he thinks the third triangle must look like 3a on figure 10B, and can not look like 3b in that figure. It should be noted that he does not, in that place, or any other that we are aware of, use a figure that includes the third triangle.

³⁶ For more on this, see appendix 2.

(figure 12), 3 must overlay 1 throughout the length of the latter, and then extend even further;³⁷ i.e. it must extend to a point such as x , y , or z , at which point the abscissa is greater than t_1 , and the ordinate is greater than $C_1(t_1)$, indicating that the period of production has been lengthened and the value of consumers' goods at the time of sale has been increased. The reason is that it would be absurd to forego consumption during a transition phase in order to arrive at a situation in which consumption were no greater than it was before the sacrifice, $C_1(t_1)$, and even less if 3 overlays only part of 1; i.e., terminates between 0 and $C_1(t_1)$, at a point such as w .

In other words, if one is at $C_1(t_1)$ before the transition, it would make no sense to suffer the loss during the transition if one ended up only right back at $C_1(t_1)$. Even worse would be to end up at point on the hypotenuse of triangle 1, such as w , closer to the origin than $C_1(t_1)$. Now consider points x , y , and z . If any of them was the intended result of the transition, then it is preferable.

³⁷ This raises an interesting issue. Can a specific structure of production be extended, or for that matter, contracted? That is, for a specific triangle can there be similar triangles? Certainly, from a purely mathematical/geometrical viewpoint they can exist. However, from the economic perspective, we understand that although the triangles are similar, in fact, each would represent a different period or structure or process of production. Then the issue is, does an $x\%$ change in the *length* of the period of production result in an $x\%$ change in the value of consumers' goods at the end of the (new) period of production? Note that although, at first blush, this issue may seem to be the same as that of scale economies, specifically, constant returns to scale, it is not. For it is one thing to ask if changing every input by $x\%$ can, or does, result in an $x\%$ increase in output. But it is an *entirely* different matter to ask about the effects of changing the time period of the structure of production, because an alteration in the time period *necessarily* implies a change in the methods of production. And it is not at all clear that one can change methods, going to a longer or shorter time period, and that output would necessarily change proportionately to the time period change. This is not to say that such a change may be ruled out on praxeological grounds, but only that because different time structures would necessarily involve, at least to some extent, different durable capital goods, it does not seem very likely that such a result would obtain.

Another possibility is that the discount rate does not rise back to the pretransition level. In that case, there are three (3) possibilities: the interest rate rises above that of the transition level, but not to the pretransition level (3a in figure 13); the rate falls below that of the transition level (3c in figure 13); and, the rate remains the same as that of the transition (3b in figure 13), where 3b overlays 2, but extends beyond it). In these cases, also, the period of production would necessarily be increased,³⁸ else the value of consumers' goods would be less than before the transition; i.e., less than before the sacrifice. That is, we would have to end up at a point on the hypotenuse such that the ordinate was greater than $C_1(t_1)$. For example, x on 3a, y on 3b, or z on 3c, so that the value of consumers' goods is greater than $C_1(t_1)$. However, this means that the period of production would have to increase to a length greater than t_1 , as each of these curves, 3a, 3b, and 3c, rises above $C_1(t_1)$ only at a later time than t_1 . Moreover, the increase in consumers' goods would be less than proportional to the rise in the time period required for production. And, the lower the post-transition discount rate relative to the pre-transition rate, the smaller would be the proportion of the increase in consumers' goods to the increase in the time period of production.

The last possibility is that the discount rate rises above the pretransition level. In that case, there are five (5) possibilities (figure 14): 1) the period of production is shortened and the value of consumers' goods at the end of the period is reduced (v on 3) relative to that produced at the end of the pretransition

³⁸ In fact, there is a minimum increase in the time period required in order for the value of consumers' goods produced to attain the pre-transition level $C_1(t_1)$; i.e., the rise would have to be greater than $t_3 - t_1$, $t_4 - t_1$, or $t_5 - t_1$ on 3a, 3b, and 3c, respectively (figure 13). If there is an upward movement, but this minimum increase is not reached, then although the time period will have lengthened, the value of consumers' goods will be less than pre-transition. And, the lower the post-transition discount rate, the greater the required minimum augmentation in the time period.

period of production (j on 1); 2) the period of production is shortened and the value of consumers' goods at the end of the period is the same as that produced at the end of the pretransition period of production (w on 3); 3) the period of production is shortened and the value of consumers goods at the end of the period rises relative to that produced at the end of the pretransition period of production (x on 3); 4) the period of production returns to the same length as that of the pretransition period and the value of consumers' goods at the end of the period is increased relative to that produced at the end of the pretransition period of production (y on 3); and, 5) the period of production is lengthened and the value of consumers goods at the end of the period rises relative to that produced at the end of the pretransition period of production (z on 3). Moreover, the ratio of the pecuniary value of consumers' goods to the length of the period of production is increased. And, the lower the post-transition discount rate relative to the pretransition rate, the greater is the *ratio* of the pecuniary value of consumers' goods to the length of the period of production, relative to the pretransition ratio.

In this section, then, we do not so far have a criticism of the Austrian triangle per se. Everything we have said we were able to illustrate with this geometrical expression. Our criticism of «mainstream» or «classical» Austrianism has so far consisted, merely, of adding a third triangle, 3, to the analysis. That is, we would expect, that over time, the vertical height would rise, reflecting an increase in the value of consumers' goods produced, and the hypotenuse would also become steeper, reflecting the economy's ability to produce consumers' goods more quickly, both devoutly to be desired in terms of improving standards of living.

However, ideally, of course, what we really want is a «triangle» with no horizontal distance at all; it would be extended, only, in the vertical direction. That is, a «triangle» that

would depict a situation in which production occurred instantaneously: one where goods were immediately available, merely upon demanding them, with no structure of production whatsoever needed for attaining these consumer goods.³⁹ This new triangle 3 is but a move in that direction.

Such a situation is illustrated not by a three-sided geometrical structure; rather, it is depicted by a vertical line.⁴⁰ Hence, ultimately, this section of the paper not only rejects the usual Austrian triangular analysis by in effect accepting it only subject to yet a third triangle, but discards the geometry in its entirety, at least ultimately.

5.

THE CONCEPT OF «STAGES OF PRODUCTION» IS CONFUSED

Although the concept of «stages of production» is often illustrated by an example; e.g., mining, refining, manufacturing, distributing, and retailing,⁴¹ this is not analytically satisfactory. These are but arbitrary categories. Any specific production process can be broken down into ever more discrete stages, or combined into fewer of them. The limit to the number of stages is set only by the number of individual human actions involved.^{42, 43} Thus, the number of stages depends upon the

³⁹ One may speculate whether such a situation would constitute a post-scarcity world.

⁴⁰ The height of the line would depend upon productive capacity; i.e., the quantity of resources, the state of technology, and entrepreneurial talent, after due allowance for the negative impact of governmental intervention.

⁴¹ Or, planting wheat, watering it, harvesting it, turning it into flour, baking it into bread, wholesaling and then retailing this foodstuff to consumers.

⁴² The relevant concept here is methodological singularism (Mises, 1966, 44-4). See on this Barnett and Block (unpublished B)

⁴³ Should we add at this point: plus the discrete physical/chemical/biological changes that occur, if in fact any do, between the individual human actions? This

judgment of the individual decision maker⁴⁴ analyst. This is not to deny that the concept may be useful in providing the flavor of production through time, but it is not analytically sound in the sense necessary to be measured along the horizontal axis of a triangle that purports to represent the structure of production from an analytical (in this case, geometrical, and, therefore, mathematical) perspective.

Further, these examples are intrinsically confusing. Consider steel in this regard. If anything «deserves» to be located in an early⁴⁵ stage of production, this item certainly does: it is the backbone of so much else, and these other productions cannot take place until the steel comes along on line. However, steel *also* occurs in *very late* orders of production. Indeed, steel may be found *throughout* the structure of production. For example, it is used pretty much at *every* stage in the production of bread, and its delivery to the final consumer. So, where does steel properly go? At an early stage of production? All though out? Moreover, things that produce steel are in turn produced by steel. For example, the rubber that goes into transportation vehicles is aided by steel, and also dependent upon steel. A similar situation applies with regard to human labor. It, too,

is tempting, but, strictly speaking, not logically implied by the triangle. In addition, there are good and sufficient Austrian reasons for *not* including these considerations: they are not subject to human action. Praxeology is a *subjective* discipline, and, as these chemical, etc. reactions are objective considerations, they do not fit easily, or, indeed, at all, into that world-view.

⁴⁴ «It is important to realize that the period of production as well as the duration of serviceableness are categories of human action and not concepts constructed by philosophers, economists, and historians as mental tools for their interpretation of events. They are essential elements present in every act of reasoning that precedes and directs action. It is necessary to stress this point because Bohm-Bawerk, to whom economics owes the discovery of the role played by the period of production, failed to comprehend the difference» Mises (1966, 480). In effect, it is our contention that Bohm-Bawerk was not the only Austrian economist to make this error; this would include all of those who utilize the triangle (see fn. 2, *supra*) without any of the reservations made in the present paper.

⁴⁵ Not the earliest. Iron and coal go into its creation, and must come beforehand.

appears at every stage. As well, things that promote the creation of human beings are in turn created by them.⁴⁶

6.

WHAT IS NEEDED IS NOT A TIME-STRUCTURE
OF PRODUCTION, WHICH IS BUT ONE
OF THE TWO TYPES OF ACTIONS,
BUT RATHER A TIME-STRUCTURE OF ACTION,
TO INCLUDE BOTH TYPES OF ACTION;
TO WIT: PRODUCTION AND CONSUMPTION

Garrison (2001, 47-49) recognizes this and attributes to Jevons ([1871] 1965, 231) the idea of extending the figure with a consumption right triangle that would share the vertical leg of the production triangle but whose time dimension would extend to the right, indicating that consumption of durable consumers' goods would continue, but at a declining rate, into the future; i.e., from left to right along the horizontal axis (figure 15).⁴⁷ Garrison then states: «Durable consumption goods and durable capital goods are obvious and, in some [*sic*]⁴⁸ applications, important features of the market economy. But to include these features would be to add complexity while clouding the fundamental relationships that are captured by the simpler construction ... Although the allowance for consumption time as well as production time may constitute a move in the direction of realism, there is little to be gained

⁴⁶ It is no accident that Kirzner's (1963, 19) attempt to supplant (see Simpson and Kjar, unpublished) the neoclassical circular flow diagram (Stigler, 6) bears a not inconsiderable resemblance to the structure of production. The point is that if A helps in the creation of B, and the reverse is also true, then the triangle can be converted into something along the lines of a circle.

⁴⁷ These back-to-back triangles might be referred to as a «double triangle.»

⁴⁸ In our view, «some» vastly understates the case as it relates to the contemporary economy, at least in the US.

analytically by replacing the multistage Hayekian triangle with the Jevonsian ...figure.»⁴⁹ We do not at all agree.

To exclude durable capital goods from consideration because they «would ... add complexity while clouding the fundamental relationships that are captured by the simpler construction» is of course unwise. The whole purpose of the triangle is to serve as a pedagogical means to explain ABCT. And yet, for the sake of simplicity of exposition this geometrical model that ignores an absolutely essential element⁵⁰ of that same theory is employed.

Nor, at least with respect to durable capital goods, would Hayek (1935, 40-41, fn. 2) agree:

But as soon as it is tried to use the diagrammatic representations to show the successive transfers of the intermediate products from stage to stage in exchange for money it becomes evidently impossible to treat durable goods in the same way as goods in process since it is impossible to assume that the individual services embodied in the durable goods will regularly change hands as they approach a stage nearer to the moment when they will actually be consumed. For this reason it has been necessary to abstract from the existence of durable goods so long as the assumption is made that the total stock of intermediate products as it gradually proceeds toward the end of the process of production is exchanged against money at regular intervals.

⁴⁹ It should be noted that, although Jevons (1965 [1871], 231) draws his double triangle to illustrate the case of «uninvest[ment]» of durable consumers' goods, Hayek (1975 [1941], 136) draws the same figure (rotated about the horizontal axis and then rotated 90° counterclockwise, although Hayek says it «has here been turned 90 degrees) to illustrate 'disinvestment' of durable goods. As this appears in his Chapter X, *The Position of Durable Goods in the Investment Structure*, it is clear that Hayek understands this disinvestment to be with respect to durable capital goods as well as durable consumers' goods.

⁵⁰ Garrison himself subtitled his magnum opus «The Macroeconomics of Capital Structure.» Additionally he has often referred to ABCT as «capital-based macroeconomics.» How can it make sense to exclude durable capital goods from an analysis of the structure of production?

And (Hayek, 1934B, 208-209)

It is necessary to begin by drawing a clear distinction between the two different ways in which time may be a condition to the production of the ultimate services to the consumer. This distinction between the actual time a process of production lasts and the time through which a product will give its services, to which corresponds the distinction between goods in process and durable goods, is of special importance in this connection... It seems to me, however, that in neither case will one alone of the two concepts provide a sufficient explanation, and that, in particular, the effects of changes in the data can be understood only if the relation between these two concepts is cleared up.

We think it a serious mistake to ignore either durable consumers' goods or durable capital goods for the sake of «simplification», and explicate our analysis and reasons therefore, in Barnett and Block (Unpublished A).⁵¹ This is not to downplay the role of goods in process. It is only to say that both goods in process *and* durable capital goods are of the essence of ABCT.

Moreover, Garrison (2001, 48) labels his production cum consumption triangle: «The structure of production (continuous input/continuous-output).» There are two problems with this. First, regarding the production-triangle part of the figure, on the preceding page (47), he labels a virtually identical,⁵² «continuous input-point output.»⁵³ It seems passing odd that the same figure

⁵¹ One might think that for Garrison the Holy Grail is a simple set of diagrams that can be used to explicate Austrian Business Cycle Theory and that he thinks he has found it with those to be found in his book (Garrison, 2001.) However, there is a difference between simple and overly simple. Austrians understand and appreciate the complexity of the real world, especially at the «macro» level.

⁵² The figures are identical, save that the figure on page 47 refers to stages labeled mining, refining, manufacturing, distributing, and retailing, in addition to early stages and late stages, whereas the figure on page 48 refers only to early and late stages.

⁵³ This is an excellent example of the type of confusion that arises from attempts to use the triangle.

can be used to illustrate two very different concepts of production. The second problem is that the label for the figure on page 48 that contains, also, the consumption triangle, does not refer to the nature of the consumption depicted. Consistency and clarity warrant that the figure be labeled «continuous-input/continuous (or point)-output/continuous-consumption» and not just «continuous input/continuous-output.»

Garrison (2001, 48) also states: «The notion of stages of consumption has much more limited interpretation than the corresponding stages of production. We might think of used-car lots, second-hand furniture shops, and junk shops as separating the stages.» But the concept of stages of consumption is every bit as inchoate as that of stages of production, discussed *supra*, in section 5.

Furthermore, the idea behind the consumption triangle; i.e., that durable consumers' goods both yield their services, and decline in value over time is equally relevant to durable capital goods. This is nothing more than depreciation. And, yet, the ordinate of the hypotenuse of the standard triangle is never decreased to account for this. But this is not surprising, as the triangle is used solely to illustrate the case where the only capital goods are goods in process.

In fact, then, what is required, if triangles are to be used at all, is a Jevonsian style figure (figure 15,) that represents both the time-structure of production, including depreciation of durable capital goods, and the time-structure of consumption, as *both* structures are affected by changes in interest rates (Barnett and Block, Unpublished A), and thus *both* should be part and parcel of the ABCT. Of more importance, the triangle can be jettisoned; this would in no way affect ABCT, as the triangle is merely a pedagogical device, and therefore, this would merely affect the way in which ABCT is explicated. Moreover, it is of great importance that the theory itself be extended to incorporate the concept of the

structure of consumption; i.e., the concept of the structure of consumption must be integrated with the concept of the structure of production into a structure of *action* that, itself, should be an essential element of ABCT (Barnett and Block, unpublished A).

We are all in favor of Occam's Razor (http://en.wikipedia.org/wiki/Occam's_Razor). But this merely states that of two theories, both of which *equally* explain a phenomenon, the simpler one is to be preferred. In the present case, it is our contention that the Jevonsian triangle set is much to be preferred to the Hayekian. For one thing, consumption is every bit as influenced by the interest rate as is production,⁵⁴ apart from the fact that most consumption items are of shorter duration than most producers' goods, and thus the effect is greater in the latter than in the former case. However, some consumer durables (houses in particular) remain in service for centuries, and, in the last few decades, have taken up a higher proportion of GDP than in former years, when ABCT was first being introduced. For another, institutional financial alterations over the past few decades have seen this sector of the economy take on a larger role. It is one thing to jettison so important an aspect of the economy as consumption on substantive grounds. To do so on the basis of convenience, or a misreading of Occam's Razor, is entirely another.

⁵⁴ Consider a factory and a residence that start out at the same value, and last the same 200 hundred years. It is difficult to see why the interest rate would affect them very differently at all.

7.

THE HAYEKIAN TRIANGLE CAN BE USED TO ACCOUNT
 EITHER FOR GOODS-IN-PROCESS
 OR FOR FIXED CAPITAL.
 IT CANNOT ACCOUNT FOR BOTH SIMULTANEOUSLY

This is recognized, implicitly, if not explicitly, in the confusion of time and stages⁵⁵ of production (or consumption).⁵⁶ The appropriate dimension of the horizontal axis is time if we are concerned with goods in process, or stages of production if our concern is fixed capital. However, although the slope of the hypotenuse reflects the interest rate in the case of goods-in-process, there is no such relationship concerning stages of production. In the latter case, it is more appropriate to use a vertical bar chart⁵⁷ than a triangle. Moreover, for purposes of the ABCT, stages, qua stages, are irrelevant insofar as interest rates, and changes thereof, are concerned. Rather, it is *time* that is of the essence where interest rates are concerned.

This is yet another example of «asking» one axis to do the work of representing two very different phenomena. Fixed capital, as its name implies, means preeminently machinery

⁵⁵ Some might argue that it is not possible to increase investment without increasing the number of stages of production in an economy, but that it *is* possible to increase investment without increasing the time that elapses from the beginning of production until the consumption stage. But this is erroneous. Investment can be increased without increasing the number of stages – in essence that is the difference between capital widening (same number of «stages», but each stage producing more value than before), and capital deepening (more «stages»). Figure 16A illustrates capital widening, and 16B capital deepening. For the not totally unrelated concept of «depth of capital structure», see Bellante and Garrison, 1988.

⁵⁶ See section 3, *supra*.

⁵⁷ One might be tempted to assert that the triangle is merely a bar chart, with perhaps very thin bars. Strictly speaking, this is incorrect. A careful perusal of Rothbard (1962, 286) indicates that a triangle with a straight-line hypotenuse *cannot* be constructed by connecting the midpoints of the bars depicted therein. From the web (<http://thesaurus.maths.org/mmkb/entry.html?action=entryById&id=2287>): «A bar chart or bar graph is a way of showing information by the lengths of a set of bars. The bars are drawn horizontally or vertically.»

that «stays put» in its relevant stage of production. Assuming *arguendo* that this makes sense in the first place,⁵⁸ what the pro triangle Austrian economist presumably has in mind is, say, a milking machine that remains in whatever stage of production to which this process is (arbitrarily) assigned. In sharp contrast is the milk itself that gets transformed from its raw state to pasteurized to serve as inputs into ice cream, etc. Here, the good in question does not «stay put» but rather emigrates from stage to stage.

A possible objection to our argument is that it does not matter at all for the ABCT whether a given item moves around through the stages or stays in one place until it depreciates out of existence. Even were this true, this is still a flaw in the triangle, as a depiction of economic reality. But, it is not so. The presumption is that goods like milk have many more alternative uses than do milk machines, which are heavily specialized. Thus, in the downturn, the latter will have to be much more radically written down than the former.

8.

IN THE CASE OF GOODS-IN-PROCESS,
THE TRIANGLE DOES NOT HANDLE POST-INITIATION-
OF-PRODUCTION INFUSIONS OF RESOURCES

That the triangle reflects the interest rate as if there were only simple; i.e., uncompounded interest, is well understood, as is the fact that a more accurate figure would replace the straight line hypotenuse⁵⁹ with a power function (figure 3) to reflect discretely compounded interest or an exponential curve (figure 4) to reflect continuously compounded interest.⁶⁰ However,

⁵⁸ We argue it does not in section 1, *supra*.

⁵⁹ Of course, every hypotenuse is a straight line; we use the redundant term for the sake of emphasis.

⁶⁰ See footnote 11 and accompanying text.

this implies that the value of the goods-in-process increases at a constant rate from the initiation of their production until the fruition of the production process in the form of consumers' goods. Historically, examples given were such as the value of grapes in the field or of uncut trees, or of wine or whiskey in casks, increasing as they matured. These had the advantage of not requiring infusions of other resources⁶¹ once the production process had commenced, and therefore, it could be assumed that the value grew at a constant rate.⁶² However, in anything but the most simple of processes such as these, post-initiation-of-production infusions of resources are the rule, not the exception. In such cases, neither a straight-line hypotenuse nor an exponential curve can accommodate such infusions of value in the form of resources.

In order to capture the effects for the triangle of infusions of resources into the goods in process, the triangle would have to be broken up into segments such that the curve, though continuous would be non-differentiable or non-smooth at the end of each segment. In fact, at each time at which there was an infusion of resources the curve would become vertical. For the length of the vertical segment is equal to the (discounted) value of the resources infused at that point. Then the triangle would look like a step function, with the horizontal parts of the steps sloped upward to the right (figure 17).

⁶¹ In making this statement, we, like everyone else, implicitly ignore the continuing contributions of land, protections against criminal incursions through fences, locks, etc., not to mention the resources used after the end of that part of the process in which «nature took its course. That is, the resources necessary to process the grapes into wine and, after another period of increasing value resulting from 'nature's work', the bottling and marketing of the wine, or after the timber is grown, all the resources necessary to convert timber into lumber and then incorporate, directly or indirectly, the timber into consumers' goods, the resources necessary to bottle and market distilled liquor, etc.

⁶² Even using such examples of relatively simple production processes, it is not at all clear that the relevant values increase at a constant rate.

Take an example. Before the reunification of Germany, both East and West Germany, presumably, had their own separate triangles. Now, they merge. How do we illustrate this via the triangle? One way to do so would be to concoct a much larger triangle. There would be no stupendous problem with this course of action on the vertical axis; we posit, *arguendo*, that the value of consumption of each could be added to the other, and this would eventuate in no more insuperable problems than amalgamating consumption in any other context. However, what of the horizontal axis? Assume for simplicity that both East and West Germany have the same time preference or interest rate, and thus that the angle formed by the hypotenuse and the time axis is the same in each case. Immediately after the political union, but before economic integration occurs and causes any changes in the structure of production in either area, the structure of production of the newly united country may be depicted by simply adding these two triangles together so that the area of the one depicting the amalgamated country is equal in area to the two smaller ones.

Any two right triangles of whatever lengths for the legs and hypotenuse could be added vertically, which would seem to be the only way that makes sense. We can add them in such way that the hypotenuses of both intersect the time axis at the same time, 0, or so that the right angles are coincident (on the time axis). Of course, if they both have the same time dimension, the two methods yield the same result. In this case the figure is the same as that for the case of capital widening, illustrated, e.g., in figure 16A. If they have different time dimensions, then depending upon the assumptions we make, there are four ways they can be added: 1) with their hypotenuses both intersecting the time axis at time 0, as illustrated in another context in figures 6, and 7B; 2) with their right angles coincident at time T, as illustrated in another context in figures 6 and 7A); 3) with neither the hypotenuses intersecting at the same point

on the time axis or the right angles coincident, illustrated in figure 18, or 4), with one both begins *and* ends before the other (see figure 19). In other words, triangle 1 begins at 0 and ends at t_1 ; whereas triangle 2 begins at 0 and ends at t_2 . However when we combine them, we do so in a way that 1 is shifted to the right so far that although it begins before 2 ends, it ends after 2 ends. Note that the part of triangle 2 that extends beyond t_1 has been shifted downward so that it is coincident with the time axis.

All of this just goes to show what nonsense is hidden, or implicit, in the triangles. The foregoing indicates yet another problem with trying to use mathematics when analyzing human action. If both the interest rate and the total (pecuniary) value of consumption; i.e., the combined height of the vertical legs, are to remain unchanged, then we must of necessity extend to the left the horizontal leg of the triangle, e.g., add stages of production *before* the zero time point (see figure 20). But this plain flat out contradicts our assumption that nothing else, economically, has changed. How can it possibly be that, at time zero, the time of unification, because of the unification, magically, new earlier stages of production somehow arise in the past? Nothing can *now* be happening in the *past*, for goodness sakes, even *arguendo*. Rather, *right now*, *before anything economically* has occurred, we must add earlier stages of production, and they must necessarily be in the past. That is, hypotenuse 1 intersects the time axis at 0, the split second in time immediately before production begins. Therefore, at 0, right now, we must add the new stages by extending the hypotenuse to the *left* of 0; i.e., into the past (hypotenuse 2). Behold history is mutable; economics is no longer only forward looking; and, costs are not necessarily sunk anymore! Oh wonder of wonders! What hath the triangle wrought? From whence do these earlier stages of production spring? Basic industries, of the sort thought to occupy the leftward tip of the triangle, do not come into being automatically and instantaneously and *in the past*, and

yet this is precisely what the triangle model requires in the present case.

9.

CONFUSION OF THE TIME DIMENSION

When multiple Hayekian triangles are constructed on the same diagram, invariably the vertical lines representing the value of consumption goods at the moment of sale to the consumer are superimposed upon each other (e.g., figures 5B, 7B, 10A, 10B, 16A, 19, 20, 21, 23, 24, 26, and 27).⁶³ This results in the vertices formed by the time axis and the different hypotenuses occurring at different points on the time axis. This is a backward point of view, whereas economic analysis is necessarily *forward looking*.⁶⁴ The points of coincidence should not be the vertical lines representing the value of consumers' goods. Rather, they should be coincident only at the one place that represents the

⁶³ We added the vertical lines of each triangle to the other in the previous example, but this, to the best of our knowledge, has not been done before in the published literature on the subject.

⁶⁴ Hayek himself apparently was confused on this point. Compare Hayek (1934A, 153, emphasis added):

«The curvilinear² triangle *ABC* represents, in the same way as the triangle I used in *Prices and Production*, the stock of capital belonging to *processes already completed*», with Hayek (1934B, 210, fn 1, emphasis added): «In both cases, however, the periods in question are *future* periods of time. In the first case the period $\text{---}OT_1$ refers to those future moments of time at which the corresponding quantities of 'labour' have to be invested in order to obtain the product at the end of the period, --- while in the second case it refers to the period during which the product of labour invested at its beginning, say the present, will mature.» Now consider Hayek (1934B, 226), «This very widespread impression is due to the fact that the concept of the period of production has generally been interpreted in an historical, backward-looking sense. For this Böhm-Bawerk's manner of exposition is mainly responsible. But, as has been pointed out at the beginning of this article, the essential concept is not the length of the process from which current output results, but the range of periods for which the current supply of factors is being invested», and, Hayek (1934B, 227), «It is for this reason that the backward-looking interpretation of the 'period of production' will always lead to absurd conclusions.»

point in time when each production process *begins*; i.e., they should coincide where the hypotenuse of each intersects the time axis: 0 as illustrated in figures 5A, 6, 7A, 11, 12, 13, 14, 16B, and 21 through 29. The former approach is to look backward from the time of sale of finished consumers' goods to the consumers to the time structure of production that resulted in the consumers' goods. That is fine for history, but incorrect for theory, which is *necessarily* forward looking. The latter approach looks forward from the «beginning» of the production processes.

It should now be obvious that the triangle-as-history approach results in a single *objective* triangle. That is, the specific structure of production that resulted in a particular set of consumers' goods at a certain point in time is a historical reality, regardless of whether any individual is aware of the totality of the facts of that structure. In contradistinction, the triangle-as-future-plan is a *subjective* triangle. Moreover, it is not *one* subjective triangle, but a group of subjective triangles, one for each entrepreneur, in the broad Misesian sense of the term. These cannot be aggregated, no way, no how! Therefore, there cannot be *a single* triangle for the entire economy in any economically meaningful sense. In fact, the very concept of *a* forward looking triangle implies complete coordination among the plans of entrepreneurs' (in the narrow sense), even if they are not coordinated with consumers' plans.

Moreover, if the former approach is to be analytically correct, no matter at what point in time the vertical lines representing the value of consumer goods' coincide, the hypotenuse must extend indefinitely to intersect the time axis only at a point in the deep recesses of human prehistory. This is so because in looking in retrospect at the process of producing a specific set of consumers' goods, we note that in reality the process began not when direct work first began on those particular goods, but rather it began at some point in

antiquity.⁶⁵ For example, in retrospect, we see that a car is made with the aid of a particular, previously-produced machine, itself made with the aid of a yet another particular, previously-produced machine, etc. However, if we use the latter approach, then the point where the different triangles coincide represents the point in time when production of the set of specific consumers' goods would begin using the different processes, including the relevant, extant, resources. In that case, we see that the forward-looking, structure of production has a finite duration.

10.

THE ASSUMPTION OF DIFFERENTIABILITY REGARDING
THE HYPOTENUSE OF THE TRIANGLE IS ANATHEMA
TO AUSTRIANISM

The implicit assumption of differentiability is with respect to the linear function that forms the hypotenuse of the triangle (in the case of simple discounting), or of the exponential function (in the case of continuously compound discounting) or the power function (in the case of discrete compounding) that, respectively, form the analogs of the hypotenuse in a triangular figure. Because these functions are differentiable they are necessarily continuous,⁶⁶ a fact that renders them incompatible

⁶⁵ This is reminiscent of the Austrian solution to the charge that its theory of money argues in a circle. Today's prices depend upon yesterday's, and so on. According to the money regression theorem, the circle is closed when we arrive, backwards, at the time before money was first used, e.g., to a barter system. For more on this see Mises, 1912, 97-123; Mises, 1998, 408-416, <http://www.mises.org/humanaction/chap17sec4.asp>. This is an insightful rejoinder to criticism of Austrian monetary theory, but it is insuperable in the present triangle case.

⁶⁶ Continuity is a necessary, but not sufficient, condition of differentiability. What else is necessary? Why isn't continuity sufficient? The missing condition is that the function must have a derivative at every point. Differentiability implies continuity, but not vice versa. Rothbard's (1993, 638-645) v-shaped cost curve is continuous, but not differentiable, because it does not have a derivative at the vertex.

with praxeology.⁶⁷ Praxeology is the science of human action, and human action is discrete, not infinitesimally divisible. It is not for nothing that Austrians have long inveighed against differentiable curves⁶⁸ in economics – they are incompatible with human action. According to Mises (1996, 12): «Action therefore always involves both taking and renunciation.» He (1996, 44) also states: «No less than from the action of an individual praxeology begins its investigations from the individual action», a principle he refers to as «methodological singularism.»⁶⁹ Action consists, then, in discrete acts of taking and setting aside. Mises (1996, 710 emphasis added) takes note of this problem: «*Even if we assume that [a good] is perfectly divisible and take the unit of [it] as infinitesimal...*» The fact that the relevant curves of the triangle are continuous therefore is highly problematical. Utilizing them, then, is an exercise in enabling the dog of economics to become a tail, and what should be the tail of mathematics (in economics) to become the dog.

⁶⁷ Rothbard (1993, 638-645) made this point very forcefully and dramatically with regard to orthodox U-shaped average cost curves. Given a downward sloping demand curve, tangency is achieved only to the left of the most efficient bottom point of average costs, seemingly implying market inefficiency. He showed that such a conclusion intimately depended upon the assumption of differentiability, which is incompatible with human action. (He did so by using a V-shaped cost curve; i.e., a curve that was continuous, but not differentiable.) However, if differentiable curves (see fn. 65, supra) are anathema in the arena of cost curves, as they are everywhere else in economics, due to their incompatibility with human action, then the same must hold true for the case of the structure of production triangle. It, too, is a smooth curved affair, and must be rejected on that ground alone. See on this, also, Barnett and Block, forthcoming.

⁶⁸ Of course, curves themselves are not differentiable, but the functions that the curves depict are, provided they are continuous over, and have a derivative at every point in, the domain.

⁶⁹ Because the dictionary (OED, 1989) definition of «singularism» is: «A philosophy which explains the phenomena of the universe from a single principle», we think this word choice infelicitous.

11.
THE TRIANGLE MODEL CANNOT INCORPORATE
LEISURE

The height of the triangle at its maximum represents the pecuniary value of consumers' goods at the moment of sale from the producer(s) to the consumer(s). However, as it only includes the value of consumers' goods that have, in some sense, been *produced*, it does not include the value of leisure, the consumers' good par excellence. The structure of production is independent of leisure. This can hardly be correct. Can the production structure of different economies be identical if, with the same time-profile of production, each yields the same set of consumers' goods, but yet they enjoy differing amounts of leisure? As leisure is a (consumers') good, the value of leisure produced⁷⁰ should be, but is not, included in the structure of production.

Is this too great an expectation to place on the triangle? It would appear not, since even so elementary a notion in economics as supply and demand is more than adequate to include leisure into the analysis. For example, the backward bending supply curve of labor (for the individual) is a case in point.⁷¹ In such a figure leisure is the horizontal distance between the 24-hour per day vertical line and the labor supply curve at any real wage.

It should be noted that it is possible that there are multiple structures of production that have the same period of production and the same value of consumers' goods at the end of the production process (figure 21). In that, case the hypotenuses would be different. That raises the issue of which, if any, is

⁷⁰ Leisure is «produced» by not using an actor's time in the production of other goods. As with any economic good, it is the object of action, and has a cost associated with it.

⁷¹ For more on this see Block and Barnett, unpublished.

superior. Because the magnitude of the ordinate at any point in time (the abscissa) represents the *discounted* value of the expected consumers' goods at the end of the period of production, this is measured as the area under the curve. Therefore, the curve under which the area is smallest (2 in figure 21) represents the one with the least value of resources⁷² tied up over the period of production, and, consequently it is superior.

As between any two curves whose periods of production differ, but have the same value of consumers' goods at the end of the day, and which have the same areas underneath (figure 22), the one with the shorter time period (1 in figure 22) is superior, because the goods become available sooner. And, as between any two curves that have the same period of production and the same areas underneath them (figure 23), the one with the highest value of consumers' goods at the end of the period of production (2 in figure 23) is superior.

There are three other cases to be considered:

⁷² Although it is not apodictically the case, in reality such a situation would, in all probability indicate that the curve with the smaller area underneath represents a structure of production with less labor and more leisure. However, the omission of leisure, an absolutely essential type of consumers' good, from the economic analysis based on the triangle, makes it impossible to determine whether any particular triangle is superior to any other. In our analysis we implicitly, and now explicitly, make the admittedly heroic assumption that the value of labor is proportional to the value of all other resources at every point in time during the production process. Therefore, the value of leisure is greater the smaller is the area under the triangle, and vice versa. Because the curves do not take into account leisure, we really cannot say anything about the value or opportunity costs of any of them. A curve might have a shorter period of production with higher a higher value of consumers' goods and a smaller area under it, and yet because leisure is a consumers' good that is absent in the analysis, we cannot draw any conclusions. That is, in the supposedly inferior curve with the higher value of resources tied-up because of a larger area under it, the resources tied-up might be almost totally non-human, so that the missing leisure is very large. Whereas, for the curve with the smaller area under it, almost all the resources might be labor, so that there is almost no leisure. Then the former, apparently less desirable curve might in fact be more desirable. That is, the failure to account for leisure makes it impossible to say anything about the superiority of one curve vis-à-vis another.

- 1) The value of consumers' goods at the end of the production process is the same, and either: a) the curve with shorter time period of production also has the smaller area underneath (1 in figure 24), in which case it is superior to the other; or b) the curve with the shorter period of production has a larger area underneath (1 in figure 25), in which case it is not clear, at least to the present authors, which is superior.
- 2) The time period of production is the same, and either: a) the curve with the higher value of consumers' goods at the end of the production process also has the smaller area underneath (2 in figure 26), in which case it is superior to the other; or b) the curve with the higher value of consumers' goods at the end of the production process has the larger area underneath (1 in figure 27), in which case it is not clear, at least to us, which is superior.
- 3) The area underneath the curves is the same, and either: a) the one with the higher value of consumers' goods at the end of the production process also has the shorter time period of production (2 in figure 28), in which case it is superior to the other; or b) the one with the higher value of consumers' at the end of the production process has the longer period of production (2 in figure 29), in which case it is again not clear which is superior.

It cannot be overly stressed that all this indeterminacy shows the triangle in yet again another problematic light. One would have thought that the way to answer these unanswerable questions is to resort to some sort of utilization of the concept of present discounted value. After all, the question of which is worth more, something smaller available sooner, or something greater, but only available later, is not a question totally unknown in the dismal science. That such a question cannot be answered in general by resorting to the triangle points up

another weakness of this geometrical expression, for economic analysis.

12. THE TRIANGLE HAS NOT BEEN MATHEMATIZED

It is more than passing strange that, if the structure of production can be illustrated by a triangle, it has not been mathematized. Certainly, it is not the triangle per se that is explanatory of the structure of production. In terms of the standard use of this geometrical figure, what is important is the hypotenuse, and only the hypotenuse.⁷³ That is, what is important is the location of each point on the hypotenuse; i.e., the coordinates of each point. Situate a Hayekian triangle (figure 1) such that the hypotenuse intersects the time axis at the origin. Then the vertical leg is unnecessary. The abscissa and ordinate represent, respectively, the elapsed time from the commencement of the production process and the (expected) value of consumers' goods at that point in time. If we assume compound discounting at a rate r , then at any time, t , $0 \leq t \leq T$ (where T is the time when the consumers' goods are sold) the value of consumers' goods, C , is given by: or $C_t = C_0((1 + r)^t - 1)$ or $C = C_0(e^{rt} - 1)$,⁷⁴ as the compounding is

⁷³ Hayek, himself (1935, 41-42, fn. 1) stated: «It is convenient to treat the quantity of intermediate products at any point of this stream as a function of time $f(t)$... In the diagrams used in the text the function $f(t)$ is represented by the hypotenuse, its concrete value $f(x + r)$ by the horizontal side and the integral by the area of the triangle.»

⁷⁴ Note the sterility and deterministic nature of the model: the value of consumption at any point in time, t , depends only upon its value at some initial period, 0 , and the rate of capitalization, i . That is, given the value of the goods in process at some initial time, the value grows at a constant rate until it «matures» at some later point in time when the consumers' goods are sold to consumers. This is all too suggestive of neoclassical growth models.

discrete or continuous, respectively. Certainly, one could place such an equation in a mainstream mathematical model.⁷⁵ But Austrian economists find such models sterile, as well they should. And, for the same reason, they should reject the triangle as sterile.⁷⁶

This is not so much a criticism of the triangle per se as it is an attempt to undermine it at least in Austrian eyes, by linking it to a phenomenon they could be expected to reject out of hand: mathematical model building. Our contention is that had Hayek (1931) *not* couched ABCT in terms of the triangle, but, instead, analyzed it on the basis of the equivalent mathematical equations, while he might have made even greater inroads into mainstream economics, he would have had less effect on how *Austrians* deal with such issues.

13. THE TRIANGLE IS THE WRONG GEOMETRICAL FIGURE

The Hayekian triangle is an «optimal» one in the same sense that the traditional «cost» curves⁷⁷ of microeconomics are optimal. Those curves represent for any level of output of the relevant good(s) the minimum expense of production. In precisely the same manner so do Austrian triangles represent the maximum value of consumers' goods in the production process, whether at the moment of sale or in process, at any point in time. And, just as there are other, unshown, cost curves that

⁷⁵ The only adjustment necessary if the triangle intersects the time axis at a point (t_1) other than the origin, is to modify the function to shift the abscissa accordingly; i.e., $C = C_0((1 + r)^{t-1} - 1)$ or $C = C_0(e^{r(t-1)} - 1)$, as the compounding is discrete or continuous, respectively.

⁷⁶ For more on this, see appendix 3.

⁷⁷ Because costs are subjective, the term «cost» curves is a misnomer and, as a means of pedagogy, the source of much miseducation. More correct is the term «expense» curves. For more on this see: Barnett and Saliba (n.d.).

represent less efficient; i.e., higher cost, ways of producing the same quantities of a good(s), so too are there unshown triangles that represent a smaller value of consumers' goods that could have been produced at any point in time.

A necessary implication of this is that there is an opportunity cost of the value of consumers' goods at any point in time, including 0. As an opportunity cost represents a positive value, the value of consumers' goods as represented by the height of the triangle must be positive. An alternative way to understand this point is that at 0, i.e., right now, there are extant land and labor that have positive value, if for no other reason than that they have alternative uses. A necessary consequence of either approach is that, if a two-dimensional figure is to be used to represent the complexity of the structure of production of an economy, the proper figure is an irregular trapezoid having the shape of a rectangle or square and a right triangle so constructed that one leg of the triangle is coincident with one leg side of the quadrilateral, and the right angle is to the right of the figure (figure 30).

Hayek (1934B, 213-214, see his figure 2 and accompanying text) created a three-dimensional figure that exhibited a trapezoid of the type we described above in our figure 30:

All these apparently rather complicated relationships can be represented in a fairly simple way if we add to the former diagram, which showed only physical quantities, a third dimension, representing the relative value of these quantities. For this purpose we place the figure so far discussed, in the horizontal plane of a three-dimensional system of coordinates and measure the values attached to these quantities along the third (perpendicular) V-axis.

Hayek assumed a linear hypotenuse for the triangle in the horizontal plane; i.e., a triangle in which quantities are measured along one axis and time along the other. And then (1934B, 213):

The value of the total quantity of 'labour'⁷⁸ [footnote added by present authors] invested during the course of the process would be shown by a rectangle with the [length of the hypotenuse in the horizontal (quantity-time plane) representing the number of units of 'labour,' as a base, and ...the value of a unit of 'labour,' as its height.

Because he assumed that the labor is not invested all at once, but continuously throughout the period of production, the rectangle is projected onto the time-value plane. Hayek (1934B, 214) then states:

The value of any unit of 'labour' will have to grow, while it remains invested, at the same compound rate of interest. This rate is shown by the curve T_0T_1 , and the family of identical curves beginning along T_0L_1' forming together the interest surface $T_0T_1'L_1'$.

But the curve T_0T_1 in Hayek's figure 2 is but one side of a quadrilateral, $OT_0T_1'T_1$, in the time-value plane that has the shape of an irregular trapezoid formed by a rectangle as base and on top of it the leg of a curvilinear, right triangle that is parallel to the time axis coincident with the leg of the rectangle that is parallel to, but situated above, the time axis. We repeat this figure of Hayek's as our figure H2.

Thus even on its own grounds, the triangle is highly problematical. The point we are making here is not that the trapezoid is safeguarded from the criticisms we have above launched at the triangle itself. Rather, it is that *even if*, *arguendo*,

⁷⁸ «'Labour' stands here and throughout this article for an assumed uniform original factor of production. Intermediate and final products are represented in such units as are the production of a unit of such 'labour,' so that each ordinate of the curve $0L_1'$ measures the quantity of intermediate product at the respective stage of production, while the final output, obtained at the end of the period OT_1 is equal to T_1L_1' , or the total quantity of labour applied in the course of the process» (Hayek, 1934b, 209-210).

none of these above mentioned criticisms were valid, still, the triangle would not be the appropriate geometrical figure with which ABCT can best be illustrated. Instead, it would be the trapezoid. The *only* circumstance under which the triangle itself, not the trapezoid, would suffice would be if we were to go back to the very beginning of mankind, when we had literally *nothing* in the way of tools, semi finished products. If evolution is correct, even this is impossible, since there were ape-men like creatures before our direct ancestors came upon the scene, and they could not have survived with a *zero* amount of capital, etc., as is depicted at the point where the hypotenuse hits the origin. Even if evolution is incorrect, and the bible story is true wherein Adam and Eve were abruptly cast out of the Garden of Eden, it cannot be the case that these two started out with absolutely nothing. They had, after all, some modicum of human capital, skills, etc. After all, they did eat from the Tree of Knowledge, so they had some knowledge as to how the world works. That is, from an Austrian point of view, there were always the original factors of production, labor and land, *plus* durable capital goods and semi finished consumers' goods.⁷⁹

⁷⁹ A possible objection to our thesis that the trapezoid, not the triangle, is more compatible with ABCT goes as follows: «We do not need the trapezoid, the triangle will do just fine, because the latter already takes into account the phenomenon that the square part of the trapezoid is supposed to incorporate. For example, in figure H1 the original means of production are continually being added to the intermediate products. True, the intermediate products start off at zero at the top of the triangle, but this does not at all apply to the original means of production.» This objection misses our point. In our view, the difficulty does *not* concern the original means of production. Rather, it involves intermediate products and durable capital goods that can *never* be literally zero, as depicted on the triangle. Even apes use sticks to get honey; even birds use twigs to build nests.

14.
IGNORES DURABLE CAPITAL GOODS

Another fundamental problem with the triangle is that, because it ignores durable capital goods, it confounds an increase in capital and capital goods with a lengthening of the capital structure. If the only capital goods one has are goods in process and the only output of final (as distinguished from finished) goods is consumers' goods, then the only way to depict an increase in capital goods during the transition phase using the triangle is to lengthen the time dimension. This is because during the transition, capital is formed by shifting resources from action in the later part of the period of production to action in the earlier part. As this occurs, fewer consumers' goods (by value) are completed and more are started, in processes of longer duration. That is, the situation changes from triangle 1 to 2, with 2 having a lower height at the point of sale to consumers (figure 31A or 31B). Now, unless the triangle is lengthened, and that by an amount large enough to more than counter the decrease in consumers' goods at the point of sale to consumers, the resultant triangle would depict fewer capital goods during the transition than before. What is never discussed when one focuses on these triangles is the fact that an increased period of production requires a new structure of production. Because we have no durable capital goods, but only consumers' goods in process, that means the only resources are the original factors of production, land and labor; thus, there must be alternative ways to produce consumers' goods using only these resources.

The inadequacy of this approach may be illustrated by introducing two new geometric figures: an irregular trapezoid (figure 32A), and another triangle (figure 32B). The trapezoid represents durable capital goods in the same way that the triangle represents goods-in-process. The ordinate of the

trapezoid represents the value of the stock of capital goods at any point of time during the period of production. That it is less at t_1 than at 0 indicates that some of the capital stock depreciated during the production period. The additional triangle represents the production of new durable capital goods; i.e., investment. So as the ordinates of each of the triangles in figures 31A and 31B represent, at any time, the value of consumers' goods in process up to and including the point of sale to consumers, the ordinate of the triangle in figure 32B represents at any time, the value of capital goods in process up to and including the point of sale to businesses.

We are now in a position to see why Hayek's (1934B, 231) statement: «That anything which will tend to lengthen this investment structure of current labour will lead to increases of the quantity of capital and anything which tends to shorten it will lead to a reduction of capital, remains a point of fundamental importance» is incorrect. A reduction in the production of consumers' goods in order to form capital can now be depicted by a consumers' goods triangle (2 in figure 33A that is the same length, representing the same time period, and structure of production, but that has a smaller height than the original consumers' goods triangle (1 in figure 33A). This indicates that the same production processes are being used to produce the same set of consumers' goods only in lesser amounts, because resources have been shifted from the production of consumers' goods to production of durable capital goods.⁸⁰ At the same time the increase in the production of durable capital goods can now be depicted by a capital goods triangle (2 in figure 33B) that is the same length, representing the same period, and structure of production, but that has a greater height than the original capital goods triangle (1 in figure 33B). This indicates that the same production processes

⁸⁰ For an explication of this point see appendix 4

are being used to produce the same set of durable capital goods only in greater amounts, because resources have been shifted to the production of durable capital goods from production of consumers' goods.

In this section we use four figures, one each for consumers' goods in process, including initial stocks thereof (34A), the stock of consumers' durable goods (34B), the stock of durable capital goods (34C), and capital goods in process, including initial stocks thereof (34D), in a consideration of some further implications for illustration of capital theory by means of 2-dimensional plane geometry.⁸¹ If we analyze them jointly we see that at the beginning of the period of production, there are extant stocks of: 1) durable consumers' goods, $CD(0)$ in figure 34B; 2) durable capital goods, $K(0)$ in figure 34C; 3) consumers' goods in process, $C(0)$ in figure 34A;⁸² and, 4) capital goods in process, $I(0)$ in figure 34D.⁸³ At the end of the period of production of consumers' goods there is a stock of consumers' goods at the point of sale to consumers, $C(t_1)$ in figure 34A. Also, there is a stock of new capital goods at the point of sale to businesses,⁸⁴ $I(t_1)$ in figure 34D. Moreover, during the period of production, 0 to t_1 , because of consumption, the initial stock of durable consumers' goods has decreased from $CD(0)$ to $CD(t_1)$ in figure 34B,⁸⁵ and, because of depreciation, the initial

⁸¹ It is important, nay, critical, to remember that the values of any variables, including the times at which the pecuniary values of goods are evaluated, are, at any and all periods or points in time post 0, *expected* values.

⁸² An absence of an initial stock of consumers' goods in process could be depicted by changing the quadrilateral in figure 34A to a triangle by shifting $C(0)$ to the origin.

⁸³ An absence of an initial stock of capital goods in process could be depicted by changing the quadrilateral in figure 34D to a triangle by shifting $I(0)$ to the origin.

⁸⁴ This includes the case where some business(es) that produce capital goods «sell to themselves;» i.e. retain for their own use, some of the newly produced capital goods.

⁸⁵ Consumption (CN) during the period from 0 to t_1 is given by $CN(t_1-0) = CD(0) - CD(t_1)$.

stock of durable capital goods has decreased from $K(0)$ to $K(t_1)$ in figure 34C.⁸⁶

Furthermore, the stock of consumers' durable goods extant at 0 will be consumed over the period 0 to t_3 and the consumption goods in process at 0 will be completed and sold to consumers at t_1 and consumed over the period from t_1 to t_2 . The stock of capital goods extant at 0 will be depreciated over the period 0 to t_4 and the capital goods in process at 0 will be completed and sold to businesses at t_5 and depreciated over the period from t_5 to t_6 . A little reflection on the relationships among $t_1 - t_6$ should convince us that the triangle cannot be used to depict anything remotely relevant to a real-world, capital-using economy, especially if that world includes not only durable capital goods, but durable consumers' as well, and, a fortiori if it is supposed to illustrate an equilibrium state of some sort; e.g., an evenly rotating economy.

That is, if nothing else, for the triangle is to accommodate durable consumers' goods it is necessary that their economic lives would have to be exactly equal to the period of production of consumers' goods in order that the newly produced consumers' durables replace exactly those consumed during the period of production.⁸⁷ Did they not, the sum of the remaining units of the initial stock of durable goods plus the new production would, at t_1 , either be greater than or less than the initial stock at 0. But if a single triangle cannot depict an equilibrium situation, how much less can it depict a real-world situation in a continuous state of adjustment in disequilibrium?

⁸⁶ Depreciation (D) during the period 0 to t_1 is given by $D(t_1-0) = K(0) - K(t_1)$.

⁸⁷ The only alternative would be if the durable consumers' goods were of the nature of a homogeneous or fungible stock such that depreciation would be in terms of quantity only, and not in terms of quality, in which case the economic life of the stock would have to be some exact multiple of the period of production of consumers' goods.

Moreover, the same relationship would have to exist, *mutatis mutandis*, between the depreciation of extant stock of durable capital goods at 0, and the production of new durable capital goods.

Finally, not only would the period of production of new consumers' goods and the period of consumption have to be identical, say t_1 , and the period of production of new capital goods and the period of depreciation to be identical, say t_2 , but they would have to be equal to each other. A miracle to behold! Will wonders never cease?

This section so far might be misread to indicate not that geometrical representations of ABCT are highly problematic, but that, instead, they can be saved with the judicious use of the trapezoid. Nothing could be further from the truth. The other 13 objections to this method are still in force. The burden of the present section is a more modest one: to show yet another flaw in the utilization of geometry to shed light on ABCT, not to try to salvage the triangle.

15.

SUMMARY

Hayek pioneered the use of the triangle to explain the ABCT. Subsequently, it has been widely adopted by other Austrian economists as a pedagogical device. The triangle is an aggregative concept. Because of their correct focus on the actions of individuals, Austrians are constantly on the alert for the instances of the misuse or abuse of aggregation in economic analysis.⁸⁸ The triangle, however, is one such case where they

⁸⁸ It is not, however, as if Austrians reject the use of any and all aggregative concepts. Rather, in those instances where they do use them, it is because, after due consideration, they have been found to advance economic analysis and understanding. For example, they do, of course, make use of such concepts as the market demand for, and supply of, a particular (homogeneous) good, themselves aggregative concepts. See fn. 17 *supra*, for further discussion of this issue.

have failed either to realize that it is an aggregative concept or, in the alternative, to realize that the number and nature of the flaws render the concept highly problematic, even to the point of being detrimental.

Each individual consumers' good has, at a minimum, one structure of production, understood as the exact manner and time pattern in which any specific good is produced.⁸⁹ Associated with each such structure is a specific time sequence in which the value of specific resources enters into the production process.⁹⁰ Even if we assume that the appropriate discount rate for each process, and, therefore, each time sequence of production for the same good is identical, their time profiles can, and almost certainly do, differ; i.e., one process for producing X starting at a particular point in time in a specific economic environment will necessarily involve some differences in the nature, type, sequencing and timing of resources than that for another. Therefore, the production triangle for every production process for good X will be different from that of every other such process. Moreover, even if, per impossible, each began at the same time, $t = 0$, there is no reason to think that the duration of each process would necessarily be identical.

⁸⁹ The structure of production is the configuration of the production process as it occurs through time. It consists in the application of labor, using fixed capital goods, to natural resources, raw materials, and partially finished goods, in specific sequences, until completion of the last actions in the series, at which time the production process is completed as the finished good comes into existence and is placed into the hands of the consumer. For an eloquent explanation of this latter claim, see Kirzner (1973).

⁹⁰ In addition, the precise method will, except in most unusual cases that may be ignored as irrelevant, involve a set of more or less durable capital goods. Because the significant aspect of production insofar as interest rates and changes thereof are concerned is the time element, two factors are of decisive importance: the length of time during which the value of a specific resource is expected to be tied-up in the production process before it is realized through sale of the consumers' good, and the number of units of the consumers' good the resource is expected to contribute to the production of, over the expected economic life of the resource. For more on this point, see Barnett and Wood (2002, 29-30, n.12).

The production of two different bicycles might start out concurrently; there is no guarantee they will be finished simultaneously. One might languish at the retailer long after the other is purchased. Consequently, even if each triangle were to start from the same point on the time axis, each could well end at a different point on that axis. If, then, we were to add these triangles in the value dimension at any given point we would be adding values of finished consumers' goods to the value of partially completed consumers' goods; i.e., resources, with results that are confused, to say the least. And, the problem is only magnified when we aggregate to the economy-wide level by adding not only the different production triangles for the same consumers' good, but production triangles for all other consumers' goods as well. Moreover, this problem is exacerbated because production of different goods of course commences at different times.

Further, because of the ubiquity of durable consumers goods, an analogous concept, the structure of consumption, and its attendant time sequence, is also necessary for each individual consumers' good if we are to understand the functioning of a modern economy. Again, each individual consumers' good has, at a minimum, one structure of consumption, understood as the exact manner and sequence in which any specific good is consumed.⁹¹ Associated with each such structure is a specific time sequence during which the value of the specific consumers' good is realized.⁹² Even if we assume that the appropriate

⁹¹ The structure of consumption is the configuration of the consumption process as it occurs through time. It consists in the use of leisure, using durable and non-durable consumers' goods, in specific sequences, including periods in which the consumers' good is «idle;» i.e., not being consumed, until the economic life of the relevant consumers' good comes to an end, at which time the consumption process is completed.

⁹² In addition, the precise method will, except in most unusual cases that may be ignored as irrelevant, involve a set of more or less durable consumers' goods. Because a significant aspect of consumption insofar as interest rates and changes thereof are concerned is the time element, two factors are of decisive importance: the length of time during which the value of a specific consumers' good is expected

discount rate for each consumers' good, and, therefore, each time sequence of consumption for the same good is identical, their time profiles can, and almost certainly do, differ; i.e., one process for consuming X starting at a particular point in time in a specific economic environment will necessarily involve some differences in the nature, type, sequencing and timing of complementary consumers' goods. Therefore, the consumption triangle for every consumption process for good X will be different from that of every other such process. Moreover, although each might begin at time $t = 0$, there is no reason to think that the duration of each process would necessarily be the same. Consequently, if each triangle were to start from the same point on the time axis, each could well end at a different point on that axis. The problem is only magnified when we aggregate to the economy-wide level by adding not only the different triangles for the same consumers' good, but consumption triangles for all other consumers' goods.

Finally, imagine the «triangle» that results from adding huge number of different production cum consumption triangles in an economy. The resultant figure, of indeterminate shape, is impossible to interpret and absolutely incomprehensible.⁹³

16.

CONCLUSIONS

Although the two authors agree, fully, with the critique of the triangle in ABCT offered above, they sharply differ as to their assessment of its overall value and usefulness for pedagogy. They also diverge in terms of nostalgia for the triangle, on the basis of which both were first introduced to ABCT.

to be tied-up in the consumption process before it is entirely realized at the expiration of its economic life, and the number of times it will be utilized over its expected economic life.

⁹³ For more on this see appendix 3.

Here is a statement on this matter from the second listed co-author:

In the early days (Hayek, 1931, 1939, 1941, 1948; Rothbard, 1962), this geometrical figure was utilized with time on the vertical axis, and dollars on the horizontal. Starting with Garrison (2001), this practice has been reversed. But, no matter how it has been drawn, it cannot be denied that the triangle has played a pivotal role in ABCT. And not only for illustration, heuristic or even teaching purposes. The structure of production triangle has also enabled generations of Austrians to think more clearly about macroeconomic issues.

One clear advantage of the structure of production triangle is that it tends to make ABCT more accessible to mainstream macroeconomists.⁹⁴ In fact, it is no exaggeration to say that without paraphernalia of this sort, neoclassical economists, for whom geometry and mathematical expressions are veritable mother's milk, would tune out virtually completely. No one would argue that ABCT has taken the profession by storm. However, it is my claim that without putting this perspective into language most economists respect, and thus can be enticed to read, praxeology has made inroads which would otherwise have been denied to it.

A bit of evidence in support of this contention is the success of Garrison (2000), both the person and that particular book, in explicating ABCT. Another is the fact that Hayek won the Nobel Prize (in 1974), and did heavily utilize this technique (1931, 1939, 1941, 1948), while there were others,⁹⁵ who at least

⁹⁴ The socialist Abrams (1934, 25) stated: «This and the similar diagram that follows are taken from Prof. Hayek's 'Prices and Production.' Indeed, this whole general analysis is based upon his work. It is almost unnecessary at this date to add that no discussion of money, no matter how humble or ambitious its scope, can hope to achieve any worthwhile results unless it uses the machinery that Prof. Hayek has so brilliantly put at the disposal of English-speaking students in the last few years.» Richard Ebeling supplied this quote, for which we thank him.

⁹⁵ Mises (1912) comes to mind.

some would say contributed even more to ABCT than him, who did not. I am of course not going out on a limb, very far out on one, and claiming that Hayek won this prize because of his diagrams, and that Mises failed to do so for lack of them; this is not at all my view. However, in attempting to make the positive case for the triangle in ABCT, I would be remiss did I not even mention this fact.

Another point on the credit side of the ledger for the triangle is that ABCT is rather complex. Not for praxeologists the simplicity of the Keynesian cross diagram. Sometimes, and this includes the best of us, we zig when we should zag in our explication of ABCT. The triangle is a very valuable heuristic device even for those of us who have been weaned on this theory many years ago. Even though the present paper discusses numerous difficulties with this device, and serious ones at that, I do not recommend a complete jettisoning of the triangle. When used with full knowledge of its drawbacks, it can still have some, albeit, limited, advantages.

Here is a statement on this matter from the first listed co-author:

In sum, the Hayekian triangle is not so much simple as it is simplistic, which should not come as a surprise as it is an attempt to illustrate the immeasurable complexity of a real world economy with a simple aggregative structure such as the triangle, or, in slightly more advanced mathematical terms, with a single 2-variable function. Regrettably, the Hayekian triangle is fatally flawed, and is of no use whatsoever. It should be jettisoned on the part of all serious researchers. It should be of interest only to antiquarians.

Moreover, it is fatally flawed not only regarding research, but also as a pedagogical device. I say this because, though it may assist some in understanding ABCT, bad habits are hard to break, and if future professional Austrian economists, especially those who go on to study for the Ph.D. first learn

ABCT by means of the triangle, it will be that much harder for them to develop a correct and complete understanding of the structures of production and consumption. This will hinder them as scholars and lead to a lessened interest in ABCT, resulting in a continuation of what I think has been a neglect of the theory in terms of development thereof. Furthermore, it alienates mainstream economists who, supposedly are good mathematicians,⁹⁶ and rightfully can make no sense of it. If the purpose is to attract the mainstream then the «Hayekian triangle» should be abandoned in favor what might be called the «Hayekian function.» At least then they could make enough simplistic assumptions to make the function differentiable, so that they could use their favorite analytical tool – calculus – to assist them in understanding ABCT.

Thus we see that the «triangle» leaves no room for entrepreneurs, uncertainty, and the heterogeneity of the real world. But these are essential elements of Austrian economics and any theory of the business cycle that claims to be Austrian must include them; e.g., clusters of entrepreneurial mistakes. The triangle then, being an attempt to capture, mathematically, the highly complex and dynamic realm of the incalculable number of real world interactions of vast numbers of individual human beings, is absolutely incompatible with Austrian economics; it was a mistake from the beginning, and should be an abandoned.

⁹⁶ But appearances can be deceiving. For an argument that mathematical sophistication is wanting on the part of many mainstream economists, see Barnett (2003 and 2004).

17.

APPENDIX 1

Consider two right-triangles (in the first quadrant of a Cartesian plane) 1, with legs a and b , and 2, with legs c and d , (figure 35), that are to be combined into a third, 3. Let them both have one leg (a for 1, and c for 2) along the x -axis and the other leg be parallel to the y -axis, with the hypotenuse of each having one terminus at the origin.

Then the area of 1 (A_1) is $ab/2$ and the area of 2 (A_2) is $cd/2$, and the combined area is $(ab + cd)/2$. The abscissa of 3 must be either a , c , or $a + c$, and the ordinate either b , d , or $b + d$. Thus there are nine possible areas for 3 (A_3):

	B	d	$b + d$
a	$A_3 = ab/2$	$A_3 = ad/2$	$A_3 = (ab+ad)/2$ OK only if $a = c$
c	$A_3 = bc/2$	$A_3 = cd/2$	$A_3 = (bc+cd)/2$ OK only if $a = c$
$a+c$	$A_3 = (ab+bc)/2$ OK only if $b = d$	$A_3 = (ad+cd)/2$ OK only if $b = d$	$A_3 = (ab+ad+bc+cd)/2 =$ $A_1+A_2+(ad+bc)/2$ $A_3 = A_1+A_2+(ad+bc)/2$

Consider these cases numbered from left to right, then top to bottom:

- 1) $A_3 = ab/2$; but $ab/2 = A_1$; therefore unless $A_2 = 0$; i.e., unless triangle 2 is non-existent, $A_3 < A_1 + A_2$;
- 5) $A_3 = cd/2$; but $cd/2 = A_2$; therefore unless $A_1 = 0$; i.e. unless triangle 1 is non-existent; $A_3 < A_1 + A_2$;
- 3) and 6) $A_3 = (ab + ad)/2$ or $A_3 = (bc + cd)/2$; in either of these cases $A_3 = A_1 + A_2$ only if $a = c$. That is, the period of production for triangles 1 and 2 would have to be the same;

- 7) and 8) $A_3 = (ab + bc)/2$ or $A_3 = (ad + cd)/2$; in either of these cases $A_3 = A_1 + A_2$ only if $c = d$. That is, the value of consumers' goods at the point of sale the consumers would have to be the same;
- 9) $A_3 = (ab + ad + bc + cd)/2$; but $(ab + ad + bc + cd)/2 = A_1 + A_2 + (ad + bc)/2$; therefore unless at least one (1) of a , or b , or c , or $d = 0$, $A_3 > A_1 + A_2$. At best that would mean either triangle 1 or triangle 2 was non-existent; at worst, both;
- 2) or 4) $A_3 = ad/2$ or $A_3 = bc/2$; these are essentially the same in that $A_3 + A_1 + A_2$ requires that the ratio of the period of production of the first triangle to that of the second plus the ratio of the value of consumers' goods at the time of sale to the consumers of the second triangle to that of the first must total to one (1), regardless of whether 1 or 2 is taken to be the first triangle, and the other, the second.

Thus, although mathematically possible, it is economically implausible, to say the least, that two or more triangles can be combined.

APPENDIX 2

Perhaps the confusion concerning the relationship between stages of production and the temporal length of the production process is a consequence of the following statements by Bohm-Bawerk, Mises, Hayek, Rothbard, and Garrison.

First, Bohm-Bawerk:

The lesson to be learned from all of these examples is quite clear. It is to the effect that roundabout methods are more fruitful than direct methods in the production of consumers' goods. And as a matter of fact, this greater fruitfulness manifests itself in two ways. Whenever a consumers' good can be produced either by direct or by indirect methods, superiority of the latter

is demonstrated by the fact that the indirect method either turns out a greater quantity of product with the same quantity of labor or the same quantity of product with a smaller quantity of labor (Bohm-Bawerk, 1959, 12).

The disadvantage which attends the capitalist method of production consists in a *sacrifice of time*. Capitalist roundaboutness is productive but time consuming. It yields more or better consumption goods, but not until a later time (Bohm-Bawerk, 1959, 82).

It is true that Bohm-Bawerk notes that:

Exceptional cases may occur in which a roundabout method is not only *better* but also *quicker*... But that is not the rule. In an overwhelming majority of cases, the adoption of circuitous methods imposes conditions that require us to wait for a time and sometimes for a very long time indeed, before we obtain possession of the product in consumable form (Bohm-Bawerk, 1959, 82).

But that is mere speculation, unsupported by analysis or data. There is no reason or a priori basis for this conjecture. Innovations often speed up the production process and even reduce the stages of production. Examples of the former are modern computers and communications technologies, and of the latter, Wal-Mart and JIT manufacturing.

And:

It goes without saying that it is no refutation of our proposition to contend that, with the help of *previously finished* capital objects, a given product can be produced more quickly than by the direct »capitalless« method. This sort of refutation might be exemplified by the argument that a tailor needs only one day to turn out a coat with the help of a sewing machine, whereas it might require three days without that capital object. But it is obvious that the sewing by machine is only a portion – and

indeed the smallest portion – of the circuitous capitalist path. The principal length of that path is covered by the making of the sewing machine. And it is equally apparent that the traversing of the entire length of the path requires a great deal more than three days (Bohm-Bawerk, 1959, 82).

However, although it may be correct during the transition phase in which Bohm-Bawerk's «previously finished capital objects» are first produced that the period of production is lengthened, this in no way establishes that the period of production is lengthened during the *post*-transition period. Let us use his example of the production of coats. Assume it takes 100 days to produce a sewing machine. Consider three periods: pre transition, transition, and post transition. In any pre transition period of 300 days, 100 coats can be produced. During the transition of 100 days, the sewing machine is produced, but no coats are produced. In any post transition period of 200 days, 100 days can be used to produce 100 coats and the other 100 days used to produce another sewing machine. Therefore, provided a sewing machine can be used to produce at least 100 coats before it wears out, the period of production, post transition has been shortened. That is, we can produce 100 coats every 200 days for an indefinitely long (because the 200 day period allows 100 days for the production of a replacement machine, as well as the 100 days required to produce 100 coats) compared to the post transition situation in which it 100 coats required 300 days to produce.⁹⁷

Next, Mises:

⁹⁷ More generally, if D_0 and D_1 are the numbers of days it takes to produce a coat pre and post transition, respectively, and M is the number of days it takes to produce the sewing machine, then the period of production will be shortened post transition provided $C > M/(D_0 - D_1)$, where C is the number of coats that can be produced during the working life of the machine.

...As acting man prefers those processes which, other things being equal, produce the products in the shortest time, only such processes are left for further action which consume more time.
 ...Bohm-Bawerk speaks of the higher productivity of roundabout ways of production requiring more time. It is more appropriate to speak of the higher physical productivity of production processes requiring more time.

The higher productivity of these processes does not always consist in the fact that they produce—with the same quantity of factors of production expended—a greater quantity of products. More often it consists in the fact that they produce products which could not be produced at all in shorter periods of production. These processes are not roundabout processes. They are the shortest and quickest way to the goal chosen. If one wants to catch more fish, there is no other method available than the substitution of fishing with the aid of nets and canoes for fishing without the aid of this equipment. There is no better, shorter, and cheaper method for the production of aspirin known than that adopted by the chemical plants. If one disregards error and ignorance, there cannot be any doubt about the highest productivity and expediency of the processes chosen. If people had not considered them the most direct processes, viz., those leading by the shortest way to the end sought, they would not have adopted them (Mises 1996 [1949], 481-482, footnote omitted).

...It is more appropriate to speak of the higher physical productivity of processes requiring more time. The higher productivity of these processes does not always consist in the fact that they produce – with the same quantity of factors of production expended – a greater quantity of products.... If one wants to catch more fish, there is no other method available than the substitution of fishing with the aid of nets and canoes for fishing without the aid of this equipment....

...But if temporally remoter goals are aimed at, lengthening of the period of production is a necessary corollary of the venture (Mises, 1996 [1949], 481-482).

Then Hayek:

That anything which will tend to lengthen this investment structure of current labour will lead to increases of the quantity of capital and anything which tends to shorten it will lead to a reduction of capital, remains a point of fundamental importance (Hayek, 1934B, 231).

And:

I have already pointed out that it is an essential feature of our modern, 'capitalistic,' system of production that at any moment a far larger proportion of the available original means of production is employed to provide consumers' goods for some more or less distant future than is used for the satisfaction of immediate needs. The *raison d'être* of this way of organizing production is, of course, that by lengthening the production process we are able to obtain a greater quantity of consumers' goods out of a given quantity of original means of production (Hayek, 1935, p. 37-38).

And:

The thing which is of main interest for us is that any such change from a method of any given duration to a method which takes more or less time implies quite definite changes in the organization of production, or, as I shall call this particular aspect, to distinguish it from other more familiar aspects, changes in the *structure of production* (Hayek, 1935, p. 37-38).

And:

On the simplifying assumption that the *total* length of the of the marginal processes that are made possible by an increase in the supply of investible funds, is always greater than the total length of any process already used, this situation can be represented by the following diagram. [Present authors: This

is Hayek's (1935, 138) figure 8, which we repeat as our H3] The curvilinear¹ triangle ABC represents, in the same way as the triangle I have used in the preceding lectures, the stock of capital belonging to the processes already completed. (The area of the curvilinear triangle $AB'C'$ shows the stock of capital before the additions were begun). [footnote] 1. The reasons which make a curvilinear triangle of the kind shown in the text a more appropriate representation than the simplified form used in Lecture II are probably obvious. See p. 39 (Hayek, 1935, 137).

Now, Rothbard:

It is obvious that the production process takes *time*, and the more complex the production process the more time must be taken (Rothbard, 1993 [1962], 288).

Last, Garrison:

In its simplest application, the two legs of [Hayek's] right triangle measure consumption [sic] and the corresponding production time (reckoned in the number of stages of production) for an economy that has achieved an intertemporal equilibrium. A primitive instance of this intertemporal equilibrium and of potential changes in it can be illustrated by Robinson Crusoe who for some time was content to sustain himself by catching fish with the aid of little or no fishing equipment. A greater output of fish is possible but only if Crusoe is willing to take time away from fishing in order to fashion a net and possibly a boat. Consumable output would have to fall while the production process is being enhanced. Once the new, more capital-intensive (and more time-consuming) process is completed, however, the level of output would rise above its initial level. The new intertemporal equilibrium can be depicted by a Hayekian triangle with a longer consumption [sic] leg, representing more fish, and a longer production-time leg, representing the increase in time spent maintaining the new production process (Garrison, 2004, 324-325).

The foregoing is problematical. First, there is no mention of the meaning of the height of the triangle save that of the right leg, and that is misstated as «consumption» rather than as the pecuniary value of consumption, or, better yet, the pecuniary value of the consumption goods at the moment of sale to the consumers.

Second, in a world of heterogeneous capital goods, not to mention heterogeneous labor and natural resources, the concept of capital intensity is incoherent. Which, for example, is a more capital intensive process: a man fishing using a boat and a rod and reel or the same man fishing with a net from the shore? Or a man hunting a deer with, on the one hand, a rifle and, on the other, a shotgun. Capital intensity cannot be measured using pecuniary value, else the capital intensity can change with no change in the physical reality; nor, for the same reason, can it be measured in terms of the quantity of output. Neither can it be measured by, to coin a term, the «socially necessary» labor required to produce it.

Third, the placement of the phrase «and more time-consuming» in conjunction with its inclusion within parentheses, implies that the «new, more capital intensive» process is necessarily also «more time consuming.» This is reinforced by reference to «a longer production-time leg» of the Hayekian triangle. We offer a counter-factual example; references are to table 1.

Crusoe works eight (8) hours a day to catch one fish by hand. The other 16 hours constitute leisure. (See day 1.) This an ERE or steady state equilibrium.⁹⁸ It takes him eight (8) hours of fishing by hand to catch one fish, a total of eight (8) hours of work of any and all kinds to catch one fish, and thus 128 calendar days to catch 16 fish.

⁹⁸ It is a basic tenet of Austrian economics that no such state of affairs can characterize economic reality.

It takes eight hours to make a net without any tools. Although a net becomes weaker and weaker with every hour of use, it will still hold fish, until after 64 hours of use it breaks completely apart and becomes useless.

One day, Crusoe spends eight hours during which he weaves a net from scratch to completion, but makes no change in his leisure.⁹⁹ Of course, he goes hungry that day. (See day 2A.) Alternatively, he spends eight hours making a net from scratch to completion, fishes by hand for eight hours, and reduces his leisure by eight hours. In this case, he catches a fish and does not go hungry. (See day 2B.) Either of these is a transition day, after which he faces a new set of alternatives, and no longer concerns us.

Now what happens? Consider three such alternatives, each of which is an ERE or steady state equilibrium and which we compare with the initial such condition. In the first, day 3A, he maintains his original level of leisure, 16 hours per day, spends¹⁰⁰ 7.11+ hours per day fishing with the net, and 0.88+ hours per day making a replacement net. Therefore, his total hours of work also remain the same, though the nature of the work differs in part. In this situation, he is able to continuously replace his net as it wears out, and catch 1.77777+ fish per day. Therefore, it takes him four of fishing with a net to catch one fish, a total of four and one-half hours hours of work of any and all kinds to catch one fish, and 9 calendar days to catch 16 fish.

In the second scenario, day 3B, he spends four hours per day fishing with the net in order to maintain his original quantity (1) of fish caught per day and 0.5 hours per day making a replacement net; his leisure increases to 19.5 hours per day. Therefore, his total hours of work decrease to four and one-half

⁹⁹ The eight (8) hours is, of course, socially-necessary-labor time.

¹⁰⁰ The superscript + sign indicates a repeated decimal.

per day, though the nature of the work differs in part. In this situation, also, he is able to continuously replace his net as it wears out. Therefore, it takes him four hours of fishing with a net to catch one fish, a total of four and one-half hours hours of work of any and all kinds to catch one fish, and 16 calendar days to catch 16 fish.

In the last situation, day 3C, he wishes to enjoy the benefits of his improved productivity partly in the form of increased fish and partly in the form of increased leisure. He chooses to spend 6 hours a day fishing with a net and catching 1.5 fish and three-quarters of an hour making a replacement net; and, he enjoys $1\frac{1}{4}$ hours of leisure. Therefore, it takes him four of fishing with a net to catch one fish, a total of four and one-half hours (4.5) hours of work of any and all kinds to catch one fish, and $10\frac{2}{3}$ calendar days to catch 16 fish.

It is obvious that, however we look at it, the structure of production on day three has been *shortened* relative to that on day one. That is, though the structure of production was lengthened during the transition period [day two] from day one to day three, even to the point of being «infinitely», or better yet, undefinably long in the case of day 2, thereafter it has been «permanently» shortened. However, on day three there are two stages of production; to wit: working on a replacement net and fishing with the extant net; whereas, on day one there is only one stage of production – fishing by hand. Therefore, not only is there no necessary direct relationship between the number of stages of production and the time structure of production, but they may even be *inversely* related. Q.E.D.

TABLE 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Day	leisure (hrs per calendar day) L	labor fishing without net (hrs per calendar day)	labor fishing with net (hrs per day)	labor making net (hrs per day)	total labor (hrs per day)	capital goods produced (nets per day)	stock of finished capital goods (nets)	depreciation (nets per hour of fishing)	depreciation (nets per calendar day)	consumer goods produced per day (fish/day)	consumption = goods & leisure (fish & leisure hours per day)	Stages of production (#)	time structure of production to produce 16 fish (man-hours; work days)	labor per fish (hours fishing/ fish)	labor per fish (hours fishing/ + hours making net/fish)
1	16 L	8 h	0 H	0 M	8 W	0 N	0 N	0 N	0 N	1 F	1 F & 16 L	1	128 hr, 16 D	8 h/F	8 W/F
2A	16 L	0 h	0 H	8 M	8 W	1 N	0 N	0 N	0 N	0 F	0 F & 16 L	1	-	-	-
2B	8 L	8 h	0 H	8 M	16 W	1 N	0 N	0 N	0 N	1 F	1 F & 16 L	2	-	8 h/F	16 W/F
3A	16 L	0 h	7.11 ⁺ H	0.88 ⁺ M	8 W	1.9 N	1 N	1/64 N	1/9 N	1.77 ⁺ F	1.77 ⁺ F & 16 L		64 H, 9 D	4 H/F	4.5 W/F
3B	19.5 L	0 h	4 H	0.5 M	4½ W	1/16 N	1 N	1/64 N	1/16 N	1 F	1 F & 20 L	2	64 H, 16 D	4 H/F	4.5 W/F
3C	17½ L	0 h	6 H	0.75 M	6¾ W	0.75 N	1 N	1/64 N	3/32 N	1.5 F	1.5 F & 17½ L	2	64 H, 10½ D	4 H/F	4.5 W/F

APPENDIX 3

In this appendix we eschew «plain old» plane geometry for analytical geometry. We also ignore the incompatibility of differentiable functions with praxeology. We assume that the discount rate, r , is the same for all goods and that there is *no* compounding.

Let:

C_i = the i th consumers' good;

C_{it} = the expected (at time $t = 0$) pecuniary value of a quantity of consumers' good i at time t , to include the expected value of the partially completed units of that consumers' good at time t ;

$C_{i0} = P_i Q_{i0} \forall i$;

P_i = the expected price of unit of C_i at time of sale;

Q_{i0} = the quantity of the i^{th} consumers' good at time production of that particular good commences, to include the expected value of the partially completed units at the moment;

$Q_{i0} = Q_0 \forall i$; and,

r = the relevant rate of discount for C .

Based on the standard Hayekian triangle, consider the production structure of an economy producing four (4) consumers' goods, C_1, \dots, C_4 , assuming production commences at time $t = 0$; and,

Let:

$0 < \tau_i < T; \forall i$;

$C_{1t} = C_{10}(1+r)^t; 0 \leq t \leq T$, where 0 and T are times at which production of C_1 commences and C_1 is sold, respectively;

$C_{2t} = C_{20}(1+r)^t; 0 \leq t \leq \tau_h$, where 0 and τ_h are times at which production of C_2 commences and C_2 is sold, respectively;

$C_{3t} = C_{30}(1+r)(t - \tau_i)$; $\tau_i \leq t \leq T$, where τ_i and T are times at which production of C_3 commences and C_3 is sold, respectively; and,

$C_{4t} = C_{40}(1+r)(t - \tau_j)$; $\tau_j \leq t \leq \tau_k$, where τ_j and τ_k are times at which production of C_4 commences and C_4 is sold, respectively.

There are 24 possible temporal orders of τ_j , τ_i , τ_h , and τ_k , and thus 24 possible figures of the function $C_t = \sum C_{it}$, $1 = 1, \dots, 4$. For illustrative purposes, we choose but one (1): $\tau_j < \tau_i < \tau_h < \tau_k$. Then:

$$\begin{aligned} C_t &= (P_1 + P_2)Q_0(1+r)t && \text{if } 0 \leq t \leq \tau_j \\ C_t &= (P_1 + P_2)Q_0(1+r)t + P_4Q_0(1+i)(t - \tau_j) && \text{if } \tau_j \leq t \leq \tau_i \\ \sum C_{it}, 1, \dots, 4, &= C_t = (P_1 + P_2)Q_0(1+r)t + P_4Q_0(1+i)(t - \tau_j) + P_3Q_0(1+i)(t - \tau_i) && \text{if } \tau_i \leq t \leq \tau_h \\ C_t &= P_1Q_0(1+r)t + P_4Q_0(1+r)(t - \tau_j) + P_3Q_0(1+r)(t - \tau_i) && \text{if } \tau_h \leq t \leq \tau_k \\ C_t &= P_1Q_0(1+r)t + P_3Q_0(1+r)(t - \tau_i) && \text{if } \tau_k \leq t \leq T \end{aligned}$$

That is the function for the «hypotenuse» of a somewhat more realistic «triangle», and that is depicted in figure 31.

Consider, now, the implications of this model. The value of consumers' goods depends only on: 1) the quantity thereof at the time production of each such good commences Q_0 ; 2) the price each such good is expected (at time = 0) to command at the moment of sale to the consumers, P_i ; 3) the rate of interest, r ; and, 4) the time elapsed between the initiation of production of each good and its sale to consumers, or if it has not yet been completed and sold, the time of interest; i.e., t , T and the various τ s. This is very mechanistic, reminiscent of mainstream growth models.¹⁰¹

¹⁰¹ On this see virtually any model in Barrow and Sala-i-Martin (1998).

APPENDIX 4

The equation of the hypotenuse of the triangle 1 (in figure 33A) is given by: $C_1(t_1) = V_1(0)(i + i_1)t_1$, [or, if one wants compound interest, either $C_1(t_1) = V_1(0)((1 + i)^{t_1} - 1)$ or $C_1(t_1) = V_1(0)(e^{it_1} - 1)$, as the interest is compounded discretely or continuously], where $C_1(t_1)$ is the value of consumers' goods at the time of sale to consumers, t_1 , $V_1(0)$ is the initial value of resources used in the production process represented by triangle 1, and i_1 is the discount rate relevant to triangle 1. The same notation is used, *mutatis mutandis*, for triangle 2. As $V_1(0)$ is denominated in value terms, we may write $V_1(0) = R_1(0)X_1(0)$, where $R_1(0)$ and $X_1(0)$, represent, for triangle 1, the price per unit of resources and the initial quantity of resources at time 0, respectively. Similarly for triangle 2, we may write $V_2(0) = R_2(0)X_2(0)$, with analogous meaning. Then, $C_1(t_1) = R_1(0)X_1(0)(i + i_1)t_1$ and $C_2(t_1) = R_2(0)X_2(0)(i + i_2)t_1$. Moreover, as $C_1(t_1)$ is also denominated in value terms we may write $C_1(t_1) = P_1(t_1)Q_1(t_1)$, where $P_1(t_1)$ is the price of consumers' goods at the time of sale to consumers' and $Q_1(t_1)$ is the quantity of consumers' goods sold at that time. Similarly, for triangle 2, $C_2(t_1) = P_2(t_1)Q_2(t_1)$.

Compare these two (2) triangles 1 and 2; the hypotenuse of each originates at time 0, when the abscissa is 0, just as production commences, and terminates at the time, t_1 , when the consumers' goods are sold to consumers; i.e., when the abscissa is t_1 . Thus both have the same period of production. However, let the value of consumers' goods at the time of sale to the consumers, $C_1(t_1)$ and $C_2(t_1)$, for 1 and 2, respectively, differ. Regardless of which functional form we use, one (1) of the triangles will lie above the other throughout their range. Let 1 be that triangle; i.e., $C_1(t_1) > C_2(t_1)$. The only possible causes for this difference are either $R_1(0) \neq R_2(0)$ or $X_1(0) \neq X_2(0)$ or $i_1 \neq i_2$, or some combination thereof.

The essence of ABCT is an unsustainable distortion of the structure of production; i.e., an unsustainable misallocation of resources, brought about by a governmental-policy-induced lending of money into existence and attendant reduction, *ceteris paribus*, in interest rates. Therefore, because the triangle is used to explain ABCT, we take the cause of the morphing of triangle 1 into 2 to be a decrease in the discount rate; i.e., $i_1 > i_2$. However, that can not be the sole cause, for it means that the quantities of resources at 0 is the same for both triangles; i.e., $X_1(0) = X_2(0)$. But as the period of production and thus the structure of production are also the same, the quantity of consumers' goods must also be the same; that is $Q_1(t_1) = Q_2(t_2)$. But this is incompatible with ABCT as there is no shift in resource use from consumers' to capital goods, nor is there a decrease in the quantity of consumers' goods produced.

Therefore, something else besides the discount rate must have changed if the story illustrated by the triangles in figure 33A is to be compatible with ABCT. And, it must be the quantity of resources used and the output of consumers' goods, both of which must have decreased; i.e., $X_1(0) > X_2(0)$ and $Q_1(t_1) > Q_2(t_1)$. The reduced discount rate signals a decrease in time preferences manifested as a fall in demand for consumers' goods and an increase in demand for producers' goods. In order for production to shift in accord therewith, the demand for resources on the part of the capital goods industries must increase and that stemming from the consumers' goods industries must fall. However, It is quite probable that the former will occur before the latter, and as a consequence, prices of resources will rise; i.e., $R_1(0) < R_2(0)$. Nevertheless, the combined effects must be such that any increase in prices is more than offset by fall in interest rates and the decrease in the use of resources for the production of consumers' goods. This is depicted in figure 33A by the morphing of triangle 1 into 2.

APPENDIX 5

Figure 1

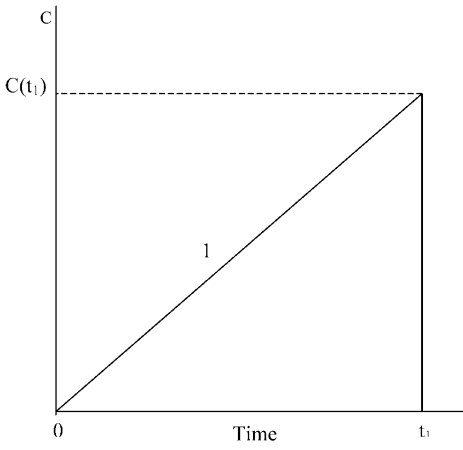
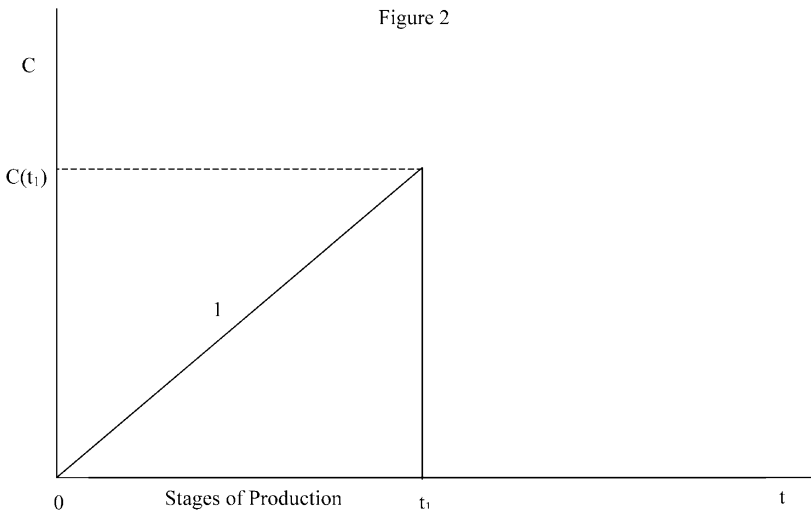
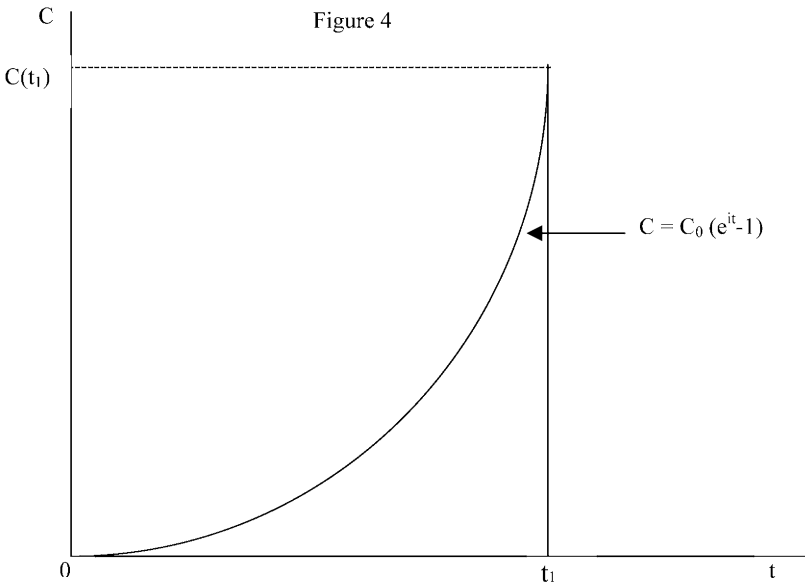
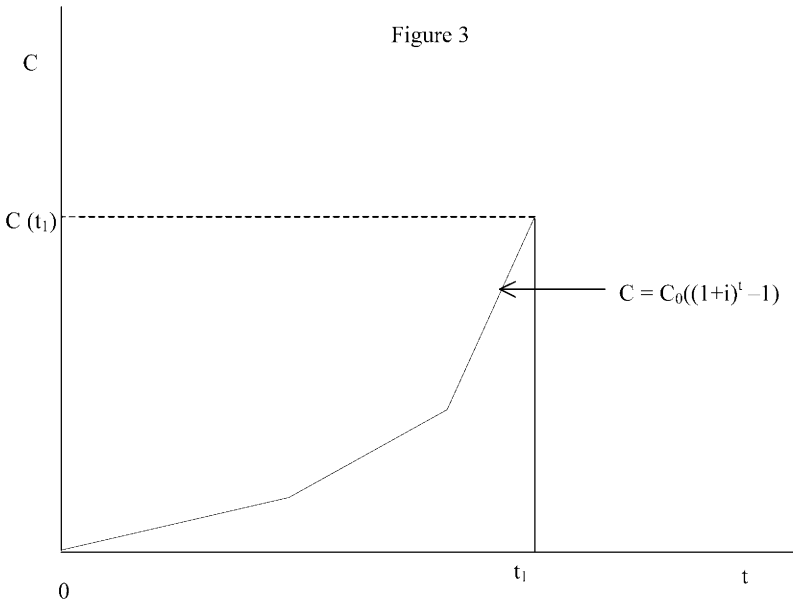
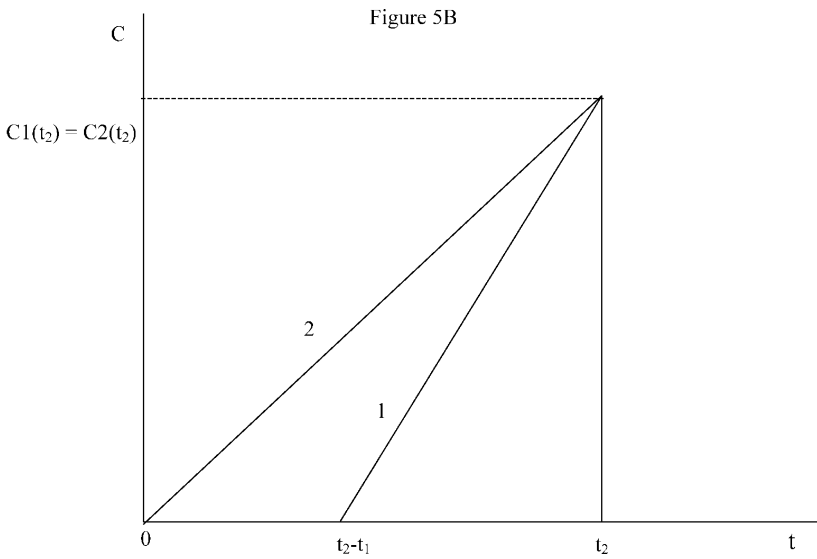
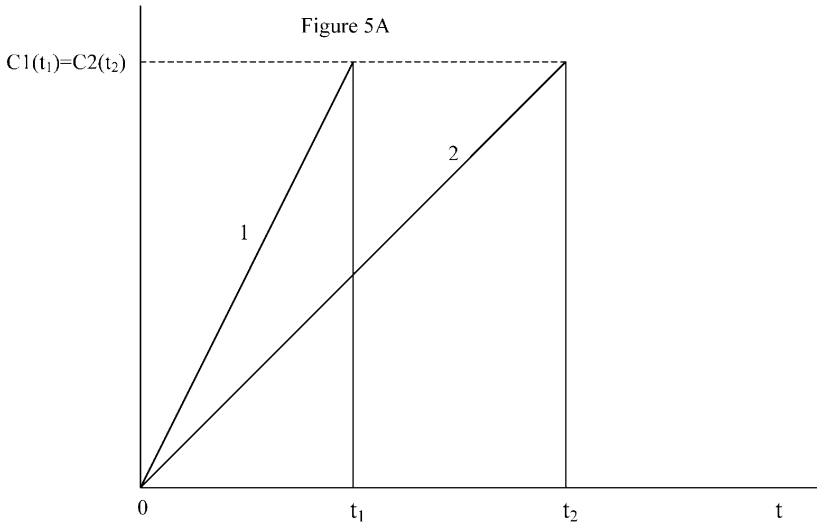
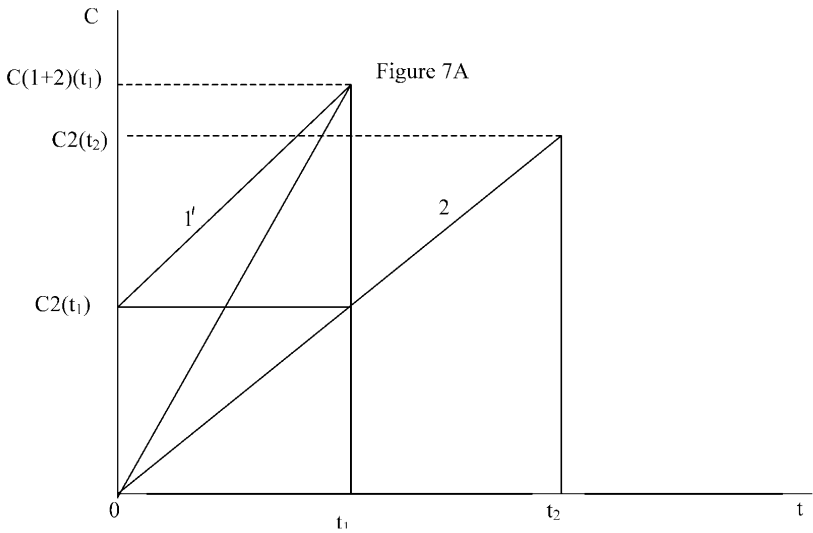
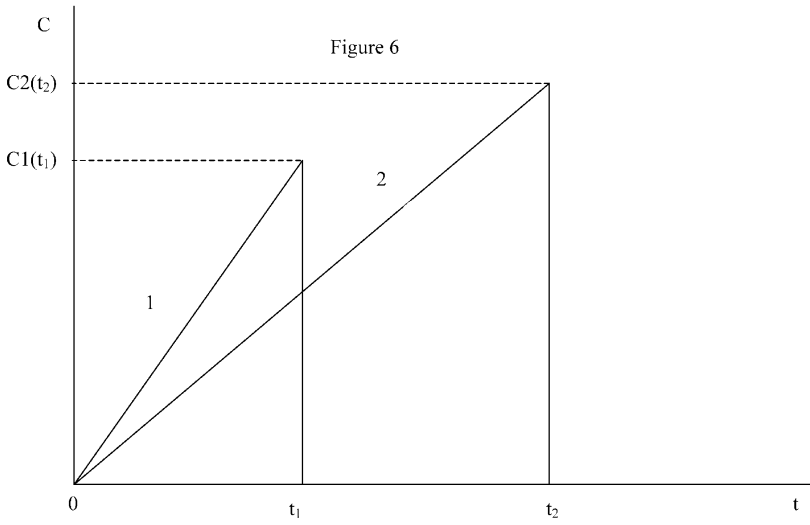


Figure 2









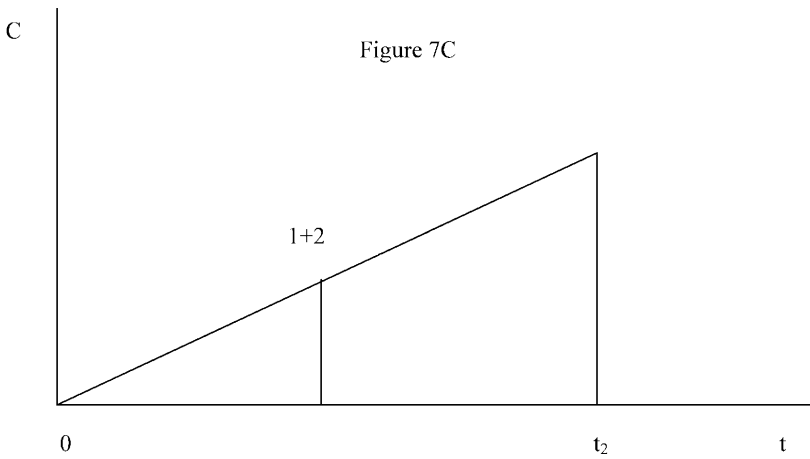
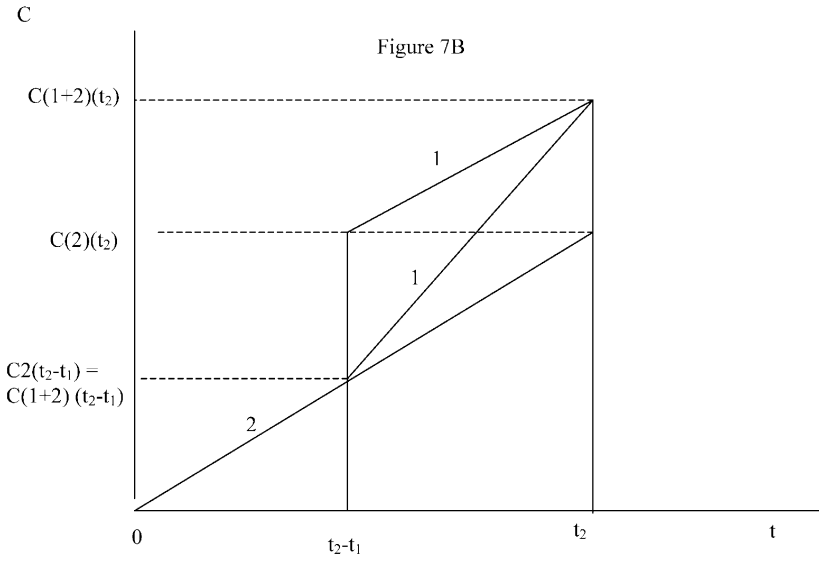


Figure 8A

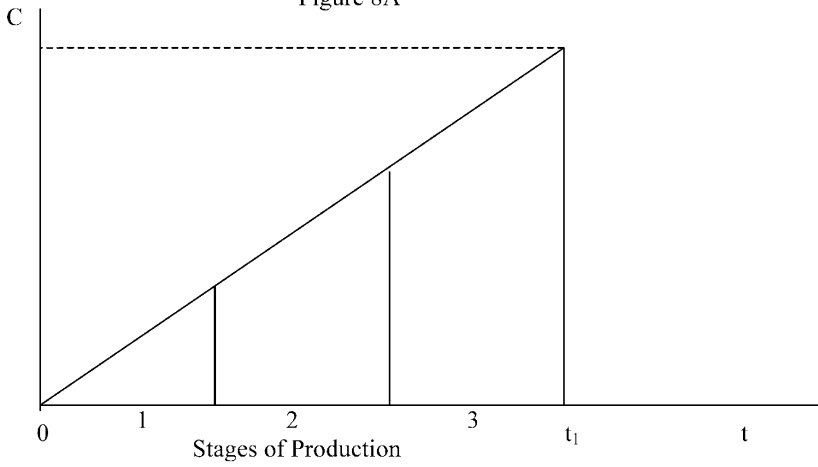


Figure 8B

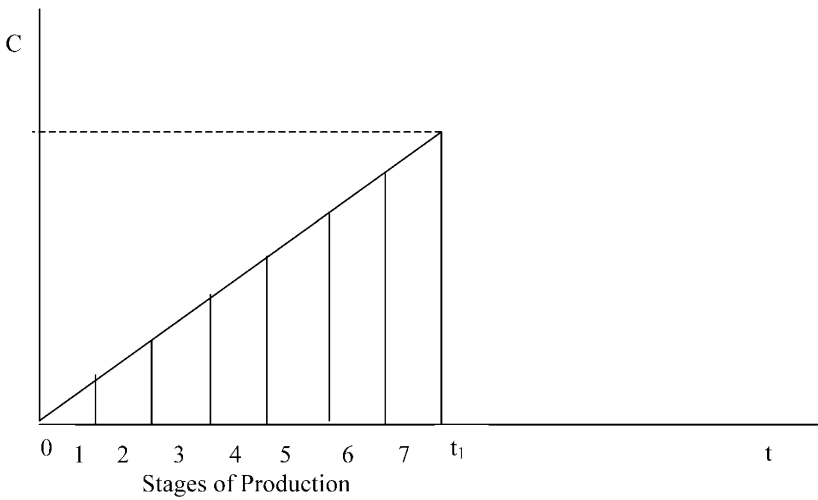


Figure 9A

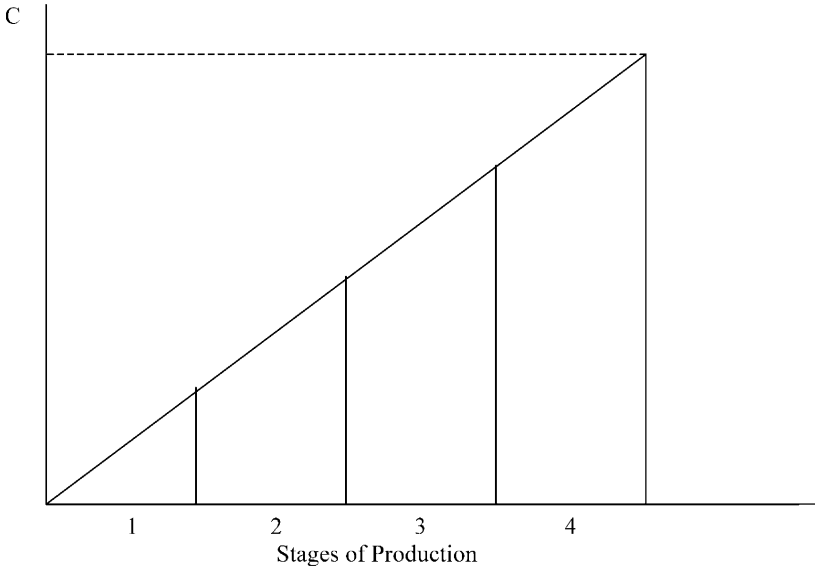
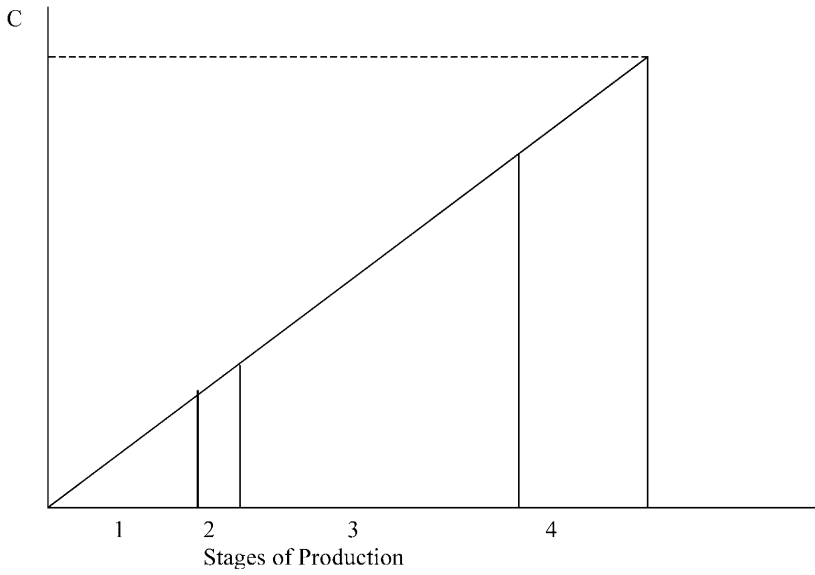
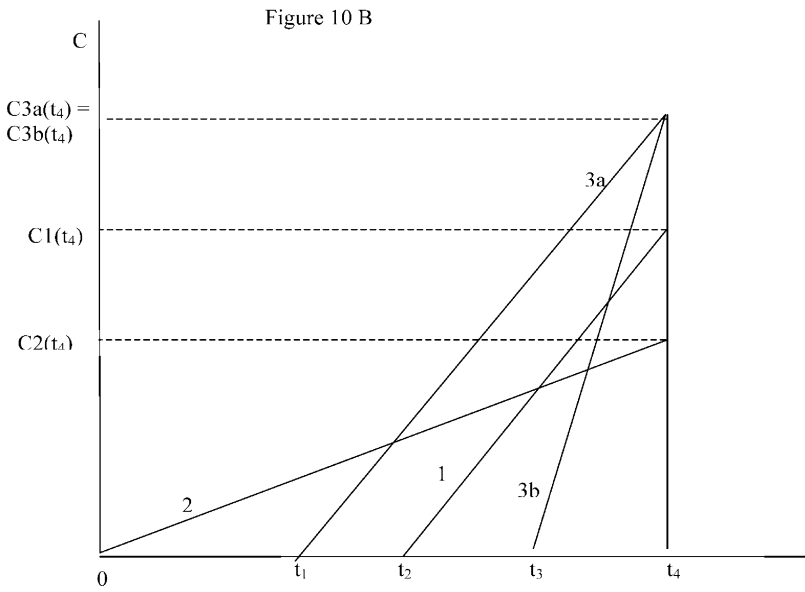
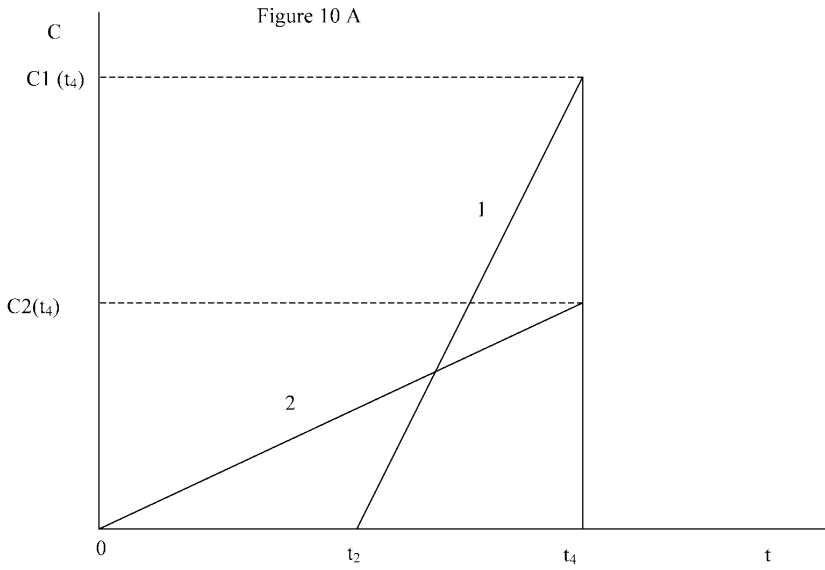
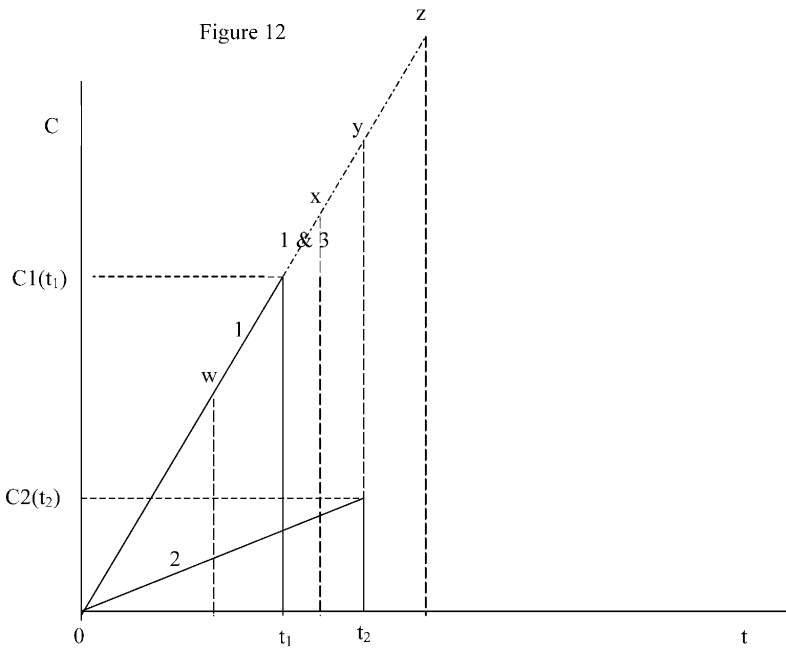
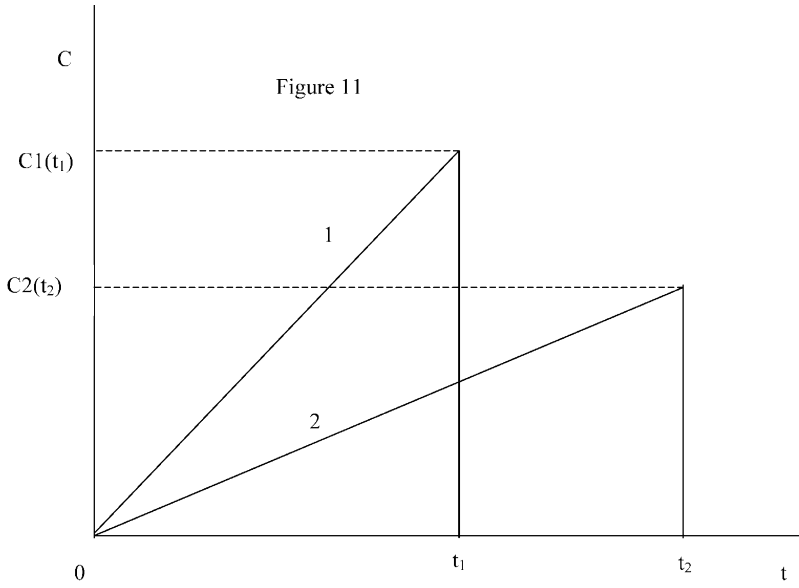
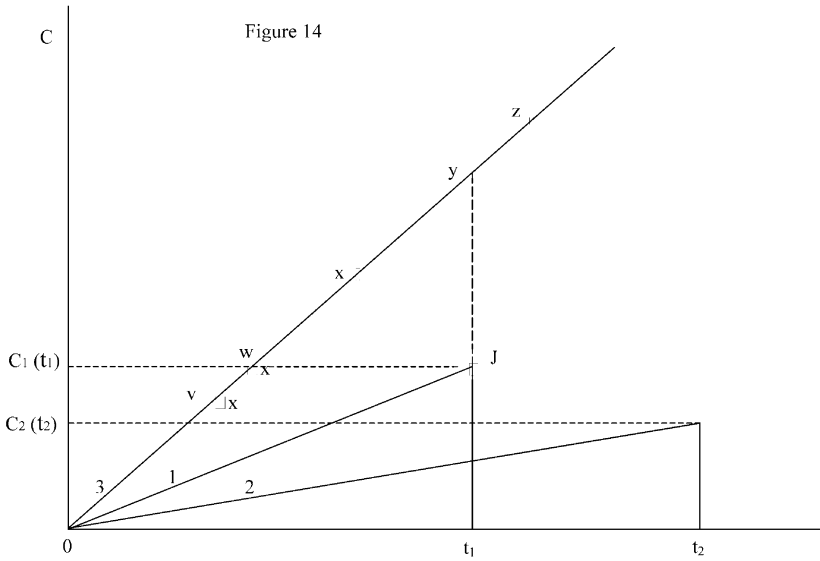
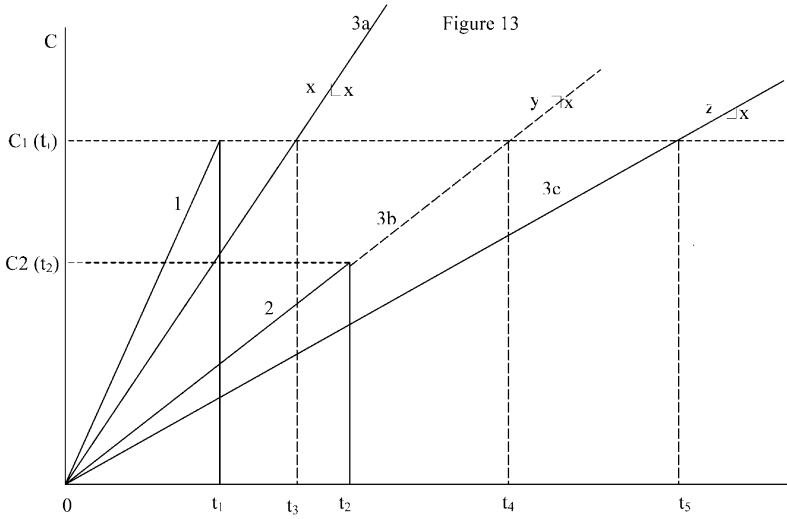


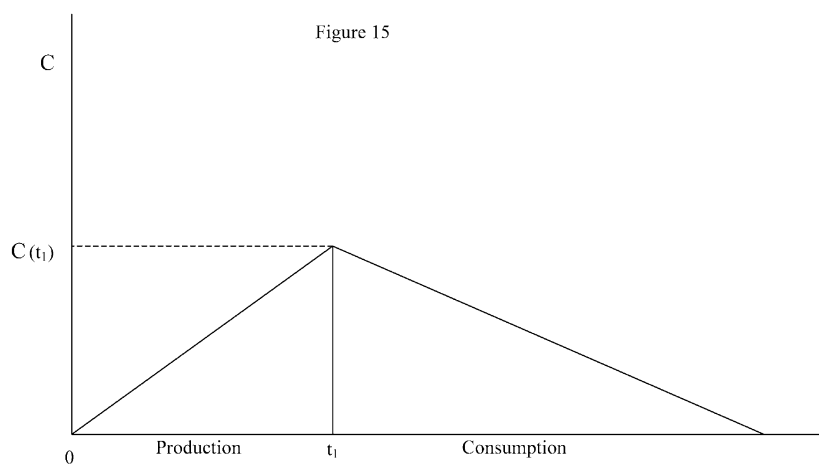
Figure 9B

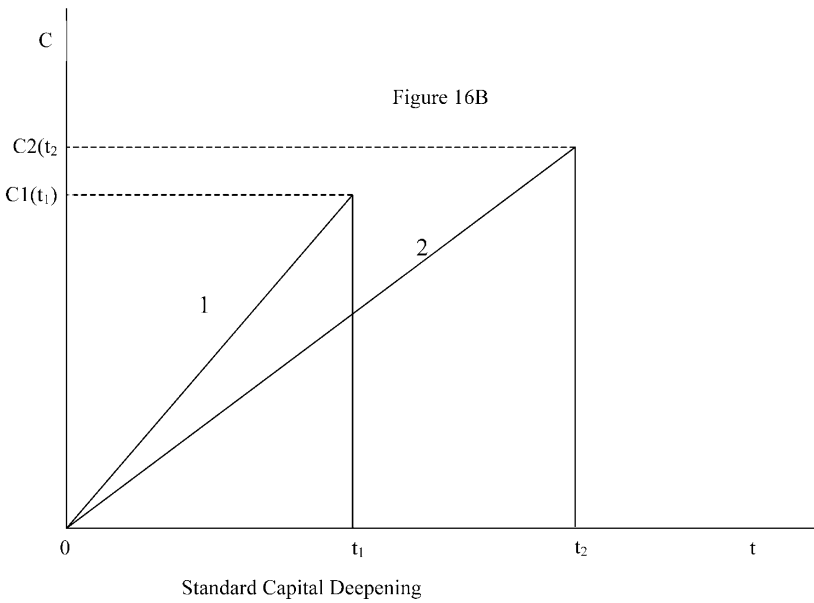
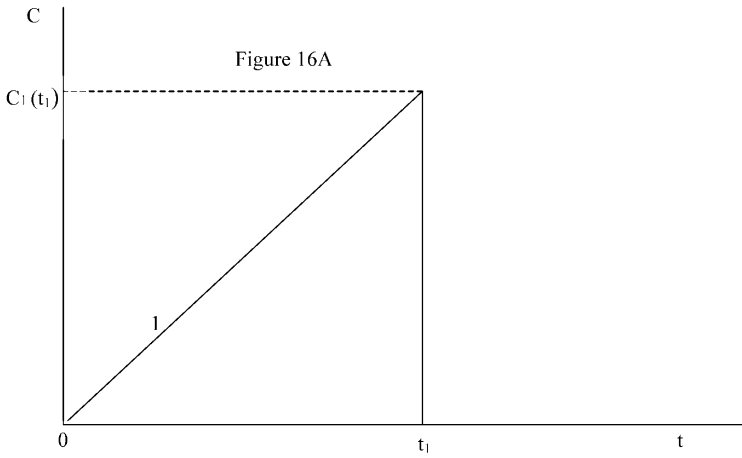


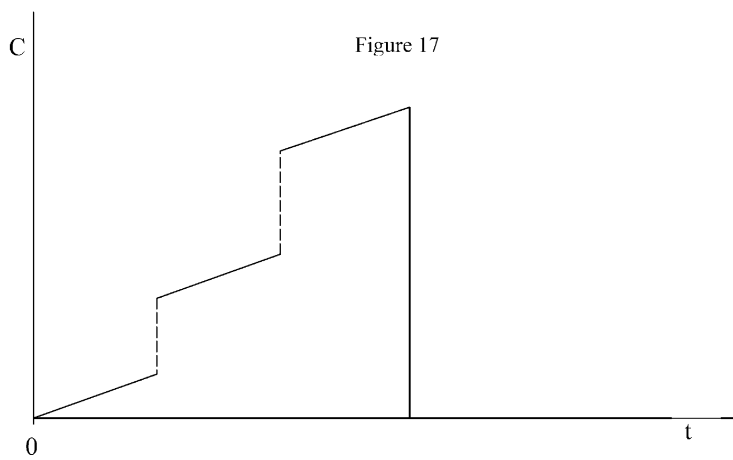


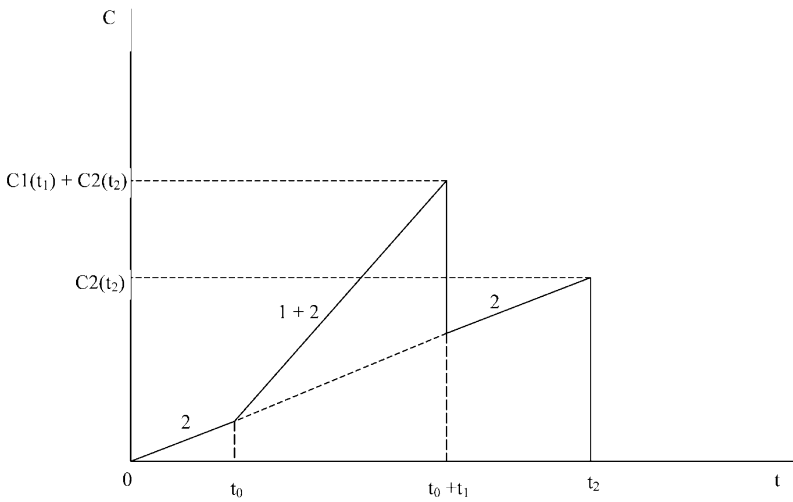
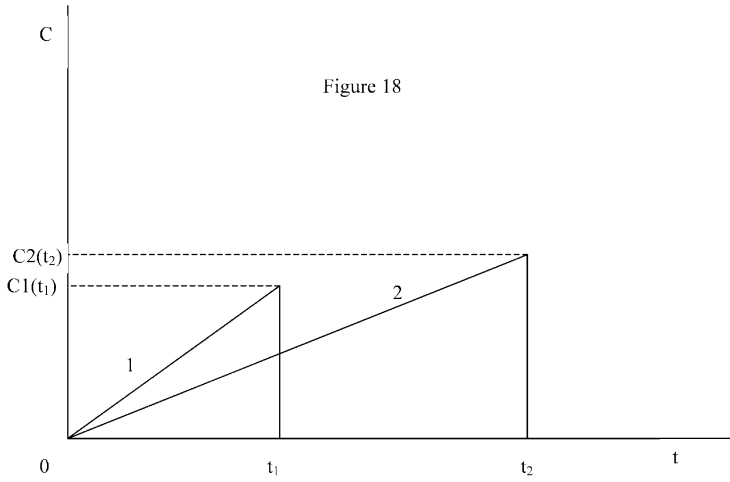


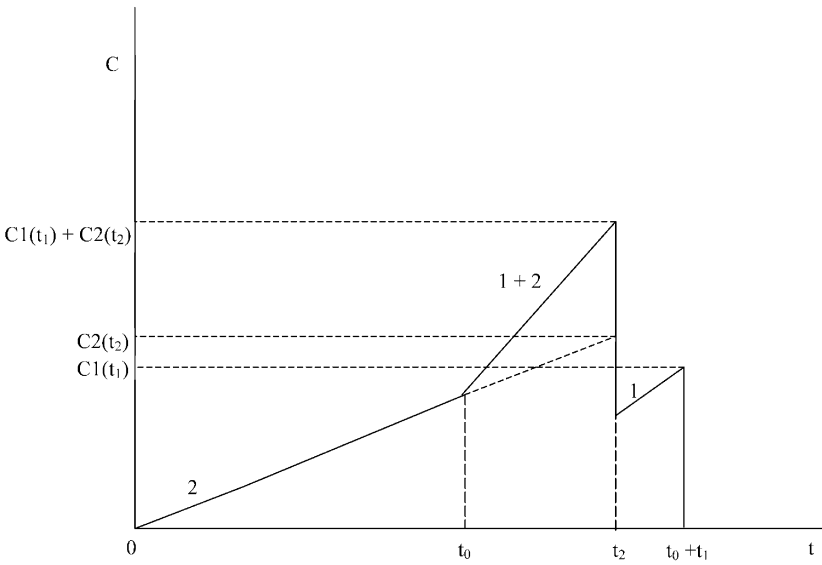
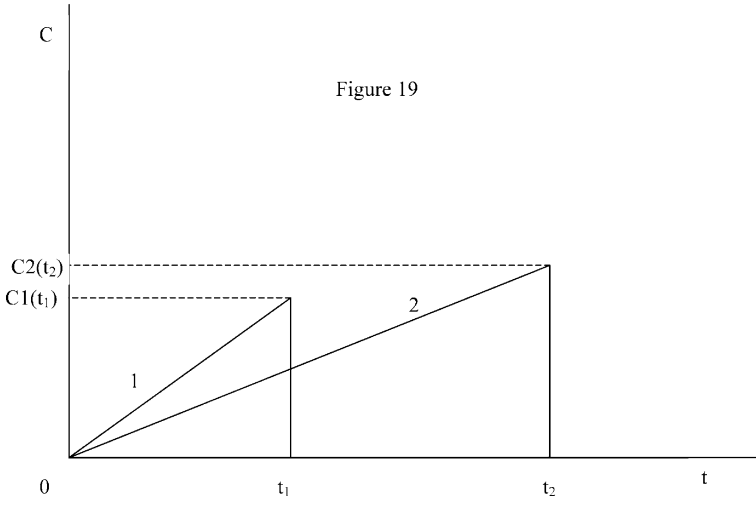


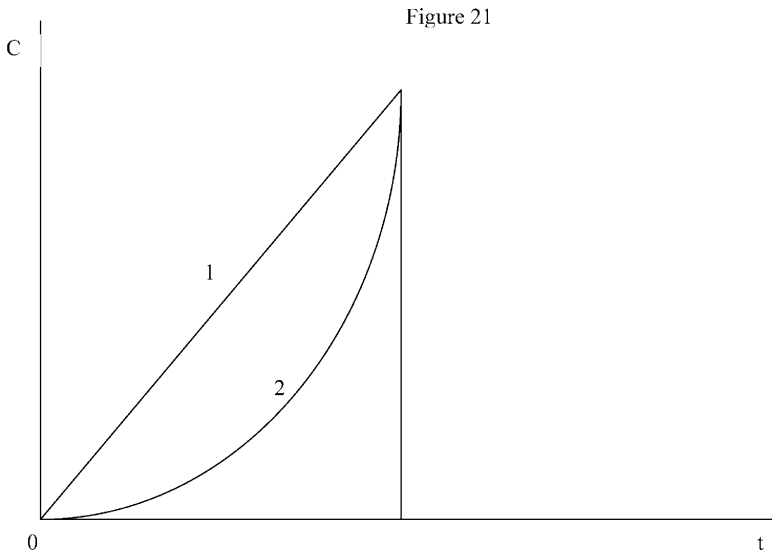
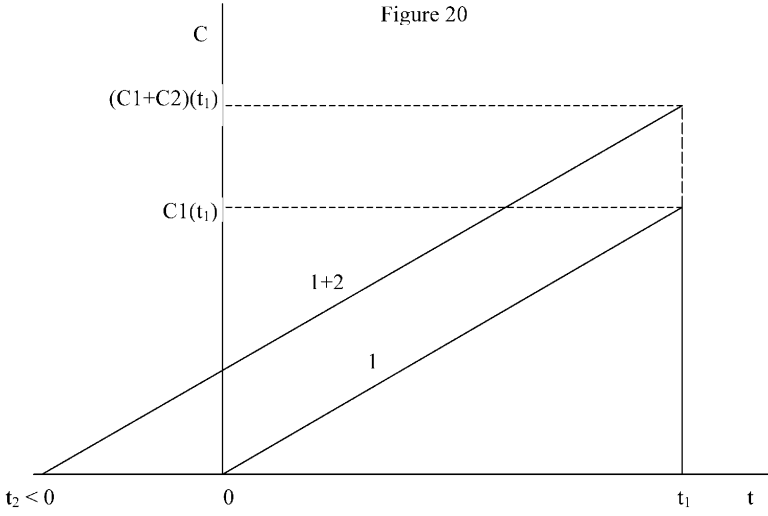


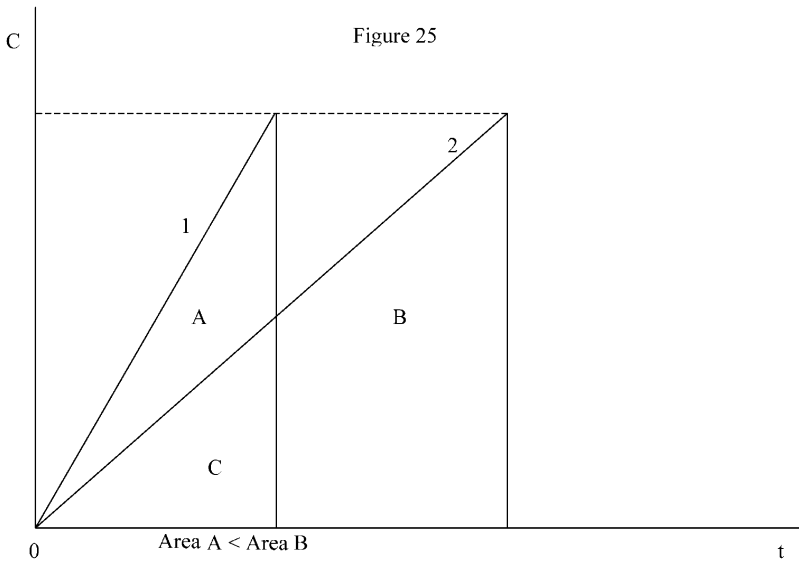
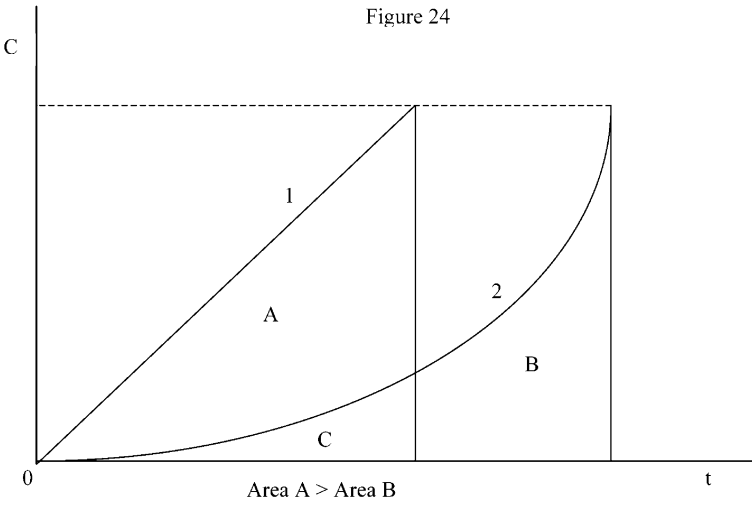












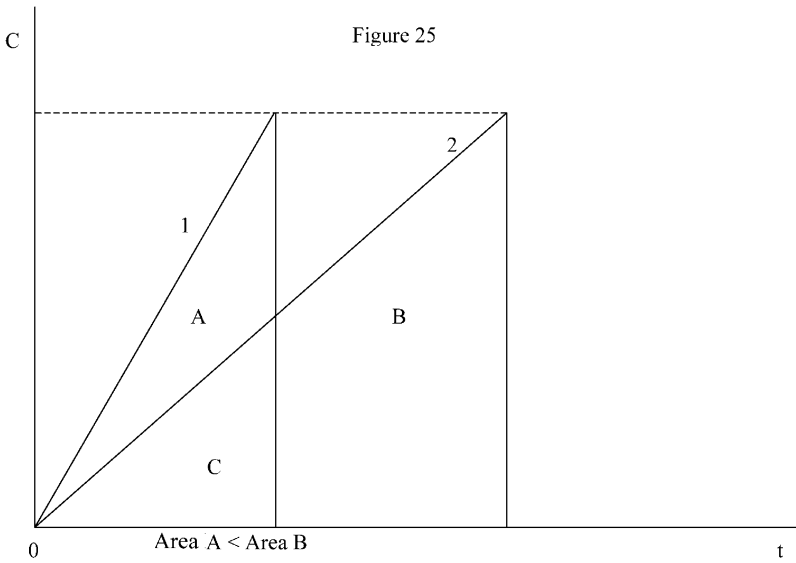
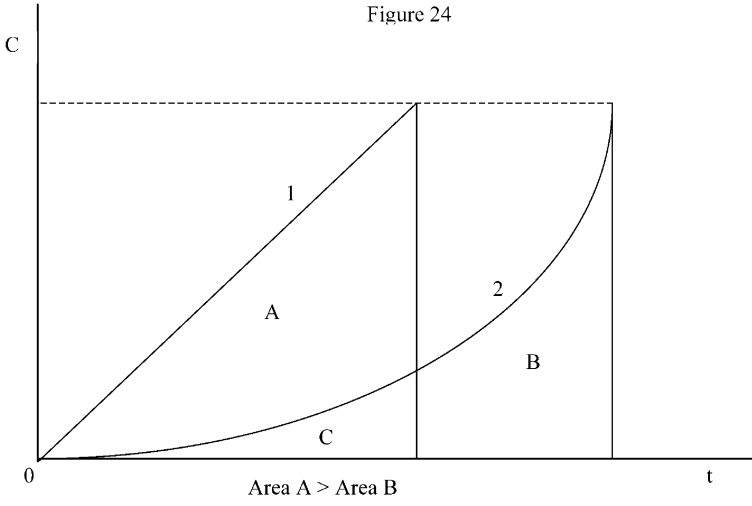


Figure 26

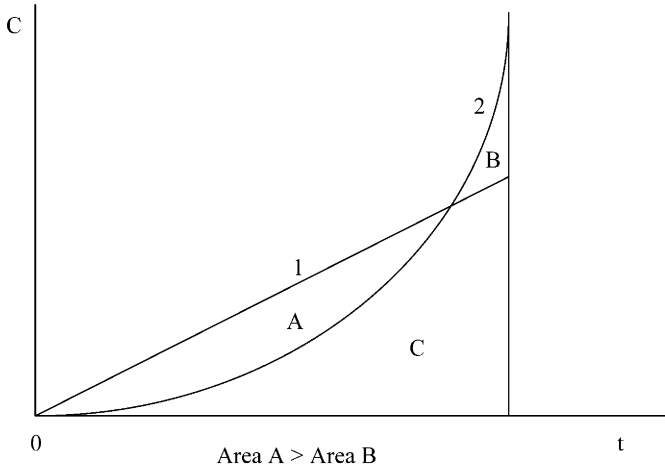


Figure 27

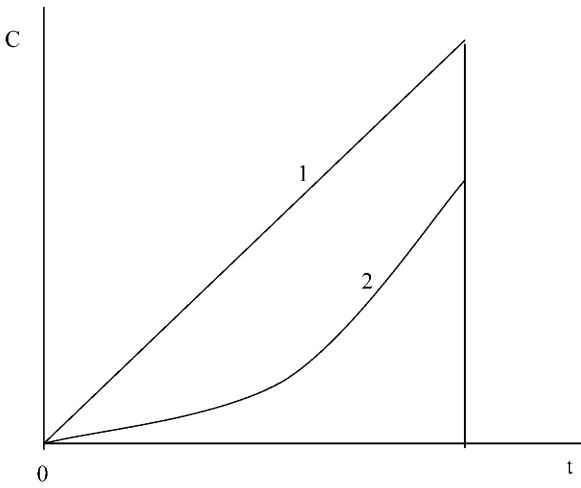


Figure 28

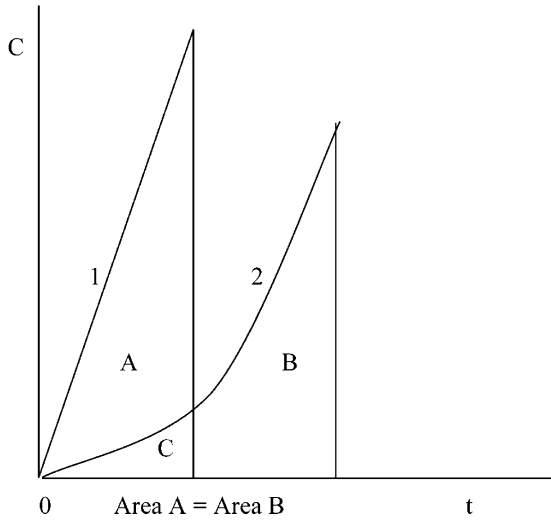
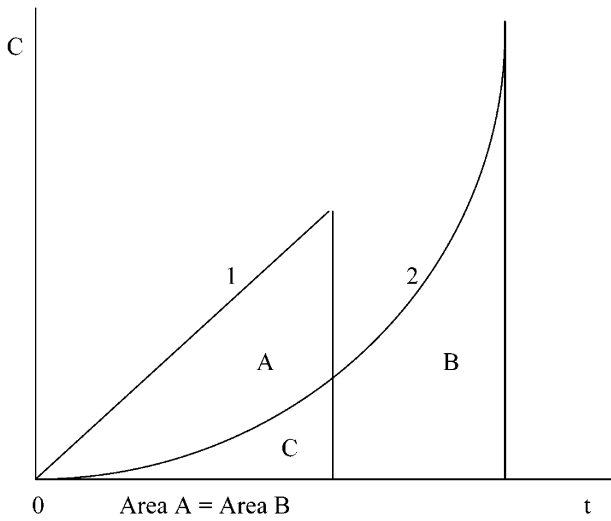
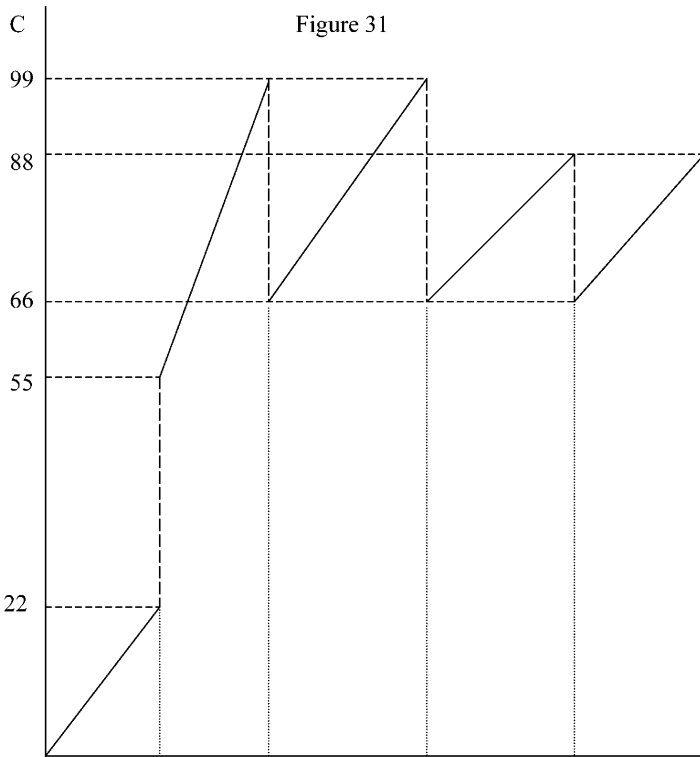
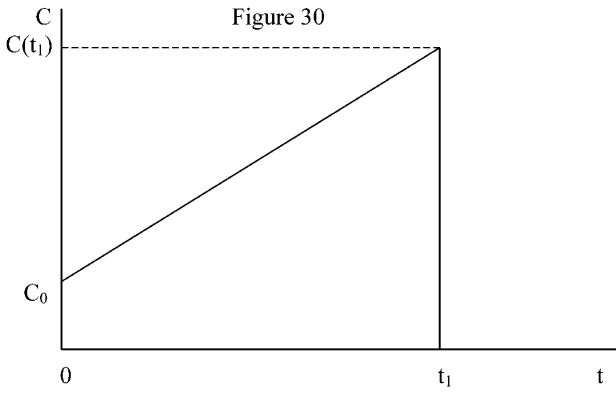
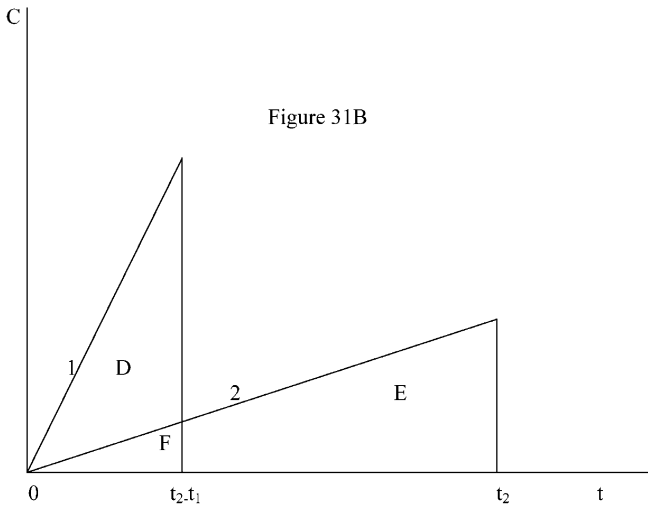
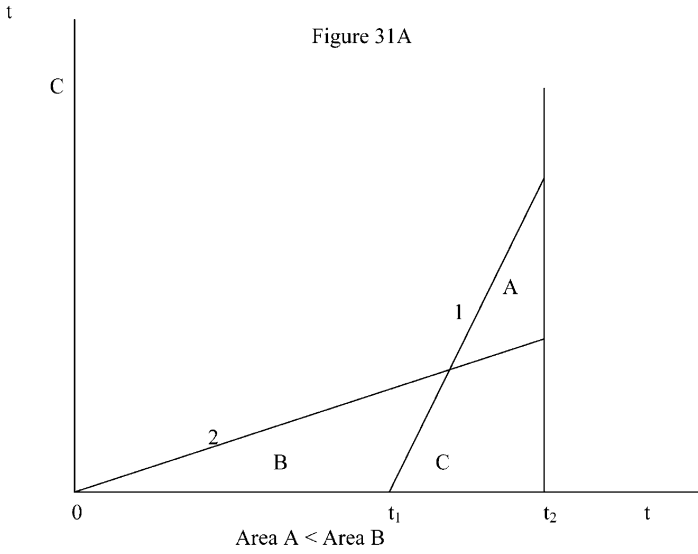


Figure 29







Area D < Area E

Figure 32A

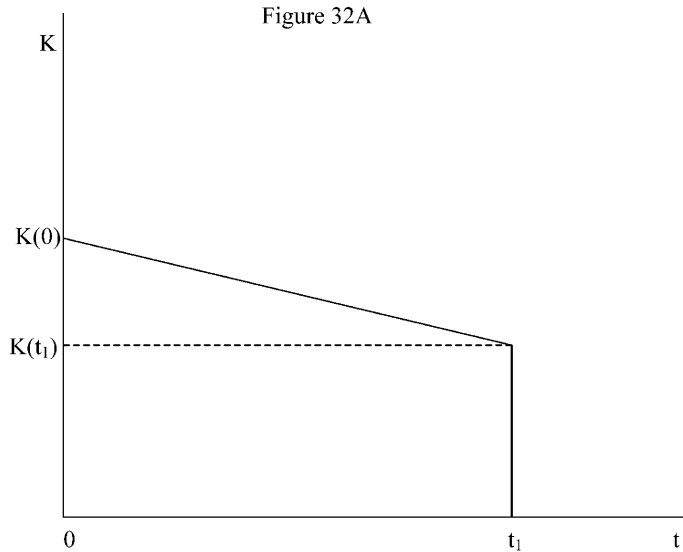


Figure 32B

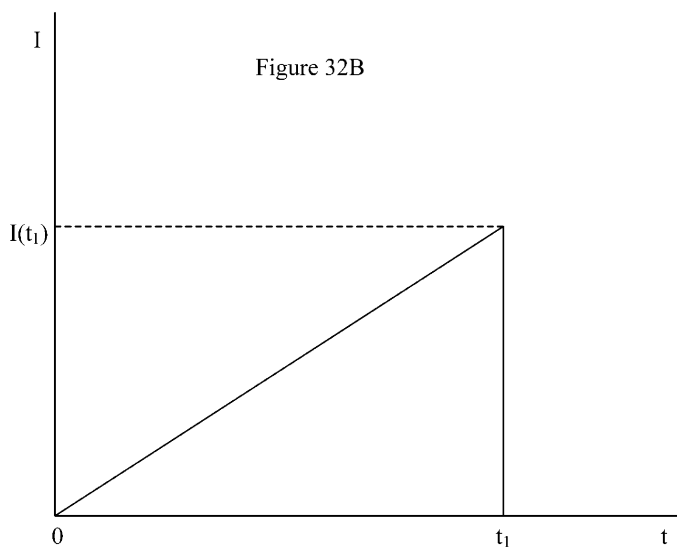


Figure 33A

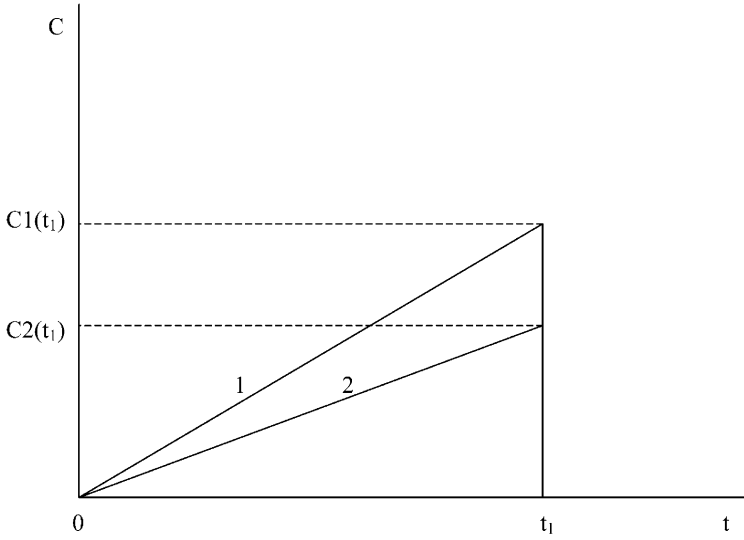
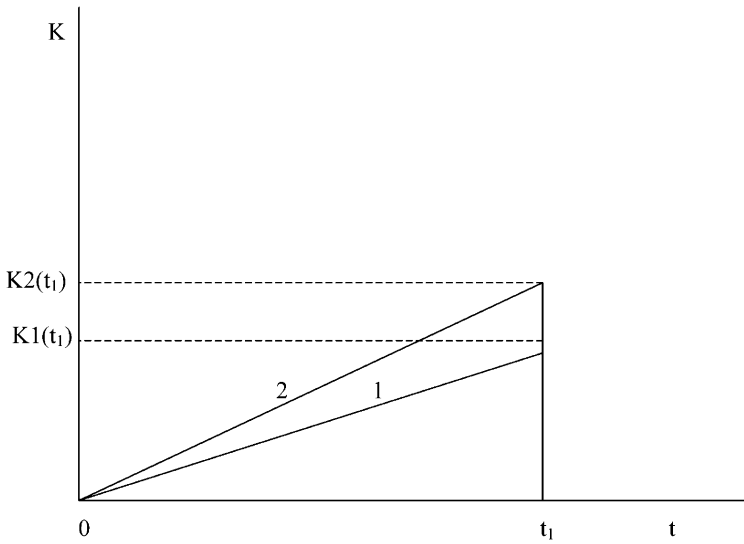
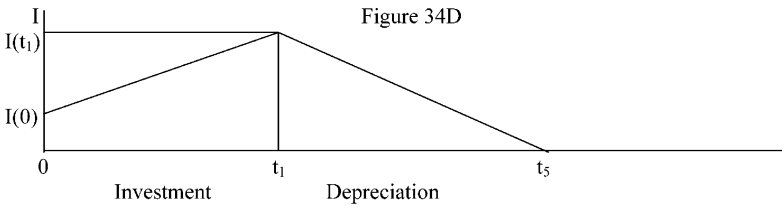
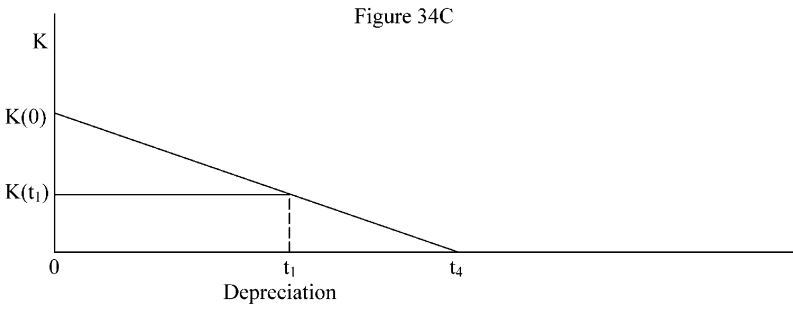
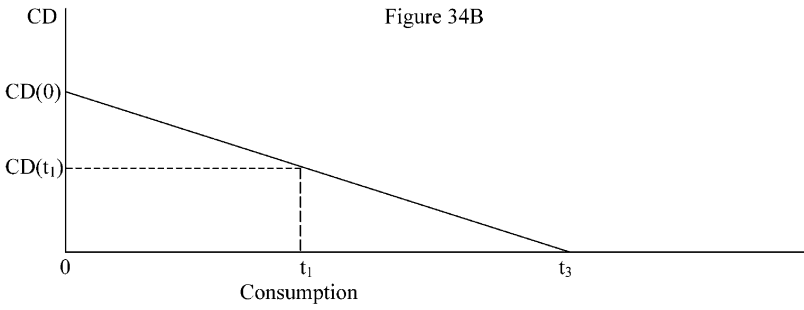
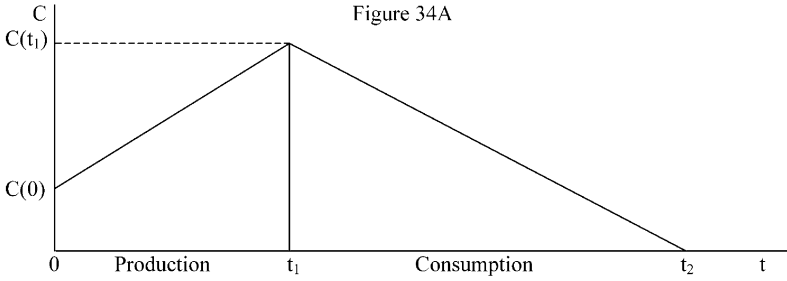


Figure 33B





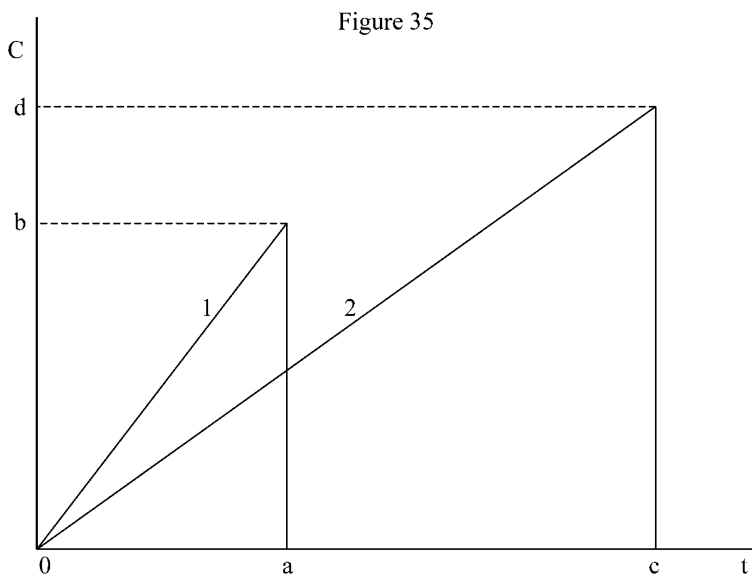


Figure H1

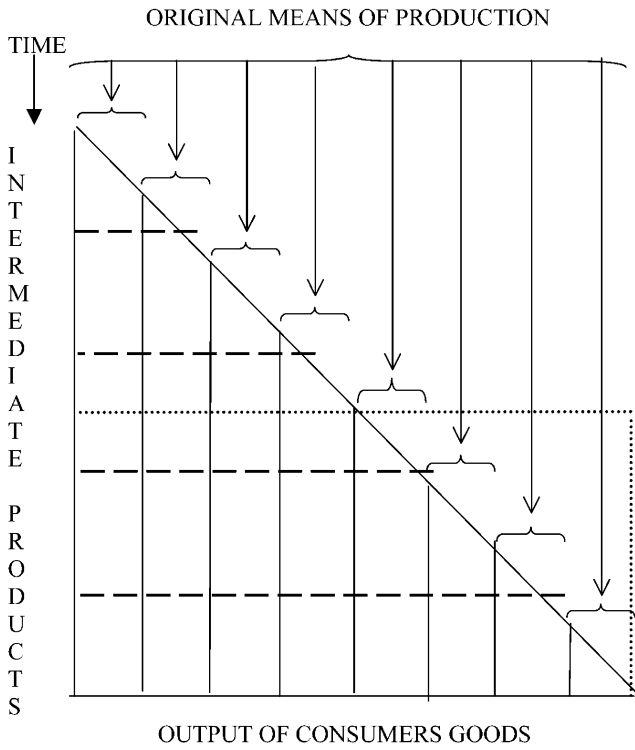


Figure H2

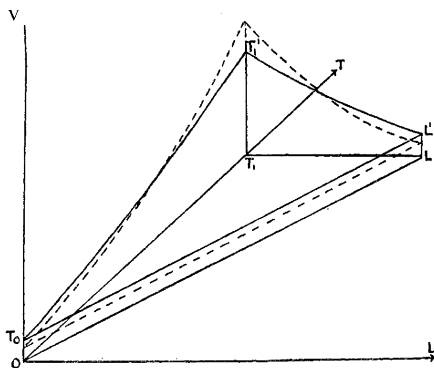


Figure H3

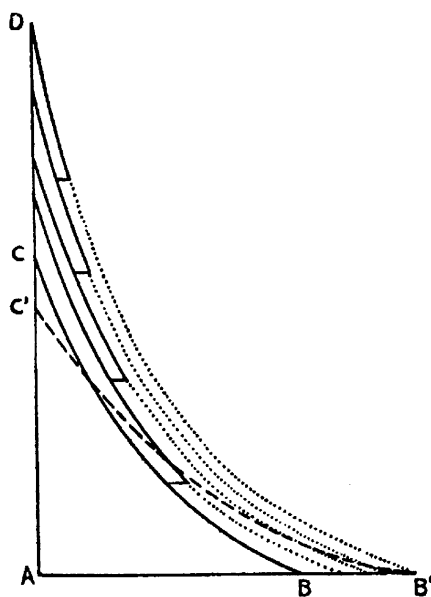


FIG. 8.

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THE UNEASY CASE FOR FRACTIONAL-RESERVE FREE BANKING

LUDWIG VAN DEN HAUWE*

Resumen: Desde hace algunas décadas varias subdisciplinas de la economía se ven reorientadas hacia el análisis institucional. Este desarrollo ha afectado más específicamente también a los campos de la macroeconomía y la teoría monetaria donde ha llevado a varias propuestas de reformas financieras y monetarias de gran alcance. Una de las propuestas más exitosas aboga por una banca libre con reserva fraccionaria, o sea un sistema sin banco central en el cual, sin embargo, los bancos puedan operar con una reserva fraccionaria. Este artículo comenta varios defectos conceptuales de dicha propuesta. Más específicamente, varias alegaciones de los banqueros de la banca libre con reserva fraccionaria relativas a las supuestas características operativas de este sistema se critican partiendo de la teoría económica. Más en particular, se denuncia como errónea la alegación de que una banca libre con reserva fraccionaria llevaría a la desaparición del ciclo económico. Además, se realiza un análisis de mano invisible lo cual refuerza la conclusión que la banca libre con reserva fraccionaria es incompatible con los principios éticos y jurídicos propios de una sociedad libre.

Palabras clave: banca libre con reserva fraccionaria, ciclo económico, mano invisible.

Abstract: Since a few decades several sub-disciplines within economics have witnessed a reorientation towards institutional analysis. This development has in particular also affected the fields of macroeconomics and monetary theory where it has led to several proposals for far-reaching financial and monetary reform. One of the more successful of these proposals advocates a fractional-reserve free banking system, that is, a system with no central

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bank, but with permission for the banks to operate with a fractional reserve. This article exposes several conceptual flaws in this proposal. In particular several claims of the fractional-reserve free bankers with respect to the purported working characteristics of this system are criticized from the perspective of economic theory. In particular, the claim that a fractional-reserve free banking system would lead to the disappearance of the business cycle is recognized as false. Furthermore an invisible-hand analysis is performed, reinforcing the conclusion that fractional-reserve free banking is incompatible with the ethical and juridical principles underlying a free society.

Key words: monetary and banking regimes, comparative institutional analysis, fractional-reserve free banking, business cycle, invisible hand.

Clasificación JEL: B53, E32, E42, E5, G18, H11, K39, P3, P34

I. INTRODUCTION

Since a few decades several sub-disciplines within the field of economics have been characterized by a reorientation towards institutional analysis. Scratching the surface of economic phenomena and searching for a deeper understanding, economists in several fields have rediscovered the crucial role and importance of institutions. The explosive growth and development of such sub-disciplines as Law and Economics, Constitutional Political Economy and the New Institutional Economics, among others, all illustrate this evolution. This development has in particular also affected the fields of macroeconomics and monetary theory.

As had often been the case throughout the history of economic thought, the members of the Austrian School have in several respects taken the lead in these recent developments. A considerable amount of attention has thus in particular been devoted to deepening our understanding of the institutional pre-conditions for economic coordination in a complex monetary economy, through a critical examination and analysis of possible

institutional alternatives to the prevailing monetary system of central-banking-cum-fiat-money.

While the scientific interest in the general theme of the complex causal relationships between monetary and banking arrangements on the one hand and the genesis of business cycles on the other is not new, it has been revived through recent scholarly contributions.

A debate has arisen in this connection between two opposing views. This debate is relevant to the causal analysis of business cycles and has led to important refinements and to a perfection of the Austrian theory of the business cycle from a comparative institutional perspective.

According to one side of the debate, represented by the fractional-reserve free bankers, the root cause of the business cycle is central banking. The proponents of this view argue that a competitive banking system under redeemability in specie and in which banks are subject to no legal ceiling on currency issues, or floor on reserve ratios, would be inherently stable. According to the other side of the debate, represented by the 100 per cent reserve advocates, the root cause of the cycle is the fractional-reserve nature of banking. The proponents of this view believe that a competitive system of fractional-reserve banking is characterized by inherent instability and advocate a return to banking under a 100-percent reserve requirement.¹

¹ Characterizations and/or defenses of fractional-reserve free banking are offered in Dowd (1993; 1996 *passim*), Garrison (1996), Horwitz (1992; 2000), Sechrest (1993), Selgin (1988; 1996, *passim*), Selgin and White (1994; 1996), White (1989; 1992; 1995; 1999). Among defenders of 100 per cent reserve free banking, mention should be made of Hoppe (1994; 2006 Chapters 6 & 7), Huerta de Soto (1994; 1995; 1998; 2006), Rothbard (1983; 1988; 1991; 1994; 1997a Chapter 18) and Skousen (1996); see also the papers in Rockwell (1992). On the interdisciplinary character of the debate, see Block (1988). The present debate is (only) to some degree reminiscent of earlier debates, see Daugherty (1942; 1943); also Rothbard (1995, Chs. 5-7) and Mises (1978, 118-20). For a standard account of the role of central banks, see Goodhart (1988).

In this paper it will be argued, in general, that the role of institutions is indeed crucial for the comprehension of macro-economic phenomena such as business cycles and depressions, and, in particular, that the fractional-reserve free bankers have not made a compelling case in favour of fractional-reserve free banking, and that they have misidentified the monetary and banking arrangements appropriate for a free society.

II.

BROADENING THE TASK OF MONETARY THEORY: TOWARDS A COMPARATIVE INSTITUTIONAL ANALYSIS OF MONETARY PHENOMENA

Institutional economics as a scientific sub-discipline is characterized by a particular kind of orientation in economic analysis, namely its focus on the interrelationships between the system of rules and institutions on the one hand and the social and economic pattern of actions (order or disorder) resulting under those rules on the other. Institutional economics draws inspiration from the insight that Adam Smith's invisible hand (Smith 1937, 423) is invisible only for those who are blind to the role and function of institutions. In the context of business cycle research this reorientation takes the form of a comparative analysis of the effects of various monetary and banking regimes, in particular with respect to the important issue of the efficacy with which the economic system performs its coordinating role.

In her important book *The Rationale of Central Banking* Vera C. Smith had already set out the main starting points of any such approach when she wrote that «[a]ny attempt to make a final evaluation of the relative merits of alternative systems of banking must look primarily to the tendencies they manifest towards instability, or more particularly to the amount of causal influence they exert in cyclical fluctuations» (Smith 1990, 192)

and that «[u]nless it can be proved that free banking would entirely eliminate the trade cycle and general runs on the banks, the argument for the lender of last resort remains a very powerful argument in defence of central banking» (ibid. 187).

The scientific theory of the business cycle is thus confronted with two distinct though related tasks. First, it is a theory of the unsustainable boom; it has to explain why, given a credit-driven or policy-induced boom, a subsequent bust is inevitable. A second and distinct (but related) task consists in explaining why the recurrence of boom-bust cycles itself allegedly is – or may seem to be – inevitable. It would not be correct to suggest that the Austrian theory of the business cycle is agnostic with respect to the possible answers to this second question. The latter aspect is more closely related to the institutional context and requires an examination both of the working characteristics of actually existing monetary and banking arrangements and of the working characteristics of possible institutional alternatives to the prevailing institutional form of central-banking-cum-fiat-money.

The latter aspect, because of its counterfactual character, is also of a more speculative nature. In particular the search will be for the type of institutional arrangements in the field of money and banking that are most likely to minimize the tendency for the market rate of interest to be reduced below the natural rate.

Using an illuminating metaphor, Hayek pointed out that «(...) money by its very nature constitutes a kind of loose joint in the self-equilibrating apparatus of the price mechanism which is bound to impede its working – the more so the greater is the play in the loose joint.» (Hayek 1941, 408)

The existence of money breaks any rigid link between production and demand. That the link between production and demand is a loose one captures the idea that the relationship between production and demand in a monetary economy will

depend upon how well money performs its intermediary role. Hayek recognized that monetary changes can cause relative prices to move in ways that will create discrepancies between supply and demand. Prices can systematically contain wrong information, which leads economic activity away from equilibrium. Production can thus be temporarily misdirected.

However, from a comparative institutions perspective, the nature and the extent of these disturbances will depend not merely upon monetary policy but also, and even more fundamentally, upon the institutional framework (monetary constitution) which is in place. The economist would not want to imply that the extent of money's «loose-jointedness» –or the amount of «play in the loose joint»– and its effects are unrelated to the institutional structure.

Combining these insights, it is now possible to characterize more adequately the task of monetary analysis and business cycle theory from a comparative institutional perspective. The crucial point is to devise society's monetary constitution in such a manner that the extent of money's «loose-jointedness» and the harmful effects thereof are «minimized» so to speak, that is, reduced to a conceivable minimum, while at the same time the general benefits which money as a generally accepted medium of exchange confers upon society are safeguarded. The essential «loose-jointedness» of money means that the use of a generally accepted medium of exchange (money) is not only welfare-enhancing, that is, it brings gains to society, but that it equally entails certain costs and risks.

Therefore society's monetary institutions should be devised in such a manner that an «optimal» balance is attained between assuring the benefits and gains the use of money confers on society on the one hand and avoiding (or limiting) the costs and risks resulting from the «looseness of the linkage» provided by money on the other. While the economic system clearly cannot and should not be turned into a barter-like system, since money

can never be strictly neutral, the task is nevertheless to make explicit the kind of monetary «rules of the game» that will allow to approximate as much as possible this «optimum». Austrian business cycle research thus comprises an important comparative institutional (or, as some would say, «constitutional») dimension.

III.

A REMINDER: THE AUSTRIAN THEORY OF THE BUSINESS CYCLE

The Austrian theory of the business cycle emerges from a straightforward comparison of savings-induced growth which is sustainable, with a credit-induced boom, which is not sustainable.² An increase in saving by individuals and a credit expansion orchestrated by the central bank set into motion market processes whose initial allocational effects on the economy's capital structure are similar. The ultimate consequences of the two processes stand in stark contrast, however. Whereas saving entails genuine growth, credit expansion leads to boom and bust.

If market participants' time preferences, *i.e.* their degree of preference for present over future goods, falls, then they will tend to consume less now and save and invest more; at the same time, and for the same reason, the rate of interest will fall. A decrease in the interest rate causes resources to be transferred from the late and final stages to the early stages. The structure of production is thus modified. It will now be depicted by a Hayekian triangle with a longer time-dimension leg and an (initially) shorter consumable-output leg. The time profile of consumption thus becomes skewed toward the future. In a

² For recent and excellent accounts of the business cycle see e.g. Alonso (2004), Huerta de Soto (2006), Garrison (2001), Skousen (1990). Chapter XX of Mises (1998) remains required reading.

genuine savings-induced boom increased investment in longer-term projects is thus consistent with the underlying economic realities.

This is not true in the case of a policy-induced artificial boom. In the hypothesis of an artificial boom, the change in the interest-rate signal and the change in resource availabilities are at odds with one another. If the central bank pads the supply of loanable funds with newly created money, the interest rate is lowered and long-term investment projects are being initiated, just as in the case of an increase in saving. However, in the absence of an actual change in time preferences, no additional resources for sustaining the policy-induced boom are freed up. In fact, facing a lower interest rate, people will save less and spend more on current consumables. In other words, the central bank's credit expansion drives a wedge between saving and investment; it results in an incompatible mix of market forces. Malinvestment and overconsumption will be observed. Of course, as the market guides these new long-term investment projects into their intermediate and later stages, the underlying economic realities become increasingly clear and ultimately re-affirm themselves.

Entrepreneurs will encounter resource scarcities that are more constraining than was implied by the pattern of wages, prices, and interest rates that characterized the early phase of the boom. The bidding for increasingly scarce resources and the accompanying increased demands for credit put upward pressure on the interest rate. On the eve of the bust, «distress borrowing» allows some producers to finish their projects and minimize their losses. At the same time, the high interest rates cause people to curtail their consumption and to save instead. Where «overconsumption» had first been observed, «forced saving» now takes place. The change in saving is far short of sufficient, however, in comparison to the saving actually needed to see the policy-induced investments through to completion.

The ensuing period of liquidation involves higher-than-normal levels of unemployment.

Clearly the consumption and investment magnitudes will not simply return to their previous pre-boom sustainable levels. Given the intertemporal disequilibrium created during the boom, needed liquidation may well take the economy inside its production possibilities frontier (PPF). Under favourable conditions, market forces may bring business decisions back into conformity with actual consumer preferences. There is clearly also a danger, however, especially in the face of ill-conceived policy actions by the monetary and fiscal authorities, that the recovery phase will be preempted by spiraling downward into deep depression, that is, self-reversing changes in the capital structure may give way to a self-aggravating downward spiral in both income and spending.³

IV.

THE PROBLEMS OF CENTRAL BANKING

The stabilization policies of the central banks have not led to the disappearance of the business cycle. Furthermore the problems facing systems with a central bank are undeniably real and have to some degree also been acknowledged in the orthodox mainstream literature.

In this respect reference can be made to the literature dealing with time inconsistency and the inflation bias under discretionary policy.⁴ The analysis of time inconsistency in

³ In fact it is this aspect of the downturn that primarily occupied Keynes's attention in the *General Theory*. (Keynes 1997) The typically Keynesian scenario of a «sudden collapse in the marginal efficiency of capital» is most likely to occur during a period in which the counter-movements of a boom-bust cycle have already begun to make themselves felt. On «secondary depression», see also Huerta de Soto (2006, 453-56).

⁴ In particular reference is to be made to the literature on «rules» versus «discretion» in monetary policy, see in particular the extensive literature following

monetary policy has provided a theoretical framework for thinking formally about credibility issues, and has led to an examination of the actual incentives faced by central banks. The further development of this strand of thought has led to an attempt to spell out some normative implications for the design of monetary institutions. Thus it has been suggested that the government might for instance delegate monetary policy to an independent central banker that is «conservative» in the sense of placing a higher relative weight on inflation stabilization than does society as a whole; or the government might attempt to design an optimal incentive structure by offering the head of the central bank a state-contingent wage contract. (Obstfeld and Rogoff 2002, 641 ff.)

Nevertheless, in all of this literature, the prevailing institutional form of central-banking-cum-fiat-money remains unquestioned and its continuing existence and legitimacy are in fact taken for granted. In other words, these authors do not extend their normative and critical reflection towards proposals for more radical alternatives to the prevailing institutional regime of central-banking-cum-fiat-money.

V.

HAYEK'S PROPOSAL FOR THE DENATIONALISATION OF MONEY

The scientific interest in more radical alternatives to prevailing institutional forms had been stimulated towards the end of the 1970s by F. A. Hayek's proposal for the denationalisation of money. (Hayek 1991)

Hayek envisioned a market in which all issuers, public and private, would offer non-redeemable currencies, each currency

Kydland and Prescott (1977), Barro and Gordon (1983a, 1983b), for an overview of recent developments, see Walsh (2001, Ch. 8).

constituting its own monetary standard. Each private issuer would pledge to maintain purchasing-power stability in terms of a particular basket of goods, but this pledge would not take the form of an enforceable redemption contract. Thus Hayek, who had always been skeptical toward free banking, did *not* suggest free competition among banks offering wholly or fractionally backed liabilities redeemable for a commodity money. Instead he speculated that private producers of fiat-type monies bearing legally protected brand names would outcompete both commodity-based monies and government fiat monies by promising greater stability of purchasing power. Each issuer would pledge to hold the purchasing power of its money constant in terms of a specified price-index basket, but the pledge would not be a legally enforceable commitment of the sort embodied in a redemption contract.

Hayek's proposal has provoked at least two forms of fundamental criticism. First, as Prof. Rothbard has reminded, it might be doubtful whether Hayek's system would be able to pass the market test in view of Mises's regression theorem. (Rothbard 1997a, 154 ff., 366 ff.) The feasibility of private fiat-type money is thus doubtful in view of the regression theorem.⁵

⁵ On the regression theorem, see Mises (1981, 129-46) and Rothbard 2004, 268-76). Mises devised the regression theorem to solve what he characterized as a circularity problem: on the one hand we resort to individual value scales and demand schedules in order to explain the formation of money prices on the market while on the other hand every time a unit of money enters in an individual's value scale it will do so in virtue of its marginal utility, that is, its serviceability in exchange rather than in direct use, or its purchasing power («objective exchange value»), which itself presupposes (or depends upon) an already given structure of money prices for the various goods. Mises argued that although the value of money today depends upon today's demand for money, today's demand in turn depends, not on the value of money today, but on its value (purchasing power) yesterday. As we regress backwards in time, we must eventually arrive at the original point when people first began to use gold as a medium of exchange. If the basis of the present purchasing power of any money is some past purchasing power to which agents refer in forming their expectations, then a new fiat money cannot be created *ab novo*. A new fiat money cannot be introduced «independently». Only a commodity-based money can be both new and independent.

The latter raises doubts about whether it would be possible at all to get a system based on private fiat-type money off the ground in the first place. A new fiat money must at first be linked to an established money through a fixed rate of exchange. Otherwise would-be users of the new money will have no means for assigning any future purchasing power to it and no basis for demanding definite quantities of it. Prof. Selgin has likened the initial redeemability of a new fiat money (or fixed exchange rate) to a «launching vehicle» that can fall away once the new currency gets into orbit.⁶

Prof. White has pointed to a further problem with respect to Hayek's proposal: this system might face a time-inconsistency type of problem. (White 1999, 227 ff.) The question can be raised of whether the keeping of such a non-enforceable pledge would be consistent with profit maximization. Arguably a profit-maximizing fiat-type issuer could choose to hyper-inflate its own brand of money, and would do so if staying in business promised less than the one-shot profit available from an unanticipated hyperinflation.

As a result of these criticisms, in more recent times monetary economists working in this tradition have devised different proposals for fundamental monetary and financial reform. Although some of these use Hayek's work as a source of inspiration, most recent proposals deviate considerably from Hayek's specific original proposal in their «details».

⁶ As Prof. Selgin writes: «A fixed exchange rate must (...) serve as a 'launching vehicle' for placing any new fiat money into circulation. Once the new money is in circulation, that is, once it is being widely employed as a medium of exchange, the fixed exchange rate used to launch it can be jettisoned without undermining the money's continued acceptance, just as a rocket can be jettisoned once a satellite is in orbit. The new money, like the satellite, may then continue to circulate (albeit, if history is any guide, at an ever-depreciating value) by means of that inertia which 'tends to perpetuate an entrenched use' (...).» (Selgin 1994, 811. Thus a new fiat money must be linked to some established money to have a plausible prospect of getting off the ground.

VI.

THE STRONG CLAIMS OF THE FRACTIONAL-RESERVE
FREE BANKERS: A MANIFOLD CRITIQUE**1. Introduction**

The case for fractional-reserve free banking consists of a conglomerate of more or less interrelated claims, all of which are highly questionable on theoretical grounds. These claims are not limited to the contention that fractional-reserve free banking, if it were installed, would lead to the disappearance of the business cycle.

Nevertheless it has to be acknowledged that the theoretical starting point of the fractional-reserve free bankers is not entirely without merit to the extent that it is recognized that the complex issues and problems raised by the loose linkage provided by money –Hayek’s «loose joint»– can be illuminated against the background of Say’s Law. The free bankers recognize that the textbook model of the Classical economists should be complemented by an account of how money and the banking system work to ensure the valid insight behind Say’s Law. They thus conceive of Say’s Law as a conditional proposition.⁷ They generally misconstrue the classical meaning of Say’s Law, however; in particular they misidentify the appropriate «monetary rules of the game» of a free society.

As will become clear further, it is not too difficult to offer a convincing conceptual refutation of the claim that the business cycle would disappear under a system of fractional-reserve free banking. Simply refuting that claim, however, might still leave open the possibility that recurrent business cycles and

⁷ See Sechrest (1993, 49) and Horwitz (2000, 86). For Jean-Baptiste Say’s statement of the law bearing his name, see Say (2001, 132-40); a contemporary statement of Say’s Law is contained in Reisman (1998, Ch. 13).

systematic intertemporal discoordination are inherent in the normal functioning of the free, unhampered market. Therefore a more comprehensive critique of fractional-reserve free banking is appropriate, in order to establish the correct meaning to be attached to the notion of free banking, which is different from the one favoured by the fractional-reserve free bankers.

Since the «free market» is ultimately always defined in terms of the institutional constraints and rules to which the actions and interactions of market participants are subject, attention is in this context also to be devoted to the ethico-juridical dimension and issues involved.

2. Historical Evidence

Historical evidence generally supports the case against fractional-reserve free banking. (Huerta de Soto 2006, 701 ff.) The main dissenter is Prof. L. White who has argued that the Scottish free banking system had operated for over a century (1716-1845) in a stable, efficient and competitive manner. (White 1995.)⁸

Historical evidence by itself, however, because of its highly complex character and since it is often incomplete and sometimes also ambiguous, is unlikely to establish the case against fractional-reserve free banking in a fully convincing manner. Therefore a thorough conceptual critique of fractional-reserve free banking is required. This critique focuses on the ethical and legal perplexities and inconsistencies inherent in the proposal for fractional-reserve free banking, as well as on an exposure of the theoretical flaws in the fractional-reserve free bankers' account of the working characteristics of this system.

⁸ The difficulties inherent in White's historical thesis are highlighted in Huerta de Soto (2006, Chapter 8), Rothbard (1988), Sechrest (1988); most authoritative from a historical perspective is Checkland (1975).

3. The Mechanics of Fractional-Reserve Free Banking According to its Advocates: Would Fractional-Reserve Free Banking Be Proof Against Systematic Intertemporal Discoordination and Business Cycles?

The fractional-reserve free bankers distinguish between a «non-arbitrary» and an «arbitrary» change in the supply of bank-issued liabilities according to whether or not such changes are effectuated by the banks in response to a change in the desire of the public to hold on to bank liabilities. Since the effects of credit expansion by the banks are basically similar whether or not the credit expansion is accompanied by changes in the demand to hold bank liabilities, the distinction between an «arbitrary» and a «non-arbitrary» expansion is of little intrinsic interest. It is here maintained only for the sake of the argument.⁹

a) *«Non-arbitrary» credit expansion under fractional-reserve free banking: the demand-elasticity of the currency supply*

According to the advocates of a system of fractional-reserve free banking, one of the main virtues of such a system consists in the demand-elasticity of the currency supply, not only at the level of the individual bank – *i.e.* the supply of money by an individual bank is *demand-elastic* – but also in case of a *general* rise in the public's desired holdings of currency across all brands: a fall or rise in the «velocity» of bank-issued money leads

⁹ The terminological distinction which advocates of fractional-reserve free banking implicitly or explicitly make between «arbitrary» and «non-arbitrary» credit expansion – and which was suggested to this author in personal communication – is not essential and in fact itself arbitrary. Under the conditions specified by the theory of the business cycle, any credit expansion unbacked by an increase in genuine saving, will generate a boom-bust cycle.

to an offsetting change in the stock of bank-issued money by changing the money multiplier.

In terms of the equation of exchange, the system makes M move to offset changes in V , thus acting to automatically stabilize MV , nominal aggregate demand for goods, or Py , nominal income. Fractional-reserve free banking would thus «automatically» discriminate between real disturbances and monetary disturbances, reacting only to the latter, thus also implementing the so-called productivity norm.

Implicit in the productivity norm as espoused by contemporary proponents of fractional-reserve free banking is the idea that no adverse business-cycle consequences as described by the Austrian theory will follow an expansion of the stock of bank money that merely accommodates a prior increase in the demand for money holdings. Such an expansion, instead of adding to the flow of spending, merely keeps that flow from shrinking. The expansion therefore serves not to trigger a boom but to avoid a bust.

A rise in the demand to hold bank-issued money relative to spending implies a fall in velocity (or the ratio of spending to money balances). By reducing spending flows, and thus the «turnover» of bank-issued money, the shift reduces the probability of large adverse clearings. Liquidity cost thus falls, and the banks can safely keep more liabilities in circulation, and correspondingly can make more loans. The rise in its liabilities restores equilibrium by pushing back up the marginal benefit of holding reserves for the representative bank.

In other words, a *general* rise in the public's desired holdings of currency, shared by *all* the banks, creates the reverse of a global in-concert over-issue. The banks' reserves are made more than sufficient by the reduction in liquidity costs from reduced spending per unit of currency. The reduction in *gross* clearings reduces desired reserves by reducing the chance of reserve depletion for any given starting level of reserves. In

response, the banking system will expand its liabilities, raising banks' desired reserves, until desired reserves again match the given stock of reserves.

In these ways, the supply of money by *the banking system as a whole* is demand-elastic: the banks as a group find it profitable to respond to a general rise in the public's desired holdings of currency by raising the actual circulation.

In the new equilibrium, the argument goes, real intermediation through the banking system has increased: the banking system has a larger volume of liabilities and a larger portfolio of assets. This indicates that the voluntary holding of bank-issued money is one component of the supply of loanable funds. To hold a bank's currency or deposit liabilities is to lend it funds which it can then intermediate (re-lend).

An important pre-supposition in the foregoing account is that to hold inside money is by itself (and by definition) to engage in voluntary saving. The aggregate demand to hold balances of inside money is a reflection of the public's willingness to supply loanable funds through the banks whose liabilities are held. Under this assumption, if the sacrificed spending is consumption spending, the increase in the holding of bank-issued currency represents a *net* increase in the supply of loanable funds.

The pre-supposition is questionable, however, and in fact not correct. The concept of saving is confused with the concept of demand for money; it is not correct to maintain the view that to hold «inside» money is to engage in voluntary saving. The holding of money, that is, the act of not spending it, is not equivalent to saving. (also Huerta de Soto 2006, 694-700)

The consumption/investment proportion, that is, the decision of how much of one's money to spend on consumption and how much on investment, is determined by a person's time preference, that is, the degree to which this person prefers present consumption over future consumption. On the other hand, the

source of his demand for cash is the utility attached to money, that is, the personal satisfaction derived from money in allowing him immediate purchases of consumer or producer goods at uncertain future dates. An increase in the balances of «inside» money that the public wishes to hold is perfectly compatible with a simultaneous increase in the demand for consumer goods and services if the public decides to decrease its investment expenditure.

If the demand for money increases while the social stock of money is given, this additional demand can only be satisfied by bidding down the money prices of non-money goods. The relative price of money versus non-money will have changed.¹⁰

However, it is neither possible nor necessary for the banks to respond to a general rise in the public's desired holdings of bank liabilities by raising the actual circulation.

First, it is *not possible* for the banks to effectuate any such offsetting. The adjustment will already have taken place. In particular it will be noted that the market participants to which a particular bank grants, say, additional loans and the bank customers whose demand for its liabilities has risen are not necessarily the *same* market participants. It is not unlikely that these two groups will be composed of *different* market participants. It is even conceivable that a particular bank experiences positive clearings because *other banks* temporarily hold its currency instead of entering it into the clearing process. Nor is it to be excluded that a particular bank, after finding the level of its reserves greater than desired, grants loans to *new* customers, that is, market participants who up to that point in time were not (yet) customers of the bank.

¹⁰ The implicit definition of saving employed by the fractional reserve free bankers is nevertheless one that has become very common. At least since Keynes's *General Theory*, saving has been defined as «the excess of income over consumption». (Keynes 1997, 62.)

Thus the way in which the system accommodates rises in the demand to hold bank liabilities works *indirectly* via the appearance of positive clearings. There is nothing in the adjustment process that guarantees that the additional quantity of bank liabilities supplied in response to such a rise in demand, say, through the granting of more loans, is put directly in the hands of those very *same* market participants who have increased their willingness to hold on to bank liabilities. It is this fact that ultimately throws some serious doubts upon the stronger claims of the advocates of fractional-reserve free banking, such as that the system, through its inherent tendency towards monetary equilibrium, will equally and simultaneously tend towards a situation from which forced saving is absent, in which notional demand equals effective demand and in which the benefits derived from the operation of Say's Law are maximized. If the analysis is conducted at a sufficiently low level of aggregation and if the precepts of methodological individualism are consistently followed, then all of these claims become highly questionable.

Second, it is *not at all necessary* to accommodate any general increases in demands of market participants to hold on to bank liabilities. Consider a market exchange between market participants A and B, A selling quantities of a particular commodity to B. A deal or transaction between A and B will only take place if the minimum money price at which A is willing to sell a unit of the commodity, that is the minimum price he wants to obtain for one unit of the commodity, is no higher than the maximum price B is willing to pay in exchange of a unit of the commodity. Suppose that a «general» increase in money demand takes place in the sense that both A and B increase their demand for money balances. On the seller side this means that A will sell a definite quantity of the commodity for a smaller amount of money, or stated otherwise, that A will offer a greater amount of the commodity for a given quantity

of money. That is, A is willing to sell at a lower minimum price. On the buyer side, this means that B will offer a smaller amount of money for a definite quantity of the commodity, or will accept only a greater amount of the commodity in exchange for a definite quantity of money. In other words, B is now willing to buy only at a lower maximum price, *i.e.* the maximum price he is willing to pay for one unit of the commodity is now lower. If any transaction between A and B still takes place, the money price of the commodity at which such a deal will be made will tend to be lower than before. In other words, a spontaneous adjustment of quantities bought and sold at a lower money price for the commodity will tend to ensue.¹¹

b) The possibility and likelihood of business cycles and systematic intertemporal discoordination as a consequence of «non-arbitrary» credit expansion under fractional-reserve free banking

In fact, the scenario of a «non-arbitrary» in-concert expansion, as sketched by the free bankers, is quite problematic.

First, it is not made clear why we should ever expect a *general* change in the public's desired holdings of liabilities, shared by *all* the banks, to occur in the real world. It seems more likely that *some* banks will experience an increase in the public's willingness to hold on to their respective currencies, while others will not, or not to the same extent.

Furthermore, it can easily be demonstrated that it is precisely the feature of free banking that is considered its main and most

¹¹ In this connection reference is also sometimes made to a so-called who-goes-first type of problem. The falling price level, the argument goes, is a public good of sorts and each actor wishes to reap the benefits of the needed decline, but no one is willing or able to bear the cost of starting the process. With everyone trying to free ride off the desired result, it never occurs. (see Horwitz 2000, 158) As the previous considerations already make clear, and in the absence of institutional barriers to price flexibility, the who-goes-first problem is largely if not entirely a pseudo-problem.

outstanding virtue, namely the demand-elasticity of the currency supply or the fact that a fall or rise in the «velocity» of bank-issued money leads to an offsetting change in the stock of bank-issued money by changing the money multiplier, which makes the system particularly prone to business cycles and inter-temporal discoordination, possibly on an economy-wide scale.

Consider a situation in which a *general* rise in the public's desired holdings of currency actually occurs, *ex hypothesi* across all brands and in the closed-economy case. This is a situation of which we would have to say, according to the inherent logic of the theory, that it is characterized by a global in-concert under-issue. In other words, what happens is the reverse of a global in-concert over-issue. The banks' reserves are made more than sufficient by the reduction in liquidity costs from reduced spending per unit of currency. This results from the fact that the reduction in *gross* clearings reduces desired reserves by reducing the chance of reserve depletion for any given starting level of reserves.

As a consequence an expansion by the whole banking system of its liabilities, say, by extending loans, is fully justified, that is, according to the theory. Following the model of the fractional-reserve free bankers, this expansion is what will actually restore monetary equilibrium.

Now suppose that those loans are granted to entrepreneurs who spend the additional money on capital goods and launch investment projects, thus widening and deepening the investment goods structure. It will be noted that there is in the model of the free bankers nothing that precludes this scenario. These investment projects will be undertaken in the expectation that a particular flow of credit will be forthcoming in order to complete the lengthier production structure. Now suppose, however, that the public's desired holdings of currency change again but that this time they decline; again there is nothing in the system to preclude this scenario. The public spends more

again, cutting back its money balances previously built up. According to the inherent logic of the theory this leads to a situation *as if* the banks have engaged in an in-concert over-expansion. In such a situation the risk of reserve depletion is increased because the increase in *gross* clearings widens the reserve-loss probability distribution. Each bank will feel its risk of running out of reserves too great. In the hypothesis of a closed system that has a limited quantity of total reserves available, relief from the excess demand for reserves requires the banks to contract their liabilities in order to re-establish their desired levels of illiquidity risk.

However, the investments initially made possible by the previous expansion will now inevitably and necessarily reveal themselves as malinvestments. The newly started (lengthened) capital structure will now reveal itself as unsustainable. The flow of credit needed to complete the lengthier production structure (processes) will not be forthcoming as erroneously expected. The explanation of this fact is not too difficult to find. The new investments in more roundabout production processes were not warranted by genuine previous saving which is needed to sustain these production processes. It will therefore be impossible to complete these production processes.

The free bankers fail to see this problem because they conduct their theorizing on too high a level of aggregation and do not incorporate heterogeneous capital into their model; in other words, their approach is a predominantly macroeconomic one. The conclusion is that free banking will endogenously generate business cycles and economy-wide malinvestment precisely in the type of situations in which according to the fractional-reserve free bankers this would *not* be the case, that is, in the situations in which changes in the stock of bank-issued money supposedly «merely» accommodate changes in the «velocity» of bank-issued money. The fundamental reason is related to the fact that the lending and investment policies of the banks

are determined, under free banking, by changes in the demand of the public to hold bank-issued money (the greater or smaller willingness of the public to hold on to bank liabilities), and not to changes in the social rate of time preference (the greater or smaller willingness of the public to forego present consumption and to save). The demand for money and time preference are distinct praxeological factors, however.

c) The possibility and likelihood of business cycles and systematic intertemporal discoordination as a consequence of «arbitrary» credit expansion under fractional-reserve free banking

The previous account relates to what from the perspective of the model of the free bankers can be characterized as a *non-arbitrary* in-concert expansion, that is, an in-concert expansion that «merely» accommodates a general increase in the public's demand for bank liabilities. From the perspective of the fractional-reserve free bankers, the question of whether fractional-reserve free banking would be prone to business cycles and systematic malinvestment is indeed mostly reduced to the problem of whether an erroneous and cycle-generating *arbitrary* in-concert expansion is still conceivable under fractional-reserve free banking, that is, a credit expansion that is not accompanied by an increase in the demand to hold bank liabilities. It is then pointed out that such an expansion, although conceivable, is far less likely than under central banking since banks in a competitive system have strong incentives *not* to arbitrarily expand in unison.

The main idea underlying the argument against the likelihood of arbitrary in-concert expansion by all banks involves a reference to the widening (or broadening) of the representative bank's probability distribution over reserve losses. If all banks expand in concert, it may well be true that each bank's average

daily net clearings may be no different, but the increase in gross clearings implies an increase in the variance around that mean, creating a need for additional precautionary reserves.¹²

An idea similar to that which underlies the square-root law of precautionary reserve demand – and which is derived from a well-known proposition of probability theory – can be used, however, to argue that competitive banks can obtain economies of scale by pooling their reserves of high-powered money. Where possible drains on the reserves of individual banks may be assumed to be independent of one another, a familiar proposition of probability theory ensures that a given degree of security for each bank can be obtained with a centralized reserve that is smaller than the sum of reserves which each bank individually would have to hold. (Laidler 1992, 197) Thus a tendency towards centralization in banking may come to prevail, strengthening any tendency towards general in-concert expansion. Moreover, the fact is sometimes overlooked that the functioning of the clearing mechanism/system provides no check of the possibility of in-concert expansion, *i.e.* expansion by all banks or the entire system at once.

d) The fractional-reserve free bankers' questionable uses of quantitative probability concepts

More generally, the methodological legitimacy of the use of quantitative probability concepts in the present context, and in particular of the law of large numbers, can be questioned.

In a different context the Viennese philosopher K. Popper had made the useful point that all applications of the laws of large

¹² The so-called «square-root law» of precautionary reserve demand indeed holds that a bank's demand for precautionary reserves for any fixed planning period will be proportional to the square root of bank-money payments made by its clients during the planning period.

numbers require an objective interpretation and that there exists a fundamental conflict between subjective interpretations and all applications.¹³

The expression «objective interpretation» refers to a theory such as the frequency theory which was developed by Richard von Mises. According to this theory, the applicability of the probability calculus is contingent upon the presence or availability of a *Kollektiv*. This means that the application of quantitative probability theory relies on a pre-supposition of *homogeneity* with respect to the phenomena to be subjected to study.

However, the phenomena belonging to the domain of human action do not, in general, fulfill this requirement. Human action is not a random phenomenon, nor is it deterministic. It is indeed better characterized as «purposeful behaviour». Therefore there can be no numerical probability applied to specific individual events. Prof. L. White violates this methodological precept when he implies that a binomial probability model should be used to analyze interactions between banks and between banks and their clients. (White 1995, 7)

The problem identified here is a mistaken pre-supposition about the fundamental nature of the phenomena involved, rather than incorrect mathematical reasoning.

It may seem somewhat strange that the problems of money and banking give rise to epistemological questions concerning the most appropriate interpretation of the probability calculus,

¹³ For Popper this means that it is not possible to derive objective statistical conclusions, that is, conclusions about relative frequencies, from subjectivist non-statistical premisses, that is, premisses about degrees of belief. Popper later came to embrace the propensity interpretation. (see e.g. Popper 1983) The suggestion here is, however, that the theory of Richard von Mises still offers a perspective worth to be considered in this context. (Mises 1957 [1981]) For Richard von Mises the existence of random sequences (or possibly the absence thereof) is ultimately an empirical fact. It is the task of statistics to identify which experiments have this collective-generating property and to elicit the associated probability distributions over their class of possible outcomes. The starting point of this theory of probability is the concept of a collective.

the legitimacy of using quantitative probability concepts etc., but such questions cannot be avoided. It was Edgeworth who wrote already in 1888 that «probability is the foundation of banking». (Edgeworth 1888, 113)

Consider again the question or problem of whether a fractional reserve free banking system would endogenously generate business cycles. The answer to this question is related to the so-called in-concert over-expansion thesis. It is a well-known fact that even if it is true that the inter-bank clearing mechanism limits and puts a check upon isolated expansionary schemes (expansion by an individual bank) it does not serve to limit credit expansion in a fractional-reserve free banking system if most banks decide to simultaneously expand their loans, *i.e.* to expand in unison.

The free bankers, however, counter this argument on the basis of an explicitly probabilistic argument. When the banks expand in unison, no bank suffers any increase in net average reserve demand, as the expansion does not lead to any change in the mean or expected value of net clearings for any of the expanding banks. But although perfect in-concert expansion does not affect any bank's mean clearing losses, it does increase the variance of each bank's clearing losses, and does therefore increase each bank's precautionary demand for reserves. The so-called «square-root law» of precautionary reserve demand holds indeed that a bank's demand for precautionary reserves for any fixed planning period will be proportional to the square root of bank-money payments made by its clients during the planning period.

The critical point made here is not that the «square-root law» is based on incorrect mathematical reasoning, although the law itself is more often cited than derived by its proponents. It is indeed a well-known theorem of probability theory that the standard deviation of a binomial probability distribution grows like the square root of the number of trials.

The critical point made here is the more fundamental one of whether the process of payments from and to banks can be correctly conceived of as a random process, that is, a process of the same fundamental nature of, say, a binomial coin-tossing game. This is not obviously the case, a fact of which Edgeworth, one of the first expositors of the «square-root law», was already clearly aware.

Edgeworth was astute enough to point out that the conditions for the applicability of the *law of error* may not be fulfilled when he wrote that «it may be objected that some fluctuations in banking business are known to depend, not upon a fortuitous aggregation of small causes, but upon regular and unique events,(...)» (ibid. 114). He further added that «it is to be admitted that in banking, as in other departments, the law of error is fulfilled with various degrees of perfection. The rules of chance apply to the ‘many-dimpled’ undulations of commercial fair weather, rather than to the solitary earthquake wave of a great crisis.» (ibid. 115)

Further in his (1888) article, when discussing how to «solve a question which in the opinion of some is not devoid of practical interest, namely, how large an amount of uncovered Bank of England notes is it safe to issue now (...)», he went on writing that «[t]he reserve of the Bank of England presents peculiar difficulties. For as it descends, it is subject to influences which cannot be treated as fortuitous. It is pulled up by the actions of a little knot of persons (the Governor and Directors) raising the rate of discount. It is pulled down by the panic-stricken public acting, not ‘independently,’ but like sheep. It acquires force by going. Returns so originated cannot be regarded as analogous to ‘errors of observation’.» (ibid. 122)

Thus we conclude that *the first expositor of the «square-root law» gives evidence of a clear awareness of certain limitations to the applicability of the mathematical theory of probability to the solution of problems of bank management such as the determination of an*

adequate reserve level. Edgeworth (1888) thus took care to formulate more reservations than more recent expositors have done. Clearly more recent expositors have not always manifested the same caution. Where the theory of probability cannot apply entrepreneurial understanding will resume its role.

One reason why some advocates of fractional-reserve free banking fail to see the problem of the instability of fractional-reserve free banking and of the ensuing inevitable tendency toward a centralized banking system, is thus that they are sometimes too easily implying or assuming that the management team of a fractional reserve free bank is in a position to determine the optimal reserve level in a straightforward manner using stochastic optimization techniques. This view in fact amounts to the contention that it is somehow possible to *insure* through the application of the law of large numbers the exercise of fractional-reserve banking since, as the argument runs, banks, in order to fulfill their customers' normal requests for liquidity, and in accordance with the law of large numbers, allegedly only need to keep on hand, in the form of a cash reserve, a fraction of the money deposited with them in cash.

The reference in this area to the law of large numbers is thus equivalent to an attempt to apply the principles of insurance techniques to guard against the risk of deposit withdrawals, a risk assumed in advance to be quantifiable and thus technically insurable.

However, this belief is based on a misconceived idea of the nature of the phenomena under consideration. Indeed, far from the type of events which correspond to the natural world and represent an insurable risk, banking related phenomena fall within the realm of human action and are therefore immersed in *uncertainty* (not risk), which by its very nature is not technically insurable. (also Huerta de Soto 2006, 385ff.) Clearly the events related to customers' more or less massive and unexpected withdrawal of deposits from a bank correspond to the sphere

of human action and are characterized by uncertainty, which by its very nature is not technically insurable.

These fundamental reflections raise doubts about the possibility and likelihood of the banking system insuring itself against the likelihood of in-concert expansion and its adverse consequences (malinvestment, bank runs ...) through uses of the law of large numbers.¹⁴

4. The Possibility of Redemption under Fractional-Reserve Free Banking

As has already become clear from the previous analysis, the fractional-reserve free bankers clearly and systematically underestimate the potential for malinvestment, intertemporal coordination failures and business cycles under free banking. There is still a different reason, however, why the free bankers fail to realize that free banking would be considerably less – rather than more – stable than, say, a free banking system based on a 100 per cent reserve requirement.

There is one respect in which central banking systems seem to be *prima facie* superior to a fractional-reserve free banking system. A key characteristic of a modern central bank is that it supports the banking system by acting as a *lender of last resort*. A lender of last resort stands ready to inject high-powered money into the system in the event of an internal drain. An «internal drain» occurs when the public's increased preference

¹⁴ More generally it will often be possible to characterize the decision-making process as being dominated by behavioral or endogenous uncertainty, which means that the probability distributions attached to uncertain events faced by decision-makers do not remain invariant with respect to their own actions. In other words the data generation process itself may change as a result of their actions. Under behavioral or endogenous uncertainty, knowledge of the past evolution of a system may be of little guide to its likely future development because there is no stable and exogenously given data generation process that agents can hope to learn about.

In these circumstances, the necessary basis for a formal representation of the process of expectations formation may not exist.

for holding high-powered money prompts redemption of bank-issued money on a scale that threatens to deplete a fractional-reserve banking system of reserves, and so forces a sharp contraction in the quantity of bank-issued money.¹⁵

Under a regime of fractional-reserve free banking, however, there is no comparable «backstop» in case of a redemption run. Clearly the logical possibility of a major contraction under free banking due to a redemption run – comparable in effect to a shift in the deposit-currency ratio under central banking – cannot be excluded.

The fractional-reserve free bankers acknowledge the fact that increased demands for redemption of bank liabilities into specie would generate effects similar to the effects of a decline in the deposit-currency ratio under central banking. (see e.g. Horwitz 2000, 217)

One is almost tempted, at this point, to conclude that central banking is indeed obviously superior to free banking. As is explained further, this temptation must nevertheless be resisted.

The fractional-reserve free bankers distinguish between «inside money» and «outside money».

Thus Selgin writes:

A demand may exist for either of two kinds of money: 'base' or commodity money-the ultimate money of redemption-and inside money (bank notes and demand deposits) redeemable in base money. In a mature free banking system, commodity money does not circulate, its place being taken entirely by inside money. Such being the case, the unqualified expression 'demand for money' used in this study will henceforth mean demand for inside money. (Selgin 1988, 54)

The fractional reserve free bankers thus not only distinguish between «inside money» and «outside money»; significantly

¹⁵ High-powered money is money that currently or potentially serves as bank reserves.

they assume that «demand for money» always means demand for inside money; not only does commodity money not circulate; it will almost never be held by market participants outside the banking system. It is assumed that the entire amount of commodity money is held by the banks as a reserve in their vaults.

Considering the entire banking system's capacity for credit expansion and new deposit creation (Huerta de Soto *ibid.* 240), it can easily be demonstrated that the net deposits created by the banking system amount to:

$$DN = d/[c + f/(1-f)] \quad (1)$$

where

- d: the money originally deposited in the bank's vault;
- c: the cash or reserves ratio maintained by the bank;
- f: the percentage of money which filters out of the system.

The money multiplier formula obtained by fractional-reserve free bankers Selgin and White is equal to $M/B = 1/r$ or $M = B/r$ with $r = R/M$. (Selgin and White 1994, 20.) This is basically the formula given previously as (1) but with f assumed equal to zero:

$$DN = d/c.$$

The fractional reserve free bankers indeed assume that $f=0$, or, equivalently, that $B = R$. The fractional-reserve free bankers lay emphasis on the fact that the free banking money multiplier is thus independent from the public's desired currency-deposit ratio. (Selgin and White 1994, 20; White 1999, 67-68)

Nevertheless the assumption that B , base or commodity money, equals R , or that the entire amount of commodity money is held by the banks as a reserve in their vaults, is not justifiable

on deductive grounds. It refers in fact to a special or «limiting» case and is presumably inspired by the fact that in some historical instances market participants behaved in this manner.

Clearly it is not plausible to assume *both* that outside money will not disappear and will subsist as a redemption medium *and* that the system will somehow be proof against redemption runs, or simply, against the willingness of some market participants to hold some commodity money outside the banking system. To the extent this assumption is not plausible, some more elaborate formula like the one provided as (1) should be considered. If outside money does not disappear and if there is no market driven path to a purely fiat regime, then outside money is and remains the only *real* money, so to speak. Apparently a confusion is going on here between *money* and what is merely a *title to money*.¹⁶

A redemption run would here mean: a sudden and significant increase in the desire of the public to hold monetary units outside the banking system, that is, a sudden and significant increase in *f*. This type of event would entail credit tightening and possibly severe deflation.

Another claim of the fractional reserve free bankers now seems unjustified, namely that such a system would be better capable of coping with «deflationary pressures» than a system subject to a 100 percent reserve requirement. In fact the opposite is likely.

In the mainstream literature discussion regarding the susceptibility of free banking systems to crises of confidence has often centered around Douglas W. Diamond and Philip H. Dybvig's (1983) influential model of bank runs, which has been viewed as showing that a harmful instability is inherent to

¹⁶ On the important but sometimes neglected conceptual difference between property and property titles, see also Hoppe (2006 Chapter 7).

laissez-faire banking.¹⁷ In their influential paper *How Would the Invisible Hand Handle Money?* fractional-reserve free bankers Selgin and White (1994) correctly doubt that the run-prone contract posited by the Diamond-Dybvig model can plausibly be conceived of as a *laissez-faire* outcome and they explicitly consider several «contractual remedies» for the inherent and harmful instability of such a bank (Diamond and Dybvig 1983).¹⁸

Unfortunately these authors do not seem to realize that they thus implicitly admit not only that the type of run-prone contract posited by the Diamond-Dybvig model is unlikely to be a plausible *laissez-faire* outcome, but also that the kind of fractional-reserve free bank they themselves favor is equally unlikely to be a plausible *laissez-faire* outcome. As regards the susceptibility of both types of banking arrangement to crises of confidence and runs, there is in this respect clearly no essential difference between a Diamond-Dybvig bank and a Selgin-White bank.

These authors' objection that the Diamond-Dybvig bank issues only a peculiar debt-equity hybrid and thus lacks an equity cushion whereas real-world banks have a distinct class of equity-owners insulating depositors against all but the most improbable losses, neglects important considerations relating

¹⁷ The Diamond-Dybvig result has mainly been viewed as a rationale for a government-sponsored deposit insurance scheme. In our view the Diamond-Dybvig model primarily serves an illustrative purpose. While the Diamond-Dybvig bank is not exactly a fractional reserve free bank – there is only an analogy or partial similarity between the two – the fundamental reason why the Diamond-Dybvig bank gets into trouble is the same as in the case of a fractional-reserve free bank: it makes promises to pay that, in certain not unlikely circumstances, it may not be able to honour. Both face a *liquidity* problem. And both get into trouble because they violate and attempt to bridge the insurmountable conceptual gulf that separates deposit arrangements from loan arrangements.

¹⁸ A type of «run-proofing arrangement» which is often discussed is the «option clause», which would render bank liabilities conditionally demandable only, thus turning demandable debt into bonds and transforming depositors and note holders into forced lenders. The arguments relating to the option clause are not generally convincing, see P.J. Shah (1997); also Yeager (1993).

to the cost of capital and is thus not convincing.¹⁹ The argument relies on the suggestion that an adequate amount of capital will weaken the incentive of depositors to run on the bank and that therefore a fractional-reserve bank needs sufficient capital in order to attract depositors. Capital itself is scarce, however. In order to attract a sufficient amount of capital on the capital markets and to subsequently maintain an adequate capital position, a fractional-reserve bank too will have to offer its actual and potential shareholders sufficient return on equity prospects, taking into account relevant risk levels. It does not yet follow from the fact that a fractional-reserve bank «needs» capital in order to attract depositors that owners of capital (savers, potential investors ...) will have an interest in investing their savings in a fractional-reserve bank. In particular, this investment has to yield an adequate return, that is, a return that covers the opportunity cost or yield which could be obtained on an alternative investment opportunity (taking into account relevant risk-return trade-offs). Of such alternative investment opportunities there are always many. This remains all the more true in view of the fact that the existence of an equity cushion as such will not necessarily entirely eliminate the incentive depositors may have to be first in line and to run on the bank in case of a crisis of confidence.

Finally, it is not clear why Selgin and White do not include 100 per cent reserve banking among the outcomes which would likely dominate fractional-reserve banking under true *laissez-faire*. This blind spot constitutes an important anomaly in their argument.

¹⁹ See further section VI.5.b).

5. Would the Invisible Hand Vindicate Fractional-Reserve Free Banking?

The argumentation is not yet finished. The thesis has now been established that a system of fractional-reserve free banking would be prone to business cycles and systematic intertemporal discoordination as a consequence of credit expansion unbacked by genuine saving. The occurrence of depressions cannot be excluded either. Does this mean that a genuinely free society would be systematically plagued by these economic evils?

a) Market evolution and the evolution of rules

The answer is in the negative. A positive answer could only rest on the supposition that fractional-reserve free banking is fully compatible with the ethical and juridical principles underlying a free society. This supposition cannot withstand serious scrutiny, however.

In fact, for several reasons it cannot be credibly maintained that fractional-reserve free banking would pass the market test; in other words, fractional-reserve banking cannot be conceptualized as belonging to the set of institutions which would emerge as the outcome of an invisible-hand process, that is, a process in the course of which the individual rights of property and contract of all market participants would be correctly defined and strictly enforced.

One way in which this thesis can be substantiated is through the performance of an invisible-hand analysis. The invisible-hand approach to the analysis of monetary institutions and their origin was pioneered by the Austrian economist Carl Menger in his well-known explanation of the origin of money. (Menger 1994, 257 ff.; 1892 [1994]) In Carl Menger's account the

process that eventually leads to the institution of money is entirely driven by the separate and independent pursuit of individual interests, without any need to rely on deliberate coordination of individual efforts.

In more recent times the invisible-hand approach has been revived by the American philosopher Robert Nozick. (Nozick 1974) Nozick considers a type of invisible-hand processes by which a particular pattern P can be produced and which he characterizes as filtering processes. Through filtering processes can pass only things fitting P, because processes or structures filter out all non-P's. If there is a filter that filters out (destroys) all non-P Q's, then the explanation of why all Q's are P's (fit the pattern P) will refer to this filter. (Nozick 1974, 21-2)

The point of performing an invisible-hand thought experiment is thus to arrive at useful hypotheses about the relationship between certain (kinds of) filters and the types of outcomes that can be expected to emerge under the operation of these filters, and about how different sorts of filters lead to different sorts of outcomes.

Invisible hand accounts thus provide us with interesting information about the general relationships between certain types of «filtering processes» (conditions, limiting constraints) on the one hand and the kind of outcomes that can be expected to emerge under the operation of these filters, conditions or constraints on the other.

The Mengerian account about the origin of money provides an answer of this sort; it is sufficient to assume that acting individuals separately and independently pursue their own interests, that they freely engage in exchanges, while supposing that in the process they do not violate other individuals' legitimate property rights. In other words, it is not necessary to rely on any concerted collective effort or deliberate coordination of individual efforts in order to explain the emergence of money.

To be sure, when discussing economic choice, spontaneous evolution and invisible-hand processes, it is important to be clear and explicit about what level is being considered. Menger's evolutionary account about the origin of money is thus a story about evolution *within* rules. A commonly accepted medium of exchange can emerge in an institutional context in which property rights are already defined, that is, a context in which acting individuals respect (do not violate) other individuals' property rights and rights of freedom of contract, in which they can thus freely enter into voluntary contractual arrangements with each other etc.

Apparently not only market outcomes, patterns etc. that emerge as the result of market interaction *within* the framework of rules defining or constraining such interaction, can be conceived of either as the result of deliberate choices or as emerging from evolutionary invisible-hand processes. The rules themselves which constrain market interaction can also become the object of an invisible-hand analysis.

In the present context it is assumed that the theoretical question considered here with respect to the possible origins of fractional-reserve free banking requires an *extension* of the invisible-hand approach to the level of the rules themselves which constrain market interaction, for instance the rules of the law.

It cannot simply be assumed, however, that both kinds of evolutionary process are basically of a similar kind. The processes of institution formation cannot simply be conceptualized as a kind of market for institutions. There is no market for institutions in the same sense in which there is a market for, say, potatoes.

This insight raises an important further question: What is the selection mechanism operating at the level of the evolutionary process with respect to the rules that constrain market interaction, such as the rules of the law? What is the nature of the

cultural selection process through which some rules are selected (for) and other rules are eliminated or prohibited from emerging or subsisting?

Obviously, and in particular if the outcome of this evolutionary process is to be characterized according to some pre-defined moral or legal-theoretic standard, or with reference to the notion of a «free» or «just» society, this evolutionary process cannot be conceived of as a totally unconstrained or unqualified one.

Following F. A. Hayek, and admittedly simplifying matters somewhat for the sake of the argument, the solution which is proposed here consists in the suggestion that the selection process operating at the level of rules can be characterized in terms of the meta-rules followed by judges when deciding cases. Hayek was quite explicit about the meta-rule judges should try to implement when deciding cases:

As in all other fields advance is here achieved by our moving within an existing system of thought and endeavouring by a process of piecemeal tinkering, or 'immanent criticism', to make the whole more consistent both internally as well as with the facts to which the rules are applied. (Hayek 1973, p. 118)

It is here assumed that the agents assisting primordially in the selection and evolution of rules are the judges.²⁰

Even if Hayek is not assuming that the judges of a natural law society would be systematically implementing libertarian ethical principles when deciding cases, he is implicitly assuming that legal rules and practices can be subjected to a consistency test and, consequently, that proposed rules or practices that are inconsistent with the accepted body of traditional law, will be weeded out in the evolutionary process through which legal rules are selected over time on the basis of court decisions.

²⁰ Abstraction is here made from Hayek's views regarding the role of legislation.

Or at least, on the basis of a normative reading of Hayek's account of the role of judges in a free society, this is how it ought to happen.

It is important to realize, however, that the consistency criterion is not identical to the criterion or the requirement that only «traditional» rules are to be selected. It does not follow from the mere fact that certain rules or juridical practices have *de facto* persisted over a long period of time and can in this sense be characterized as traditional, that these rules or practices *ipso facto* satisfy a consistency criterion; nor does it follow from the fact that certain practices have persisted over a long time, that they will satisfy or comply with any other meta-rule or quality standard such as a particular ethical ideal or legal-theoretic norm.

There is no reason to believe that the following of tradition *per se* is a reliable meta-rule to be recommended to or imposed upon judges. When it is asserted that judges follow or ought to follow tradition – such as when it is said that they decide cases on the basis of custom and precedent – it is more often implicitly assumed that the accepted body of existing and traditional law is itself the outcome of an evolutionary process implicitly governed by a particular meta-rule or criterion, such as a consistency norm, and which presumably warrants the «quality» of the resulting outcome. In other words, it is more often assumed that, through the critical efforts of legal experts, flaws, internal and external inconsistencies etc. have been progressively weeded out over time and removed from the body of accepted law.

As an illustration, the greatness of classical Roman jurisprudence does not reside in its «traditional» character *per se*. As Prof. J. Huerta de Soto clarifies:

The occupation of classical jurist was a true *art*, of which the constant aim was to identify and define the essence of the

juridical institutions that have developed throughout society's evolutionary process. Furthermore, classical jurists never entertained pretensions of being 'original' or 'clever,' but rather were 'the servants of certain fundamental principles, and as Savigny pointed out, herein lies their greatness.' Their fundamental objective was to discover the universal principles of law, which are unchanging and inherent in the logic of human relationships. (Huerta de Soto 2006, 24)

It has been contended, and on the basis of respectable arguments, that the institution of fractional-reserve banking involves a juridical or legal contradiction or impossibility. (Huerta de Soto 2006, Ch. 1 and Ch. 3; Hoppe 2006, Ch. 6 and Ch. 7; Rothbard 1991)

Granting the well-foundedness of these arguments, the proposition that the institution of fractional-reserve free banking cannot be expected to emerge as the outcome of a spontaneous invisible-hand process, and that the invisible hand would thus *not* vindicate fractional-reserve banking is then established by a simple syllogism.

If and to the extent that judges (or other agents assisting in the selection of rules) perform a consistency test when deciding cases, and if and to the extent fractional-reserve free banking cannot be consistently justified from a legal viewpoint (or involves a legal inconsistency or impossibility), then predictably fractional-reserve free banking will not subsist in a society governed by natural law. Such contracts will be systematically disapproved by the judges (or, more generally, by the agents assisting in the selection of rules).

Even from an intuitive viewpoint, this conclusion is plausible enough. Suppose that a bank and a customer somehow agree to enter into an attempted contractual arrangement which they label «fractional-reserve contract» and which allegedly has certain *prima facie* characteristics of a deposit contract (such as being «payable on demand»), except for the fact that contracting

parties also explicitly agree that the bank will have to keep in its vaults only a fraction of the money deposited by the customer.

It is not too difficult to understand why such hybrid pseudo-contracts (or so-called fractional-reserve contracts) would not likely be very successful. Such arrangements would tend to systematically generate inherently conflicting expectations and thus become particularly susceptible to give rise to recurring conflicts and to become the source of repeated litigation. On the one hand depositors would expect to be able to redeem their notes continually and upon demand. On the other hand the banks could not expect to be able to fulfill all the promises they have made to redeem notes upon demand, since by assumption they have made many more such promises than they can possibly keep.

Furthermore, the costs accompanying such conflicts can be considered a particular kind of transaction costs. From the standpoint of the banks and their customers (depositors), the most obvious way to avoid such costs consists in the refusal to enter into such hybrid forms of contract. From the standpoint of the judges who have to decide cases in these matters, however, such pseudo-contracts will have to be invalidated.

Arguably a judge following a hypothetical meta-rule of the type «*Disallow types of contract that give rise to unnecessary or potentially excessive transaction costs*» or even more simply «*Minimize transaction costs*» would systematically declare such contracts null and void, thus creating a suitable precedent. The meta-rule stipulating that judges ought to make sure that legitimate expectations match and do not conflict will in this case yield a similar outcome.

Fractional-reserve free banking is equally incompatible with libertarian ethical principles.²¹ Thus when it is assumed that

²¹ In recent times this issue has been argued most cogently by Hans-Hermann Hoppe. In particular, this author has successfully refuted the contention of fractional-

judges (or other legal experts having to decide about the validity of contractual arrangements) adjudicate on the basis of libertarian ethical principles, a similar conclusion follows as regards the problematic character of fractional-reserve free banking.

We thus seem entitled to conclude that under a variety of assumptions regarding the meta-rule followed by judges when adjudicating cases (considered hypothetically the major agents in society assisting in the selection and evolution of the rules of law), the institution of fractional-reserve free banking, rather than being a highly successful institutional form, would more likely be «unfit to survive» and thus be eliminated. The interaction patterns that would actually tend to develop as the outcome of invisible-hand processes would likely be such that the types of successful contractual arrangement between banks and bank customers would be of two kinds only: these contractual arrangements would be either of the irregular deposit contract type or of the monetary loan contract type, at the exclusion of hybrid (and inconsistent) types of contract.

To some degree this conclusion is further supported by the observation that in the actual world – or the world in which we live – the institution of fractional-reserve banking is actually maintained and kept into existence by interventions and institutions which are easily recognized as being incompatible with the unhampered market, such as lenders of last resort, government-backed deposit insurance schemes, legal tender

reserve free bankers Selgin and White (1996) that fractional-reserve free banking is in accordance with the title-transfer theory of contract as developed by M. N. Rothbard. (1998, Ch. 19) In accordance with Rothbard's contract theory, individuals are only entitled to make contracts regarding the transfer of *their own property*. Fractional-reserve banking, however, affects the property of third parties in a threefold way. First, by thereby increasing the money supply, the purchasing power of all other money owners is reduced; second, all depositors are harmed because the likelihood of their successfully recovering their own possessions is lowered; and third, all other borrowers of commodity credit are harmed because the injection of fiduciary credit impairs the safety of the entire credit structure and increases the risk of a business failure for every investor of commodity credit. (Hoppe 2006, 200-1.)

laws, laws that directly curtail the rights of depositors and so on. It is also further supported by the historical observation that in the absence of such extra-market devices and interventions, fractional-reserve banks have invariably tended to become bankrupt.

The central question we have asked previously was: How strong are the assumptions which have to be made with respect to the meta-rules (filters, constraints...) which in a free society govern the cultural evolution and selection process at the level of the rules constraining the actions and interactions of market participants, in order to ensure (so to speak) that a particular institutional form – *in casu* fractional-reserve free banking – will be either vindicated or eliminated in the process?

Assuming a Hayekian natural law society in which the major agents assisting in the selection of legal rules are considered to be the judges, we have arrived at the conclusion that it is sufficient to assume that the conduct of judges when adjudicating cases satisfies a general consistency constraint in order to admit of the conclusion that the institution of fractional-reserve free banking will be eliminated in the evolutionary process. This is not a particularly strong assumption or requirement. It asserts merely that judges will (or rather, ought to) try to make the law more coherent both internally and with, say, «the nature of things».

We have also been entitled to conclude, however, that under various assumptions regarding possible (other) meta-rules to be implemented by judges, a similarly unfavorable verdict as regards fractional-reserve free banking seems justified. In a society where judges, arbitrators (or other «institutional entrepreneurs») implement the principles of libertarian ethics, fractional-reserve free banking would not emerge as the outcome of a spontaneous invisible-hand process either. And we can even conjecture that under the assumption that judges follow a still different meta-rule such as the minimization of transaction

costs, fractional-reserve free banking would not pass the test. This means that the argument against fractional-reserve free banking, on the basis of an invisible-hand analysis, is fairly robust.

b) Free banking and the cost of capital

There can be little doubt that the ethical and legal-theoretical objections against fractional-reserve free banking by themselves already constitute a decisive refutation of the proposal for fractional-reserve free banking. There are reasons to believe, however, that even if from the outset fractional-reserve free banking were hypothetically considered fully legitimate from the ethico-juridical viewpoint, economic forces would work against it.

One author considers that in a perfectly free banking system, everyone must be free to offer any type of notes and to charge customers for his services in any way he can imagine. And any customer must be free to choose the kind of notes and the system of payment for services he prefers. Assuming that initially all monetary systems are based on 100-percent-reserves, it may seem that a transition towards fractional-reserve systems can be easily imagined to happen to the extent that these systems are preferred by the money producers and their customers entering into mutually beneficial contracts. (see Salin 1998) Pursuing this line of argument, it is considered that if ever a 100-percent-reserve system is optimal – which supposedly means that it better meets the needs of producers and users of money substitutes – it will be selected by the market, and fractional systems will not survive.

This author pursues, however:

It is quite true that, during the whole process of adjustment from one system to the other, there is a multiple creation of money

substitutes, with all related effects (inflation, excess credits, over-investment, etc.). These effects are costly, but they may be viewed as a type of investment costs, those which have to be borne in order to shift from one given system to another preferred system. (Salin 1998, 64)

However, it should be kept in mind that there will obviously be winners and losers in this process. The market participants who bear these «investment costs» and those who reap the benefits will most likely be different persons. The «fractional-reserve contracts» between banks and their customers obviously entail external effects affecting the property of third persons who are emphatically *not* parties to these contracts. (see Footnote 21)

But even if we make abstraction from the issues regarding external effects resulting from credit expansion and from the ethico-legal questions involved, it is indeed far from obvious that fractional-reserve banking would be a successful institution and be selected by the «market».

One need only take the previous line of argument one step further to understand why this is true. When it is contended that a bank and its customers might enter into a *sui generis* contract, say, a deposit contract with a fractional reserve, which by both parties to the contract is considered to their mutual benefit, one should realize that on the part of the bank reference is ultimately made to the shareholders of the bank who are the residual owners. Especially from the viewpoint of such (actual and potential) shareholders of the bank, it is far from obvious, however, that a fractional-reserve bank will present itself as a particularly interesting investment vehicle for those capitalists who look for opportunities to invest their savings in the medium to long term, and who will take into account all opportunity costs, such as the forgone return on possible alternative investment opportunities as well as the relevant risk-return trade-offs.

The comparison to be made is then no longer exclusively with a pure deposit institution, but especially also with the type of bank that engages exclusively in pure financial intermediation. As appears clearly from a comparison of the typical balance sheets of a pure financial intermediary on the one hand and a fractional-reserve free bank on the other, the latter might well find itself in a disadvantaged position in the capital markets when it comes to securing an adequate amount of capital (equity).

Typical balance sheet of a fractional-reserve free bank

Assets	Liabilities
Specie (reserves)	Notes and Deposits
Bills/Loans	Equity

Typical balance sheet of a bank engaging exclusively in pure financial intermediation

Assets	Liabilities
Bills/Loans/ Participations	Medium and Long Term Debt Equity

On the one hand the specie reserve to be held by a fractional-reserve bank will generate an opportunity cost since these funds cannot be profitably invested. Nevertheless, as most advocates of fractional-reserve free banking agree, the bank will pay an interest return to depositors. On the other hand, a fractional reserve free bank will always remain subject to the risk of a redemption run in case it loses the confidence of the

public. A pure financial intermediary is not subject to this kind of risk (even if it may have to guarantee a sufficient degree of matching between the maturity structure of its assets and the maturity structure of its liabilities). When the two situations are compared, the following tendency undeniably asserts itself: *ceteris paribus, the fractional-reserve free bank will tend to offer lower return prospects for a higher degree of risk.*

This obvious fact has escaped the attention of the fractional-reserve free bankers because in their model the amount of capital at the disposal of the bank (equity) is treated as a fixed parameter. In a more dynamic and complete analysis, however, this assumption must be relaxed.

In a model of fractional-reserve free banking such as that proposed by Prof. L. White, holding an extra dollar of reserves implies a marginal opportunity cost, but also entails a marginal reduction in liquidity cost.

Optimization requires an equalization of the marginal cost and the marginal «return» of holding additional reserves.

In a fractional-reserve bank, keeping an additional dollar «idle» as reserve has *both* a marginal return *and* a marginal cost. Therefore it makes sense to balance the two. In a loan or pure intermediation bank, keeping an (additional) dollar «idle» always has *only* a marginal cost, that is, there is no marginal return involved in holding «reserves», since the problem of incurring a liquidity cost does not arise in this form. No «reserves» are to be held.

From the viewpoint of potential shareholders seeking to invest their savings, however, the relevant alternatives are (1) investing their savings in a bank operating under the principle of fractional reserves versus (2) considering an altogether different possibility involving *no* marginal return of holding (additional) reserves (since no reserves are to be held), that is, a possibility in which the data of the model are altogether different.

For a potential shareholder these two possibilities always remain open (given an appropriate legal framework). Therefore the potential shareholder will take into account the foregone yield with respect to reserves to be held if he or she invests in a fractional-reserve bank as an opportunity cost that can be avoided if he or she invests in a loan bank. He or she will not regard this foregone yield on reserves to be held as a cost *necessarily* to be borne if liquidity cost is to be reduced. Liquidity cost can be avoided altogether by choosing an altogether different alternative which need entail no foregoing of any yield on earning assets because no funds are, under this alternative, to be held as reserves in the first place. There is no reduction of liquidity cost to be balanced with forgone yield on earning assets under this alternative.

Therefore, the true liquidity cost of investing in a fractional-reserve bank, as against investing in a pure loan bank, is underestimated in this model, if the actual choice alternatives of potential shareholders are taken into account. Furthermore the potential shareholder will of course also take into account the risk inherent in the possibly run-prone character of the fractional reserve bank. *Within* the context of a fractional-reserve free bank, *i.e.* from the perspective of its management team, acting on behalf of shareholders/savers who have supposedly decided to put their money/savings at risk in a fractional reserve free bank, every additional dollar of reserves entails both a marginal gain and a marginal cost. However, from the broader choice perspective of the potential shareholder, facing a choice between a fractional-reserve free bank and alternative investment possibilities and taking into account all opportunity costs, there is *only* a marginal cost. There is no need to invest his or her money in a possibly run-prone fractional-reserve free bank in the first place. Alternatives such as a pure loan or investment bank would always be available under pure *laissez faire*. In this sense fractional reserve free banks might face an equity maintenance problem.

VII. CONCLUSION

Defining and possibly also implementing the monetary institutions appropriate for a free society will likely become an issue of primary importance in the 21st century. Given the ongoing success of the proposal for fractional-reserve free banking, among economists within but to some extent also outside the Austrian School, the task we have undertaken in this essay, which is to expose several flaws and fallacies inherent in this line of thought, is fully warranted. Hopefully our critical reflections will stimulate further debate regarding this important subject matter.

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JUEGOS ESTRAT-ÉTICOS: ¿ES RACIONAL EL COMPORTAMIENTO COOPERATIVO?

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Resumen: En este trabajo, tras esbozar las principales aportaciones de los premios Nobel de Economía de 2005 Thomas C. Shelling y Robert J. Aumann, respondemos a un dilema social con un importante calado económico: ¿es racional el comportamiento cooperativo? Para ello proponemos los juegos strat-éticos como una posible solución a dilemas sociales tipo «dilema del prisionero». También argumentamos que la Economía y la Ética están integradas o deberían estarlo.

Palabras clave: Teoría de Juegos, racionalidad, Homo Economicus, capital social, Ética Económica, activos intangibles.

Abstract: This paper first presents the principal works of the 2005 Economic Nobel Prize Thomas C. Shelling and Robert J. Aumann. Then we answer the economic question, is cooperative behavior rational? We guess strat-ethic games as a solution to prisoner´s dilemma. We also argue that Economics and Ethics are integrated or should be.

Key words: Game theory, rationality, Homo Economicus, corporate capital, economic ethics, assets, intangible assets.

Clasificación JEL: C79, A13, Z12, Z13.

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Agradezco los comentarios a una versión inicial de este trabajo por parte de Federico Basáñez, M.^a Ángeles Caraballo, Francisco Espasandín, Octavio Fernández, Manuel Guillén, Amparo Mármol, Luisa Monroy, José María Ortiz, Enrique S. Pées, Javier J. Pérez, M.^a Luisa Ridao, Jan Spielvog y Carlos Usabiaga. Todos hemos interactuado en un juego cooperativo, pero solamente yo soy el responsable de las deficiencias que persistan.

I. INTRODUCCIÓN

Como sabemos, en el comportamiento estratégico se tiene en cuenta las posibles reacciones de los demás agentes. La Teoría de Juegos proporciona un marco analítico para estudiar este tipo de comportamiento (su principal objetivo es predecir qué estrategia va a elegir cada jugador). El pasado año se concedió el Nobel de Economía a Thomas C. Schelling y Robert J. Aumann, autores que han cultivado precisamente la citada Teoría de Juegos.

En este artículo nos planteamos la pregunta explícita del título: ¿es racional el comportamiento cooperativo? A partir de este dilema social con importantes implicaciones económicas, nos hacemos una pregunta con un trascendental calado teórico: ¿están integradas la Economía y la Ética? Intentando dar una respuesta coherente a ambas preguntas proponemos los juegos estrat-éticos.

En el apartado segundo recogemos las principales aportaciones de Schelling y Aumann. En el apartado tercero planteamos las principales críticas a la Teoría de Juegos, centrándonos en el axioma de racionalidad y las alternativas éticas. En el apartado cuarto presentamos los juegos estrat-éticos como una posible solución a dilemas sociales tipo «dilema del prisionero». Finalmente, en el apartado quinto recogemos unas reflexiones finales.

II. UN NUEVO NOBEL DE ECONOMÍA PARA LA TEORÍA DE JUEGOS

El año pasado se concedió el premio Nobel de Economía a Thomas C. Schelling (1921-) y Robert J. Aumann (1930-) «por haber ampliado nuestra comprensión del conflicto y la cooperación mediante el análisis de la Teoría de Juegos». Schelling es estadounidense, nacido en Oakland (California) y es profesor de Economía en la Universidad de Maryland. Ha publicado libros sobre temas diversos tales como la estrategia militar y el control de armas, política energética y ambiental, cambio climático, terrorismo, teoría del conflicto y del regateo, segregación e integración racial y política de salud. «La Estrategia del Conflicto» (1960) es su libro más influyente y ha sido traducido a muchos idiomas.

Aumann nació en Frankfurt (Alemania) y emigró a los Estados Unidos donde se doctoró en matemáticas en 1955, en el Massachusetts Institute of Technology (MIT). Actualmente trabaja en la Universidad Hebrea de Jerusalén. Sus desarrollos en el campo de la Teoría de Juegos se iniciaron en 1959 al analizar las diferencias entre los juegos con repetición finita e infinita.¹ Para Robert Aumann, la Teoría de Juegos es «la teoría más general» de la ciencia económica. Desde este punto de vista estamos seguros que éste no será el último Nobel para los cultivadores de la Teoría de Juegos.

Previamente, en 1994, ya se concedió el Premio Nobel de Economía a John C. Harsanyi, Reinhard Selten y John F. Nash (¡Una Mente Maravillosa!) por sus pioneros análisis del equilibrio en la teoría de los juegos no cooperativos.

¹ Se puede encontrar varias contribuciones con aplicaciones económicas de la Teoría de Juegos en la compilación de Hart y Neyman (1995), precisamente en honor de Aumann.

III.

LAS CRÍTICAS A LA TEORÍA DE JUEGOS:
UNA VALORACIÓN DESDE LA ÉTICA ECONÓMICA

Algunas de las ideas de la Teoría de Juegos han pasado a formar parte del acervo cultural común. Por ejemplo, creo que mucha gente sabe lo que es un juego de suma cero (si uno gana es a costa de la derrota del otro jugador). La cuestión no carece de importancia porque se llega incluso a hablar de que la sociedad es «de suma cero» porque el beneficio de una persona se consigue en detrimento de otra. Esto nos recuerda a la noción de óptimo de Pareto.² En este artículo vamos a intentar recordar que podemos representar a la sociedad como un conjunto de juegos de suma positiva, donde todos los agentes implicados salen ganando al alinearse con la cooperación.

Antes de realizar ese planteamiento, vamos a detenernos en las críticas a la Teoría de Juegos, que podemos agrupar en tres categorías:

1. En primer lugar, podíamos plantearnos las objeciones puramente matemáticas, pero desde la publicación del libro seminal de von Neumann y Morgenstern (1944) nunca se ha puesto en duda la validez de la teoría desde un punto de vista matemático.

2. La segunda categoría de críticas nos va a dar más «juego». Efectivamente, hay una corriente de pensamiento que opina que esta teoría es un ejercicio de maquiavelismo para justificar la guerra o las acciones que no son éticas. Todo esto se debe a que la Teoría de Juegos considera que los jugadores son perfectamente racionales,³ sólo les interesa ganar y desconfían

² Una asignación de recursos es eficiente en el sentido de Pareto cuando no es posible mejorar el bienestar de una persona sin empeorar el de alguna otra.

³ Daniel Kahneman, Premio Nobel de Economía en 2002 y profesor de Psicología en la Universidad de Princeton, ha demostrado que, en condiciones de incertidumbre –situación muy habitual–, el comportamiento de los agentes económicos suele alejarse de la racionalidad –véase, por ejemplo, Tversky y Kahneman (1981)–.

unos de los otros –conflicto–. Von Neumann fue un poco más lejos: «Es tan absurdo quejarse del egoísmo y la falta de honradez de la gente, como protestar porque la intensidad del campo magnético no crece a no ser que exista el rotacional del correspondiente campo eléctrico».⁴ Para los que estamos bastante alejados del conocimiento de las leyes físicas, un símil parecido sería: «Es tan absurdo quejarse del egoísmo y la falta de honradez de la gente, como protestar porque la Tierra no es plana».

En este contexto, algunos críticos de la teoría han llegado a comentar que el cinismo personal de von Neumann llegó a influir en la teoría. Esta inquietud llega a adoptar unas proporciones dramáticas cuando ciertos resultados de la Teoría de Juegos contienen un mensaje de cinismo insensible para con el propio destino de la especie humana. A este aspecto crucial nos referiremos después.

Este modo de proceder de la teoría no se debe a que se centre en la manera de jugar de determinados personajes con un perfil psicológico concreto (es decir, centrados en sí mismos y sin piedad).⁵ Parece que se trata más bien de ahorrarse descripciones redundantes en las estructuras teóricas.

Evidentemente es imposible demostrar nada sin un punto de partida. Es necesario que haya una afirmación reconocida por todos y tan obvia que sirva como base para proposiciones más controvertidas. Estos hechos aceptados en la ciencia se llaman axiomas. Pues bien, un axioma de la Ciencia Económica es la noción de *Homo Economicus*.⁶ Este individuo representativo

⁴ Citado en la excelente biografía de von Neumann realizada por Poundstone (1992, p. 352).

⁵ A este respecto es fundamental la profundización y el deslinde entre las nociones de propio interés, egoísmo, autoestima y racionalidad (individualista y grupal; limitada y cuasi-). En Quintanilla y Bonavía (2005) puede encontrarse una aguda crítica del mito del *Homo Economicus* desde la óptica de la Psicología Económica.

⁶ Este modelo actúa como una especie de profecía que se auto-cumple. Por ejemplo, en el caso de un grupo de personas (una empresa, la sociedad) que acepta sus

–eje del razonamiento económico– es un agente que sólo actúa en la esfera económica y no obedece a otros impulsos que los que le llevan a la satisfacción de sus propias necesidades.⁷ El jugador de la Teoría de Juegos tampoco tiene ningún grado de empatía hacia los demás y, además, es esencialmente desconfiado y totalmente alejado de la ética de grupo.

Todo esto parece sumirnos en una especie de determinismo psicológico-económico. Cuando analicemos a continuación el dilema del prisionero mostraremos que la naturaleza humana es multidimensional y susceptible de cambio, y que también debemos ampliar las visiones reduccionistas sobre la misma. Jugando con el símil transformado de von Neumann, hace no tanto tiempo se creía que la tierra era plana y precisamente ahora creemos que la Economía es plana –mecánica–, impulsada por la racionalidad individualista. Sin embargo, se hace necesario pasar a una nueva Ciencia Económica –circular– que incorpore la influencia mutua entre los agentes y las relaciones clave de reciprocidad.⁸

premisas (los individuos sólo tienen que buscar su propio interés y la «mano invisible» se encargará de alcanzar el óptimo social), los incentivos para cooperar se inhiben espontáneamente. Frank *et al.* (1993) demostraron que estudiar las carreras del área económica volvía a los estudiantes menos cooperadores, en juegos bipersonales tipo «dilema del prisionero», que antes de empezar sus estudios.

⁷ Sobre la relación entre la obra de Adam Smith y el origen del principio de egoísmo como una nota caracterizadora del agente de la Teoría Económica, puede verse el análisis –especialmente crítico– de Sen (1987). Es también interesante la lectura de Pées (2005), que plantea la transfiguración de la «mano invisible» en una «envolvente ética» (que se proyecte sobre todos los integrantes de la sociedad).

⁸ En este nuevo paradigma, el equilibrio económico es un subproducto de los valores colectivos. Para simplificar, siguiendo a Deusy (2005): si se cambia al hombre, se cambia la economía. En Gómez (2006) hemos planteado, desde diferentes perspectivas, las implicaciones económicas de un hombre THG (Trabajo-Humildad-Generosidad). Los agentes (trabajadores, familias, empresas, organizaciones, etc.) THG contribuyen a la expansión de una Nueva Economía Ética. Los valores anteriores (activos intangibles) nos llevan a una economía con externalidades positivas, rendimientos crecientes, bienes públicos, economías de red y confianza generalizada (capital social). Dicho capital se puede definir como un conjunto de normas o valores informales que comparten los miembros del grupo y que permite su cooperación. En Pérez *et al.* (2005) se sistematiza la literatura sobre la noción

3. Y, en tercer lugar, suele argumentarse que la Teoría de Juegos no funciona demasiado bien en la vida real. Los dilemas de la vida real, que no son planteados por científicos sociales, surgen gracias a las diversas maneras con las que nuestros intereses individuales se debaten con los de otros y los de la sociedad en general. Diariamente debemos tomar decisiones difíciles al interactuar con muchos agentes económicos, a veces con resultados distintos de los que habíamos esperado. La cuestión esencial que se plantea es simple y apremiante: ¿existe un comportamiento racional para cada situación? La Teoría de Juegos tiene mucho que decir para responder con solvencia a esta pregunta.

IV.

LA SOLUCIÓN DEL DILEMA DEL PRISIONERO: LOS JUEGOS ESTRAT-ÉTICOS

El dilema más conocido es el «dilema del prisionero» por sus aplicaciones a la carrera armamentística, a la ciencia política, a la biología, a la sociología, y, entre otras ciencias, a la economía. Podemos describir distintas particularizaciones del mismo y siempre se concluye con una paradoja: ¿cooperar o desertar? Para resaltar que estamos ante un problema de alcance universal vamos a describir la formulación del juego de la carrera armamentística entre EE.UU. y la Unión Soviética durante la «guerra fría». Cada bloque razona de la siguiente manera: 1) Si el otro bloque fabrica armas de destrucción masiva, nosotros también lo haremos (deserción mutua); 2) Si el otro bloque no las fabrica (coopera), nosotros sí lo haremos para sacar ventaja (deserción individual). En este contexto, la estrategia

de capital social y se realiza una estimación para la economía española, sus regiones y sus provincias.

dominante (óptima independientemente de lo que haga el otro jugador) para los dos es desertar (armarse, que es también un equilibrio de Nash). Desde el punto de vista matemático este equilibrio es estable, pero no deja de ser inquietante: cada jugador quiere que el otro coopere, y sin embargo le tienta desertar. Además, evaluando desde una perspectiva global dicho equilibrio, observamos cómo el bien común (desarme nuclear –paz–) pierde terreno frente a la racionalidad individualista (guerra preventiva).⁹ Si este es el coste de «no hacer el primo», tenemos que replantearnos, también en cuestiones menos dramáticas como por ejemplo los ámbitos laborales,¹⁰ la noción de racionalidad.

Al hilo de la argumentación anterior vamos a explorar algunas recomendaciones éticas basadas en conflictos del tipo del dilema del prisionero. En el evangelio según San Mateo, se atribuye a Jesús de Nazaret la regla de oro del cristianismo: «Todo lo que queráis que hagan los hombres con vosotros, hacedlo así vosotros con ellos» (Mateo, 7:12). En esta regla está implícito el punto de partida de que las personas suelen mirar por sus propios intereses. Pero a través de la cooperación se soslayará el obvio interés propio en aras de un mayor beneficio para todos (maximización del beneficio conjunto).¹¹

⁹ Aumentaban así las posibilidades de un holocausto planetario. El propio Von Neumann contribuyó sobremanera al desarrollo de la bomba atómica y la de hidrógeno. Sin embargo, a diferencia de otros investigadores de la «bomba» –como Einstein–, no mostró remordimientos de conciencia (véase Poundstone, 1992, p. 109). La «guerra fría» también heló los corazones de algunos investigadores. A pesar de su cinismo vital, cuando se aproximaba el final de su vida, Von Neumann se convirtió al cristianismo.

¹⁰ En principio, puede desconcertar bastante, en una economía capitalista, plantear las virtudes de una economía basada en los dos pilares siguientes: 1) la cultura del dar; 2) la importancia crucial de la persona (trabajador, cliente, proveedor, etc.). En el libro de Bruni (2001) se presentan ejemplos reales de empresas donde está funcionando este paradigma.

¹¹ En este punto se puede objetar que la cooperación como regla de oro no es un monopolio del cristianismo. Efectivamente, podemos encontrar dicha regla de oro en distintas religiones como la judaica, la budista, el islamismo y el hinduismo.

También podemos encontrar consejos semejantes en la obra de los filósofos. Por ejemplo, viene aquí a colación el «imperativo categórico» de Immanuel Kant: «Compórtate como si tu comportamiento fuese a ser elevado a ley de categoría universal». Es lo mismo que preguntarse siempre: ¿qué pasaría si todo el mundo hiciera lo mismo?

Bajo este prisma ético, para el jugador (ético) la estrategia dominante siempre es cooperar y consigue que desaparezca el dilema porque aunque el juego sea simultáneo e interactúe con un jugador perfectamente racional, éste sabe cuál es la estrategia dominante del jugador ético (su «seña de identidad» es cooperar y esto va a generar un efecto imitación) y «terminará» dándose cuenta que lo mejor es el resultado cooperativo. Efectivamente, hasta ahora teníamos en mente un juego que se jugaba una sólo vez, pero muchos se reiteran (como el de la carrera armamentística o el del ámbito laboral en una organización). Evidentemente la reiteración –juego repetido– nos da una mejor perspectiva sobre la disyuntiva existente entre los beneficios a corto plazo de no cooperar y las buenas relaciones a largo plazo resultantes de la cooperación.¹² Además, esta perspectiva dinámica hace que cuestiones como hacerse con una buena reputación pasen a ser centrales para los agentes económicos.¹³

¹² Actualmente cada vez se presta (dentro del ámbito de la Responsabilidad Social Corporativa –RSC–) más atención a los indicadores de clima laboral de las grandes empresas. Pero el razonamiento también vale para las pymes, sin pérdida de generalidad. Véase, para el caso español, el trabajo de Nieto (2004).

¹³ Está claro que esto alterará la matriz de pagos de la misma manera que si introduyéramos en el juego los problemas de conciencia moral («culpa») por el hecho de desertar (traicionar, mentir, comportamientos depredadores, etc.), y, por el otro lado, la práctica del perdón: aumentan los incentivos a cooperar. Las transferencias de utilidad y las externalidades positivas surgen espontáneamente al iterarse el juego. En este contexto, la capacidad de ver a los otros jugadores como compañeros humanos convierte un supuesto dilema del prisionero en un juego mucho menos agobiante.

Esto conecta con un importante principio del comportamiento estratégico: pensar primero en el fin del juego y retroceder desde ahí para identificar la mejor opción actual. A esta práctica se la denomina retroceso –inducción regresiva– (ayuda al jugador a centrarse en las consecuencias futuras de su decisión actual). También podemos hablar aquí de una especie de retroceso ético. Los agentes sopesarán las consecuencias futuras de su deserción (egoísmo) actual y les será más fácil empezar la cooperación desde el inicio de la interacción.¹⁴ Lo mismo ocurre con el nivel de confianza (capital social) dentro de la organización. Si los agentes económicos anticipan que la desconfianza provoca desutilidad respecto a las relaciones económico-laborales futuras, retrocederán (evolucionarán) hasta convertirse en generadores de confianza. En todas estas cuestiones se ve claramente el coste de la no ética y los beneficios del comportamiento ético.

Como sabemos, en 1998 el jurado del Nobel de Economía pareció querer despertar la conciencia ética de la misma reconociendo las aportaciones de Amartya Sen. Este autor ha advertido en numerosas ocasiones que el sistema capitalista no podrá implantarse en algunos países si no se tiene en cuenta la importancia de algunos valores que hay que fomentar previamente: 1) crear y mantener un clima de confianza; 2) evitar las tentaciones de la corrupción generalizada; y 3) hacer de las garantías morales un sustituto viable de la aplicación unitiva de la ley –véase, por ejemplo, Sen (1987 y 1999)–.

Este autor ha encarado una línea de investigación en la que expone un cierto enfoque –el de las «capacidades»– alternativo

¹⁴ La idea es que es apropiado cooperar ahora para así asegurarse que habrá cooperación en el futuro –proyección del futuro–. Sin embargo, casi nadie se toma el futuro tan en serio como el presente. Esta miopía puede paliarse si la organización se rige por un código ético bien definido –véase Lózano (2004)–.

a la Nueva Economía del Bienestar, poniendo especial énfasis en el carácter multidimensional de la persona –véase Sen (1992)–. En el fondo de la cuestión, lo que se está planteando es la incompatibilidad de la Teoría Económica (del equilibrio general) con las necesidades humanas y la persistencia del hambre.

Así, se podría desarrollar una teoría de los juegos estratégicos, con un *Homo Ethico* por axioma y que vaya mucho más allá del realismo mágico. Un buen ejemplo es el trabajo de Bornstein (2005), donde se sistematiza la obra de multitud de emprendedores sociales que, guiados por una idea de justicia social, han mejorado la vida de miles de personas a lo largo de todo el mundo. No son santos, utilizan técnicas modernas de gestión empresarial y nunca dudan en compartir los méritos conseguidos. Son emprendedores sociales y en todos ellos destaca un fuerte impulso ético (es fácil encontrar un familiar o un profesor con unos valores éticos sólidos que marcaron al emprendedor social). En su dimensión ética-económica, asumo plenamente la máxima de Thomas Edison: «Si todos hiciéramos las cosas que somos capaces de hacer, quedaríamos literalmente asombrados».

En el juego strat-ético el agente económico representativo integra completamente lo económico y lo moral. Por ejemplo, la empresa reconoce (Dalla Costa, 1998) que no puede funcionar sin la participación y la creatividad de sus empleados y sin las contribuciones de los proveedores, clientes, las asociaciones de consumidores, los competidores... («stakeholders»). Ahora el jugador participa simultáneamente en dos tableros distintos: el del propio y legítimo interés y en el del interés común –racionalidad grupal–. En este punto, siguiendo la estela del también premio Nobel de Economía en 2002 Vernon L. Smith, se hace necesario una mayor apuesta por la economía experimental (con una mayor inversión en sus laboratorios –véase Rodero y Jiménez, 2002–). Así, por ejemplo, podríamos com-

probar cómo se comportan los individuos ante los diversos juegos estrat-éticos.¹⁵

Pero no vamos a negar que podemos poner etiquetas y reconocer que hay seres desertores habituales igual que otros son cooperadores natos. Además, parece existir una norma de algún tipo, impuesta culturalmente –que ha traspasado el ámbito de la empresa–, que hace que muchas personas actúen con reserva frente a los desconocidos y, muchas veces, también frente a los conocidos. El miedo a «hacer el primo» destruye el capital social y reduce el tamaño del mercado.

Aquí creemos que es importante hacer referencia al sugerente trabajo de Layard (2005). Del mismo se deduce que la felicidad media de un país comparada con la de otro puede explicarse en gran parte por seis factores clave: la proporción de gente que afirma que se puede confiar en los demás; el índice de pertenencia a organizaciones sociales; el número de divorcios; las cifras de paro; la calidad del gobierno y las creencias religiosas. Por desgracia, durante los últimos cuarenta años los niveles de confianza se han reducido drásticamente en Gran Bretaña y Estados Unidos, aunque no en la Europa continental. Esto convierte en sumamente importantes cualesquiera políticas que fomenten la confianza, por ejemplo la educación religiosa en las escuelas y la ética en las universidades, así como el fomento de unas familias, comunidades y ocupaciones estables.

Por otro lado, es importante resaltar que no sólo podemos aplicar esta noción de los juegos estrat-éticos en el ámbito microeconómico. Así, por ejemplo, podemos plantear el problema del desarrollo de los países pobres como un juego en el que interactúan los siguientes jugadores (actores): la ciudadanía

¹⁵ Podría contrastarse y evaluarse empíricamente la hipótesis de que la estrategia ética (confianza, cooperación, reputación, etc.) produce mejores resultados (en términos del óptimo de Pareto, para todos) que la estrategia perfectamente racional (desconfianza, depredación, ¡ojo por ojo!, etc.).

civil, el factor empresarial, los emprendedores sociales, las ONGs, el sector público local y, entre otros, los organismos internacionales. La pobreza en el mundo debe ser el problema económico más apremiante para los economistas y este es precisamente un ámbito donde la ética (governabilidad, confianza, resolución pacífica de conflictos,...) y la cooperación son el caldo de cultivo apropiado para avanzar hacia una solución factible.

A partir de lo anterior, podríamos afirmar que la Economía y la Ética están integradas. Sin embargo en el trabajo de Encinar *et al.* (2003) se llega a la conclusión de que la dificultad percibida para integrar armónicamente los aspectos éticos de la acción en la Teoría Económica estándar lleva a calificar la relación entre Economía y Ética como de mera yuxtaposición. Ambas disciplinas no están integradas, pues, por ejemplo, no hay en la Teoría Económica convencional la provisión de una base analítica suficientemente coherente como para integrar conductas basadas en motivaciones no egoístas.¹⁶

Sin embargo, recientemente Huerta de Soto (2004), al poner en el centro del análisis el concepto de eficiencia dinámica (capacidad de un sistema económico para impulsar la creatividad y la coordinación empresarial), establece una relación directa entre el ámbito de la Economía y de la Ética, impulsándose una muy fructífera relación entre ambas disciplinas, que se ven así mutuamente reforzadas. En este contexto, se hace fundamental el diseño de un adecuado sistema de incentivos que estimulen simultáneamente la fuerza creativa y organizadora de los empresarios. El ímpetu de la creatividad empresarial también se manifiesta en el ámbito de la ayuda al prójimo

¹⁶ Toda otra consideración ética adicional distinta del mero interés personal (altruismo, motivaciones, valores, etc.) susceptible de concurrir en un ámbito de decisión del agente, generará elecciones «irracionales» o «anomalías» de acomodo problemático en el marco teórico estándar.

necesitado y de la previa búsqueda y detección sistemática de situaciones de necesidad ajena –otra vez los emprendedores sociales–.

Por tanto, Huerta de Soto (2004, p. 54) abre todo un programa de investigación en Economía Aplicada en el que la Economía y la Ética se integran espontánea y armónicamente: «El estudio, por tanto, en la perspectiva de la teoría económica de la eficiencia dinámica, del papel que cumplen los principios de la moral personal y las diferentes instituciones sociales que hacen posible e impulsan su cumplimiento y mantenimiento, abre un vasto campo de investigación para los estudiosos que esperamos tenga una importancia determinante en el futuro».

V.

REFLEXIONES FINALES

Resumiendo, todos nosotros llevamos a la práctica de manera inconsciente las ideas implícitas en la Teoría de Juegos, pues una sociedad humana es un grupo en el que surgen continuas interacciones. Algunas interacciones implican escoger entre el interés propio y el del grupo. La frecuencia con que sucede la cooperación mutua mide la eficiencia del funcionamiento de la sociedad y de la economía.

Tenía razón von Neumann al afirmar que, a la larga, la supervivencia de la raza humana dependerá de que seamos capaces de crear cauces más perfectos para promover la cooperación. Estos cauces van más allá de las leyes y abarcan la Ética, los valores humanos y todas las normas sociales o de grupo que, al fomentar el capital social, favorecen la cooperación. La única solución satisfactoria al dilema del prisionero consiste en evitar dilemas del prisionero.

Aquí es donde entran en escena el *Homo Ethico* y los juegos strat-éticos. Compartimos la predicción de Thaler (2000) de que

el Homo Economicus terminará haciéndose más emocional, al menos en el sentido de que los economistas prestaremos más atención al estudio de las emociones (culpa, envidia, empatía, confianza, amor,... –véase también Elster, 1998)–. Primero fue el capital físico, después el capital tecnológico, al que siguió el capital humano. En la actualidad, el capital social ya es un firme candidato a argumento de la función de producción microeconómica y agregada. ¿Hablares algún día de los activos emocionales como otros intangibles generadores de valor económico?

Me gustaría terminar, porque creo que viene al caso, describiendo lo que vi en un documental sobre la fauna de la Antártida. Sobre todo me llamó la atención la forma en que los pingüinos se organizaban para no morir de frío en la parte más dura del invierno. Se apiñaban formando una especie de circunferencia para aislarse del frío y aumentar el calor corporal con la fricción. Es lógico pensar que los que estaban en el borde del círculo sufrían más directamente el impacto del temporal. Efectivamente, y por eso los pingüinos hacían turnos para no desgastarse.

Si pensamos en términos de Teoría de Juegos, este equilibrio, resultado de la cooperación, es estable desde el punto de vista evolutivo (funciona en el tiempo), es consistente y desincentiva los comportamientos tipo «free rider». Los jugadores satisfacen simultáneamente su propio interés y el del grupo. ¿Es racional el comportamiento cooperativo? Sí, siempre y en todo lugar. Por tanto, en aras del sentido común, se trata de cooperar con y no de luchar contra.

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Notas

JUAN DE LUGO Y LA LIBERTAD EN ECONOMÍA. EL ANÁLISIS ECONÓMICO ESCOLÁSTICO EN TRANSICIÓN

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ÓSCAR DE-JUAN**

Resumen: Odd Langholm reconoce en Lugo ciertas ideas que lo presentan como un autor en transición entre el paradigma escolástico y el de los filósofos del derecho natural. El elemento central de esta transición es la despersonalización u objetivación de la economía caracterizada por la desaparición de la dimensión interpersonal en las relaciones económicas y de la necesidad como condicionante de la voluntad y de la validez de los contratos. Estas ideas se hacen patentes en Lugo en el tratamiento de la voluntad y en el del cumplimiento de los contratos. En este trabajo se revisa la tesis de Langholm concluyendo que en el primer caso la ruptura no es radical, pero sí en el segundo. En cualquier caso, las «nuevas ideas» en Lugo son un intento de armonizar la nueva realidad económica con la tradición escolástica, a la que pertenece.

Palabras clave: Historia del pensamiento económico, posición dominante, ética y justicia.

Abstract: Following Odd Langholm certain ideas of Lugo presents this scholar as an author in transition between scholastic and natural law philosophers paradigms. The key point is the depersonalization or the objectivization of the economy characterized by the disappearance of the interpersonal economic relations and the necessity as a condition of the will and of the covenants validity. These ideas appear on Lugo writings over the will and the keeping covenants. This paper revise Langholm thesis. The authors agreeing over the second item, not fully over the first one. Anyway, this «new ideas» are a Lugo attempt to fit the new economic reality with the scholastic legacy, where he belongs to.

Key words: History of Economic Thought, dominant position, ethics and justice.

Códigos JEL: B11, D42, Z10.

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I.
 PODER, ELECCIÓN, NECESIDAD Y COACCIÓN
 EN ECONOMÍA

Por mucho que Henri-Maximilien pretendiera sacudirse el polvo del mostrador familiar, no en balde se es hijo de un hombre que *puede subir o bajar el precio de los productos*, y que concede préstamos a los príncipes. La madre del héroe en ciernes le llenó la bolsa de vituallas y le dio a escondidas dinero para el viaje.

(MARGUERITE YOURCENAR, *Opus nigrum*)

Henri-Maximilien, hijo de un mercader de Brujas, decide abandonar su casa natal abandonando al mismo tiempo su porvenir como hijo de mercader. La renuncia de Henri-Maximilien en términos económicos y de poder es particularmente importante y difícilmente podríamos buscarle una comparación en la actualidad; y esto no por el hecho de que su padre prestase dinero a los príncipes, sino por el hecho de que *podía subir y bajar el precio de los productos*. En un entorno de agentes económicos precio-aceptantes, la capacidad de fijar los precios queda reservada a pocas empresas y esto, además, como una circunstancia transitoria pues ese poder tiende a desaparecer en el largo plazo.

Concede Marguerite Yourcenar, pues, al mercader la capacidad de alterar el precio de los productos. Para poder explicar ese poder hemos de tener en cuenta dos elementos que marcan una diferencia sustancial con la sabiduría económica convencional actual.

En primer lugar, la realización de las transacciones económicas en un marco de relaciones interpersonales. Comprador y vendedor concurrían individualmente y su voluntad y decisión eran determinantes para concluir la transacción.

The modern mechanistic conception of the market as a supra-personal force setting the terms to which an individual exchanger must submit was foreign to the medieval masters. Their frame of reference was a moral universe that obliged any buyer or seller to act for the common good and agree to terms of exchange accordingly, regardless of the advantage granted him by the forces of the market. This means that the common estimate of the just price could not refer indiscriminately to whatever price might be obtainable under existent market conditions. (Langholm 1998: 85)

En segundo lugar, la necesidad de vender o de comprar o de tomar un préstamo, en un entorno de ausencia de un mercado sistematizado, podía llevar a los agentes económicos a tomar decisiones que de otro modo no hubieran tomado. Así pues, la voluntad queda condicionada por la necesidad.

Son estos dos elementos los que conceden veracidad a la frase de que el mercader *podía subir o bajar el precio de los productos*. Así pues, el mercader de Brujas, en su doble condición de comerciante y banquero adinerado, no tenía *necesidad* de vender a precios que él no decidiera. No se encontraría en la situación de urgencia de vender para poder subsistir.

Ahora bien, la mayoría de los agentes económicos no gozaban de esa privilegiada situación. La necesidad podía condicionar su voluntad en las transacciones económicas y desde la postura más débil verse sometidos a las condiciones que quisiera imponer la más fuerte. En este caso, la compulsión derivada de la necesidad impediría la voluntariedad en la transacción.

Como es sabido, en el esquema escolástico se exigía el respeto a la justicia conmutativa en las relaciones contractuales, de tal manera que ninguna de las partes quedara en peores condiciones que la otra tras haber realizado la operación. La justicia conmutativa se basaba, pues, en una «razón aritmética» según la cual las partes contratantes han de intercambiar bienes equivalentes.

El peligro para el respeto de la justicia que suponía la necesidad del comprador –o vendedor– era evidente. La parte más débil obligada por su necesidad no tendría más remedio que consentir. Su libertad quedaría condicionada. Así pues, necesidad, compulsión, voluntad y libertad son elementos presentes en las transacciones económicas que motivaron la reflexión de los doctores escolásticos por su incidencia sobre la moral y sobre la justicia.

Esta problemática, a la que tanto esfuerzo y tratados dedicaron los doctores escolásticos, constituye el objeto central del excelente libro de Odd Langholm, *The legacy of scholasticism in economic thought. Antecedents of choice and power*.¹ En este estudio Langholm reflexiona sobre el concepto de libertad en Economía, la capacidad de elegir y la limitación que el poder y la necesidad pueden ejercer sobre la misma. Para ello emprende un recorrido por toda la tradición económica escolástica –desde Santo Tomás de Aquino hasta Juan de Lugo– buscando las conexiones etimológicas, jurídicas y teológicas a través de las cuáles se va construyendo la doctrina de los doctores en torno a la libertad de elección en economía.²

Langholm sostiene dos tesis fundamentales en este estudio. La primera es considerar que la aportación principal y más duradera de la corriente escolástica a la Economía ha sido su reflexión sobre el concepto de *libertad económica*.

¹ Entre los historiadores y analistas del pensamiento económico de la escolástica, Odd Langholm se ha situado en un lugar preeminente. Con sus estudios sobre el precio justo, el dinero y la usura ha tratado de reconstruir el camino que conecta a Aristóteles con los doctores escolásticos medievales, así como las influencias que sobre éstos ejercieron las fuentes romanistas, patrísticas y canonísticas.

² En este sentido, conviene recordar que el paradigma escolástico no puede considerarse como un bloque monolítico. Las discrepancias entre autores eran lugar común. Sucesivamente se introducía nuevos matices en las disputas que reorientaban el problema en un intento permanente de adecuación a la cambiante realidad económica. Advierte, pues, Langholm sobre «the common error of regarding the scholastic tradition as too uniform, overlooking the breakdown of the medieval paradigm at the hands of the late scholastics and their gradual assumption of some of the premises of the new economics». (Langholm 1998: 176)

In scholastic economic thought, freedom in that sense brought to bear on two of the elements of all market economies, namely, the phenomenon of need in the face of scarcity and the arrangement of need satisfaction by means of exchange. The question of freedom then became the question of the state of the will of a person who consents to certain terms of exchange because of need. Conversely, it became the question of compulsion by need or, in a personalized sense, of compulsion (or coercion) by one party to the exchange taking advantage of the other party's need. (Langholm 1998: vii)

La segunda es que en la transición entre el paradigma escolástico y el de los filósofos del derecho natural –en el seno del cual Smith sistematizaría sus ideas– se produciría el inicio de la objetivación o *despersonalización* de la economía.³ Esta despersonalización se caracterizaría, en primer lugar, porque desaparece la dimensión interpersonal en las relaciones económicas y con ello la posibilidad de exigir una responsabilidad moral en las mismas. En segundo lugar, deja de ser relevante la voluntariedad con que los agentes acuden al mercado, y, por tanto, la necesidad como condicionante de la transacción. Se modifica así el concepto de libertad económica. A partir de entonces la justicia desaparece como virtud moral. Si en la tradición aristotélica la justicia de los contratos se sustentaba en los términos, con Hobbes ésta pasa a sustentarse en el cumplimiento. Se trata pues de un cambio crucial, en la medida en que la cultura occidental se ha construido en torno al cumplimiento de los contratos.

Junto con las dos ideas anteriores y en conexión con ellas, Langholm muestra como dentro de la tradición escolástica es posible detectar algunas ideas que conectan a estos autores con los posteriores filósofos del derecho natural. De entre estos

³ El término objetivación hay que atribuírselo a Gordon (1975: 270). Langholm prefiere hablar de despersonalización.

autores Langholm reserva un lugar especial a Lugo pues considera que en su análisis sobre la usura

Lugo makes two important observations... Both are devastating to the scholastic doctrine and point forward to another era, already dawning elsewhere in Europe. (1998: 75)

Es nuestro propósito en este artículo tratar de analizar más detenidamente la postura de Juan de Lugo, el Doctor Hispalense, y con ello revisar la importante tesis de Langholm al respecto del final del periodo de la escolástica y su enlace con los filósofos del derecho natural.⁴ Esta revisión nos permitirá, además, profundizar en lo señalado hasta ahora sobre los conceptos de necesidad, compulsión, voluntariedad y libertad. Con-

⁴ Juan de Lugo es comúnmente considerado como el último gran representante del renacer escolástico español, al menos en lo que a pensamiento económico se refiere (Grice-Hutchison 1982: 135; Roover 1957: 119). Dentro de las distintas tradiciones escolásticas (véase nota 2), Lugo se inserta en aquella que surge en España en el siglo XVI a través de Francisco de Vitoria y sus seguidores. En esta corriente se inserta Lugo; en ella se forma; de ella toma los temas de estudio, el método de análisis, la forma de entender y abordar la realidad, la preocupación moral en la investigación... Es su escuela, su ambiente intelectual. Pertenece, pues, al grupo que denominaremos «doctores escolásticos españoles de los siglos XVI y XVII». Schumpeter se refirió a ellos como «Escolásticos tardíos» (Schumpeter 1994: 134), y Grice-Hutchison, con la expresión más exitosa de «Escuela de Salamanca» (Grice-Hutchison 1982). El término «Escuela de Salamanca» ha suscitado alguna controversia (Grice-Hutchison 1993: 25-27).

Juan de Lugo, nació en Madrid en 1583. Su infancia la pasó en Sevilla, quedando fuertemente vinculado a esta ciudad, de ahí que firme sus obras como «Ionnes de Lugo Hispalensis». En el año 1603 ingresó en la Compañía de Jesús. Su labor dentro de la orden fue eminentemente docente, impartiendo clases en Medina del Campo, Monforte de Lemos, León, Salamanca y Valladolid. En el año 1621 es reclamado por el General de la Compañía para ocupar la Cátedra de Teología escolástica del colegio que la Compañía tenía en Roma. En 1643 es nombrado Cardenal por el papa Urbano VIII. Murió en Roma en 1660.

En relación con su obra, a nuestro objeto interesa reseñar el tratado *De Iustitia et Iure*, y más concretamente las disputas XXV –sobre la usura– y XXVI –sobre la compra-venta–. La primera edición apareció en Lyon en el año 1642. Le siguieron las de 1646, 1652 y 1670, publicadas también en Lyon. Las siguientes ediciones aparecen, en el marco de sus obras completas, en los años 1718 y 1751 –ediciones venecianas– y 1868 y 1891 –ediciones parisinas de Vivés–.

ceptos relevantes para una aproximación no convencional a la realidad de las transacciones económicas y para reconstruir el camino de la despersonalización de la economía.

II. EL PAPEL DE LA VOLUNTAD EN EL ANÁLISIS ECONÓMICO ESCOLÁSTICO

Al reflexionar sobre la virtud en su *Moral a Nicómaco* reconoce Aristóteles que ésta sólo puede predicarse de los actos voluntarios de ahí que sea

un estudio imprescindible cuando se quiere dar razón de la virtud determinar lo que debe entenderse por acto voluntario e involuntario (1997: 122)

Por acto involuntario entiende Aristóteles aquellos que se hacen por fuerza mayor o por ignorancia. Ahora bien, dentro de este grupo también podemos encontrarnos con actos que realizamos bien debido al temor de males mayores o bien por un motivo noble.

Por ejemplo: un tirano, dueño de vuestros padres y vuestros hijos, os impone una cosa vergonzosa; podéis salvar esas personas que os son queridas, si os sometéis; y perderlas, si rehusáis someteros; y, en un caso semejante, se puede preguntar si el acto es voluntario o involuntario. Algo análogo sucede al marino que en una tempestad arroja al mar las mercancías. En los casos ordinarios nadie que tenga buen sentido arroja al agua los bienes que posee, pero no hay hombre sensato que no esté dispuesto a hacerlo si es una condición precisa para salvarse él o salvar a los demás. Las acciones de este género son, puede decirse, acciones mixtas; sin embargo, se aproximan más a las acciones voluntarias. Son el resultado de una preferencia en el momento mismo en que se hacen, y el objeto definitivo del acto está en relación con las circunstancias... En los actos que

acabamos de citar, se obra aún libremente, porque el principio que para estos actos pone en movimiento los miembros de nuestro cuerpo que los ejecutan está en nosotros; y siempre que está en nosotros sólo de nosotros depende hacer o no las cosas. (1997: 124)⁵

Como se desprende de la cita, Aristóteles resuelve la cuestión de la voluntariedad de las *acciones mixtas* aduciendo que éstas son principalmente voluntarias pues la acción final no es sino una elección del agente dadas las circunstancias; y puesto que existe elección, existe voluntariedad.

Por otra parte, la tradición legal europea establecía el consentimiento como condición necesaria para la validez de los contratos. Si algún contrato era resultado de la fuerza o del miedo la voluntad del contratante quedaba anulada y no podía ser sancionado por la ley. Lo cual no implica que la compulsión fuera incompatible con el consentimiento.⁶

La duda surge, pues, en relación con la voluntad en caso de las *acciones mixtas*; es decir, de aquellas en las que existe cierta compulsión que obliga a tomar una decisión que en otras circunstancias no se hubiera tomado. Para clarificar la cuestión, los escolásticos distinguieron entre voluntad absoluta (*simpli-citer*) y voluntad condicionada (*secundum quid*). En el primer caso no hay lugar a dudas. En el segundo, la tesis escolástica sancionó la de Aristóteles y fue taxativa a la hora de considerar que la compulsión no invalida la voluntariedad:⁷ el agente escoge

⁵ Este texto de Aristóteles, y concretamente el ejemplo del capitán, será profusamente citado y utilizado en toda la tradición escolástica.

⁶ De hecho, en el Digesto pueden encontrarse dos posturas contradictorias sintetizadas en las siguientes afirmaciones de Paul y Ulpiano, respectivamente: «...although I should not have willed if I were free; still, being forced, I have willed»; «Nothing is a contrary to consent... as force and fear». Langholm afirma que, considerado en su conjunto, acabó dominando la primera. (1998: 34-37)

⁷ Esta severidad, si bien se ampara en las consideraciones de Aristóteles y de la tradición legal europea, no es ajena a la cuestión del pecado dentro de la moral cristiana. La libertad para pecar y para combatir el pecado es una premisa funda-

voluntariamente una opción de entre las posibles dadas las circunstancias. Así pues, la voluntad forzada no deja de ser voluntad. Otra cuestión sería la mejor o peor disposición con la que actúe.

Esta severidad doctrinal admitió una excepción: el de la coacción o compulsión económica, entendida como

Economic compulsion is compulsion by a person's own need, utilized by another person to his advantage. (Langholm 1998: 6)

De hecho, Langholm considera que la piedra angular que sustenta y da consistencia lógica al edificio de análisis económico escolástico es la lucha contra la explotación de la necesidad económica individual. Es este *leit motiv* lo que sustantiva dicho análisis y marca la principal diferencia de la escolástica con otros paradigmas.

Una vez precisado el papel de la voluntad y la necesidad dentro de la doctrina escolástica, retomamos el propósito del artículo sobre el papel de Lugo en el periodo final de la escolástica.

III.

JUAN DE LUGO Y LA DESPERSONALIZACIÓN DE LA ECONOMÍA

1. Necesidad, voluntad y usura

El préstamo de dinero y la usura fue la primera de las actividades económicas que centró la atención de los doctores escolásticos y sobre la que aplicaron sus ideas sobre la compulsión, la voluntad y la necesidad.

mental de la doctrina católica. Ahora bien, si la compulsión se considerara como un factor atenuante, se abrirían las puertas al *pecado involuntario* pero forzado por las circunstancias. Cosa que no podían admitir los teólogos escolásticos.

La postura que prevaleció entre los autores de los siglos XIII y XIV fue la de que aunque el prestatario pague un interés por encima del principal –usura– éste no lo hace libremente sino movido de la necesidad, ya sea en sentido estricto –necesario para la existencia– o en sentido más amplio –necesario para existir de forma adecuada–. Para Sto. Tomás:

One who accepts a loan always suffers necessity either in the first or in the second of these two senses. If this is interpreted literally, it means that usury is always paid involuntarily, regardless of the purpose for which the money was intended, and that all usury is theft. (Citado en Citado en Langholm 1998: 64).

La usura es pues una forma de robo, pues el usurero toma algo que no le pertenece contra la voluntad de su legítimo propietario. El argumento de la compulsión se convirtió en una razón más en contra del cobro de usuras;⁸ contra la devolución de algo por encima del capital prestado en el contrato de mutuo.⁹ Señala Langholm (1998: 65-66) que dicho argumento fue dejando de utilizarse durante los siglos XIV y XV y las discusiones sobre la usura se reorientaron hacia las circunstancias y los

⁸ Los otros argumentos principales contra la usura serían: a) La esterilidad del dinero; b) el riesgo en la transferencia de propiedad; c) el consumo de los bienes con el uso; d) los beneficios sobre la industria del prestatario; y, e) la a-causalidad del tiempo. Cfr. Langholm (1984) y Monsalve (2002)

⁹ Conviene recordar que la definición de usura sólo podía predicarse del contrato de mutuo: «Definiremos la usura como el lucro que proviene del mutuo de modo inmediato y como algo debido. Por ejemplo, si se exigieren ciento diez a cambio de cien que se entregaron en mutuo, a los cien que se entregan se llama capital o 'suerte' (sors), y a los otros diez se llama usura, interés, o ganancia sobre la 'suerte' o capital. Por consiguiente, no será usura si el lucro proviniera, no del mutuo, sino de una compra-venta, aunque fuera injusta; tampoco será usura si la cantidad no se diera como algo debido, sino por benevolencia, gratitud o amistad; se tratará sólo de mutuo formal, o virtual, cual se encuentra en la compra-venta en la que el bien se vende más caro por razón de haber diferido el pago del precio, o más barato por haberlo anticipado; pues en ambos casos interviene un mutuo virtual por razón del precio cuyo pago se retrasa o anticipa originando un lucro por diferencia con el precio justo.» (Lugo 25: 6).

títulos extrínsecos (*damnum emergens, lucrum cessans*) que legitimaban el cobro de un interés. Así mientras que la construcción doctrinal sobre la injusticia de la usura permanecía intacta las circunstancias atenuantes la sancionaban.

Veamos lo que escribe Lugo en relación con la voluntad y la usura.

...la usura, como se ha dicho en muchas ocasiones, es un pecado contra la justicia, para el que se requiere esencialmente que el prójimo sea gravado contra su voluntad o sufra algún daño. Así pues, cuando no existe daño ni se grava al prójimo no puede tratarse de pacto injusto ni, por tanto usurario. (Lugo 25: 55)

Ahora bien la voluntad podría verse condicionada por la necesidad.

...para juzgar si el pacto es o no usurario no basta con mirar sólo al daño que del pacto se pueda seguir para el mutuuario, sino también a la carga o daño que deberá padecer por aceptar la obligación pactada; pues aunque la ejecución del mismo no implique de hecho ningún daño, sin embargo, la obligación que se acepta, en cuanto contradistinta de la ejecución del pacto, es tal que el mutuuario podría someterse a ella involuntariamente, es decir, coaccionado por la necesidad que tiene del mutuo. Pues como quiera que toda la injusticia de la usura nazca de la involuntariedad con que se acepta, siempre que exista involuntariedad habrá usura. Sin embargo, cuando esa obligación se estime en nada, o se considere como inexistente por el que la acepta, cesará el fundamento para que exista usura e injusticia en la obligación contraída; pues se acepta de modo absoluto y plenamente voluntario, es decir, sin mezcla de involuntariedad. (Lugo 25: 55).

El problema se plantea al considerar si el prestatario paga el interés libremente o movido por la necesidad. Si lo hiciera libremente y teniendo en cuenta el principio aristotélico de que *nadie sufre injusticia voluntariamente*, parece claro que en este caso

no habría injusticia en el pago de ese *algo más* por encima del capital. Es decir, si el prestatario pagara la usura voluntariamente entonces no existiría robo. Así pues, la voluntariedad se convierte en la clave del problema.

Frente a la firmeza de Sto. Tomás de considerar el pago siempre como involuntario, Lugo reconoce que respecto a la obligación de pago «el mutuuario *podría* someterse a ella involuntariamente»; el condicional nos indica que también podría pagar algo por encima del capital de forma voluntaria, como muestra de liberalidad y gratitud, en cuyo caso no se considera un préstamo usurario, pues lo que paga no es usura sino libre gratitud (Lugo 25: IV). Así pues la voluntad puede ser la de pagar y el pagar no necesariamente implica involuntariedad.

De esta forma Lugo rompe la conexión entre necesidad e involuntariedad. El prestatario puede querer un préstamo sin sufrir la necesidad de la que hablaba Sto. Tomás. Alguien que acepte un préstamo no siempre sufre necesidad. Este nuevo matiz que recoge el Doctor Hispalense frente a la tradición escolástica de los siglos XIII y XIV ha de relacionarse con los dos siguiente hechos:

- La variación de la realidad económica entre el estado cuasi-estacionario de los siglos XIII y XIV y el estado más económicamente dinámico de los siglos XVI y XVII.
- La variación en la concepción de los usos del dinero. Lugo ya no percibe el dinero como una mera mercancía que sirve para el intercambio de bienes. Su idea del dinero es más compleja. El dinero puede ser usado como medio de cambio y consumido o puede ser utilizado para la negociación y convertirse en capital.¹⁰

¹⁰ Lugo (28: 54) reconoce que en los mercaderes el «principal instrumento de negociación es el dinero». Al discutir sobre el lucro cesante, utiliza con frecuencia las expresiones invertir, negociar y beneficiarse con el dinero (Lugo 28: VI.1).

Así pues el préstamo *podría* no deberse a la necesidad sino al deseo de negociar. El condicional se manifiesta como importante pues es el elemento que permite a Lugo mantener la construcción escolástica contra el abuso de poder y conectarla con la nueva realidad económica necesitada de mayor flexibilidad financiera.

Profundizando algo más en la cuestión podríamos preguntarnos qué pasa con la propiedad del dinero que se paga en concepto de usura. Si se admitiera que el dominio pasa al usureiro la cuestión de la voluntad se torna irrelevante y, de hecho, se sancionaría el cobro de la usura. Al contrario, si se sostiene que tal dominio no pasa al usurero. Recordemos que según Langholm, al resolver esta cuestión,

Lugo makes two important observations... Both are devastating to the scholastic doctrine and point forward to another era, already dawning elsewhere in Europe. (1998: 75)

Antes de abordar la cuestión de la transferencia de dominio del pago de la usura conviene precisar que la cuestión que se plantea no es sobre la legitimidad del cobro de la usura—cuestión que queda fuera de duda— sino qué ocurre con el dominio de lo que se paga en concepto de usura, entendida como la devolución de algo más sobre el principal sin título que lo justifique (*lucrum cessans, damnum emergens, riesgo, gratitud...*). Es decir, una vez producido físicamente el pago, ¿de quién es el dominio de las monedas?, ¿del usurero que las recibe ilegítimamente?, ¿del prestatario que las entrega de forma involuntaria?

Hablando sobre las prácticas de los banqueros, describe cómo los depósitos fructifican para el banquero: «No es menor, sino antes mayor el beneficio que se hace al banquero depositándole el dinero, con el que entretanto puede negociar y lucrarse. Más aún, los banqueros estiman en tanto el beneficio, que a veces añaden una remuneración al depositante» (Lugo 28: 63).

Hubo autores, principalmente canonistas, que defendieron la transferencia de propiedad. En la tradición escolástica, la postura fue más bien la contraria. De entre los varios argumentos que unos y otros expusieron interesa detenernos en aquel que hace referencia a la voluntad.

Para los autores que defendían la transferencia de dominio, existe voluntad de pagar aunque esta sea condicionada (*secundum quid*) y no absoluta (*simpliciter*), pues es preferible la usura a un daño superior, en consecuencia sí existe transferencia de propiedad.¹¹ Así pues, el pago de la usura habría que encuadrarlo dentro de las *acciones mixtas* de las que hablaba Aristóteles. Acciones consideradas como voluntarias, de lo cual se deduce la transferencia de dominio. Molina nos resume la postura de estos autores.

Porque el dominio de los bienes se adquiere por la entrega de los mismos, y allí se da esta razón: «porque nada hay tan natural a la equidad natural como el que el dueño tenga voluntad determinada de transferir una cosa a otro»; y como el prestatario entrega al prestamista el lucro usurero por propia voluntad, se sigue que el prestamista adquiere así el dominio de ese lucro o beneficio. Y no es obstáculo que esa entrega sea una acción involuntaria mixta, pues como dice Aristóteles es *simplemente (simpliciter)* voluntaria y sólo *condicionalmente (secundum quid)* involuntaria; de igual manera que la acción de quien forzado por la tempestad arroja su mercancía al mar sea considerada simplemente voluntaria. (Molina 1989: 199)

Para otros autores, no es posible hablar de transferencia de dominio pues no existe título justo que lo legitime. Entre ellos Molina, quien responde al anterior razonamiento apoyándose en la idea de necesidad como compulsión.

¹¹ Sobre estos autores véase Langholm (1998: 71-73).

Aunque sea involuntaria *condicionalmente (secundum quid)*, si se obligó a actuar así injustamente, por ejemplo, coaccionando con miedo a la donación de algo o al pago de un precio que no se justifica, tal involuntariedad no es suficiente para transferir el dominio, aunque al mismo tiempo se acción *simpliciter (simpliciter)* voluntaria.

Aunque Molina considera que el usurero no adquiere el dominio de la usura con carácter general, sí lo puede hacer ocasionalmente (*per accidens*).

Ocasionalmente el usurero se puede convertir a veces en dueño del dinero que ganó mediante la usura. Así, por ejemplo, si ese dinero se mezclase con otro del usurero. (Molina 1989: 204)

Esta apreciación deriva de una concepción meramente física del dominio de las monedas. Obviamente si éstas se mezclan con las que lícitamente recibiera o tuviera el usurero, no podría distinguirse las unas de las otras y adquiriría el dominio de todas, aunque el prestatario retiene el derecho a reclamarlo y a que se le prefiera a otro acreedor.

Para Lugo (25: 206) «el usurero adquiere el dominio de las usuras, pero sólo un dominio débil y con obligación de restituir». Es decir, al pagar la usura existe un simple cambio de mano del dinero, pero la propiedad y el derecho a reclamarlo permanecen en el prestatario.

Sobre esta tesis del Doctor Hispalense Langholm afirma:

According to Lugo, there can be no question but that the ownership of money paid as usury passes to the usurer. Whether the coins in question are mingled with other coins or not is irrelevant. Lugo makes two important observations... Both are devastating to the scholastic doctrine and point forward to another era, already dawning elsewhere in Europe. (Langholm 1998: 74-5).

Veamos detenidamente cuáles son esas dos observaciones. La primera de estas observaciones se relaciona con la cuestión de la voluntad.

Aunque la voluntad esté mezclada con algo de involuntariedad, debe considerarse simplemente libre, no impidiendo que la transferencia sea eficaz el que en cierto aspecto exista involuntariedad. Porque, realmente, la involuntariedad con la que el mutuuario paga las usuras no es mayor que la involuntariedad con que paga el interés que se paga del daño emergente, y por eso no niega que el dominio del interés se transfiera eficazmente. (Lugo 25: 206)

A partir de esta cita de Lugo Langholm concluye que «this observation robs the Aristotelian model of most of its meaning as an instrument of economic analysis» (1998: 75). La involuntariedad que pudiera existir no invalida la transferencia de propiedad. Si el prestamista acudió movido por la necesidad o no es indiferente pues esto sólo afectaría al grado de involuntariedad o voluntariedad con que se somete al pago de la usura y esto, en definitiva, a partir de Lugo, es irrelevante.

Conviene, sin embargo, matizar esta apreciación de Langholm. Inmediatamente después del texto anterior, Lugo continúa.

Por tanto, si el dueño quiere transferir eficaz y absolutamente el dominio de lo que entrega, y no sólo cumplir con la acción externa de lo que entrega, no vemos razón por la que su voluntad no deba considerarse eficaz si no existe ley positiva que le impida a él transferirla, ni al usurero recibirla. (Lugo 25: 206).

Así pues Langholm parece fijarse solamente en la primera parte del texto en la que se habla sobre la hipotética involuntariedad del prestatario al pagar bien las usuras, bien el interés por el daño emergente. Si en el segundo caso es lícito, ¿por qué no en el primero? No obstante, Lugo continúa y pone el

acento en que el dueño «quiere transferir eficaz y absolutamente el dominio de lo que entrega». Es en este caso en el que no hay duda sobre la transferencia de propiedad.

Además, Lugo es concluyente al inicio de toda esta discusión sobre su postura al respecto

También parece cierto que el dominio no se transfiere al usurero si el mutuuario las pagó sin intención de transferir su dominio, y lo hizo sólo para no faltar a su palabra. Por lo tanto, muchas veces habrá que reconocer que, de hecho, no se adquiere el dominio por el usurero, puesto que el mutuuario no tiene intención de hacerlo por ser consciente de que no debe pagarlas, y se limitó a entregarlas sólo por cumplir la palabra dada. (Lugo 25: 204).

El texto deja clara la idea de que la transferencia de propiedad depende de la intención con que el mutuuario entregue las usuras. En ciertas ocasiones si existirá y otras «muchas veces habrá que reconocer que, de hecho, no se adquiere el dominio por el usurero...»

Así pues, no parece que Lugo se desvincule plenamente del planteamiento de la compulsión y la voluntad como Langholm parece sostener. No obstante, aunque en la construcción doctrinal Lugo se mantenga fiel a la tradición de pensamiento en la que se inserta, la incorporación del matiz que desvincula la transferencia de propiedad de la voluntad no deja de tener su importancia y realmente supone incorporar un elemento *extraño* al análisis que cuestiona la congruencia del mismo. Si todo el modelo se sustenta en la cuestión de la voluntad, y la libertad económica que otorga la ausencia de necesidad, para evitar situaciones de abuso de poder, matizar dicha cuestión le resta parte de su consistencia. Lugo, educado en una tradición centenaria, está excesivamente atado a la misma como para desvincularse de forma radical. Percibió los retos que planteaba la nueva realidad y trató de responder a la misma mediante

refinamientos en la argumentación y no mediante un cambio en el método y el enfoque. Éste sería el gran error, no sólo de Lugo, sino de los escolásticos en general y que privaría al análisis económico de buena parte de sus conclusiones.

Mais, l'impressionnant appareil dialectique ne peut plus dissimuler le fait que les scolastiques avaient épuisé les ressources de leur méthode qui, au lieu de plus de raffinement, avait besoin d'une transformation complète et d'une révision de fond en comble. Malheureusement, les scolastiques n'en virent pas la nécessité et se refusèrent à évoluer avec le temps. Assaillis de tous côtés –par les Cartésiens, les Jansénistes, les Philosophes, les Encyclopédistes et les Physiocrates– ils se cramponnèrent malgré tout à leurs méthodes désuètes, et leurs doctrines économiques subirent le même sort que leur philosophie en tombant dans le discrédit le plus complet. (Roover 1971: 36-7).

La segunda de las observaciones de la que nos hablaba Langholm se relaciona con la cuestión del cumplimiento de los contratos.

El texto relevante en esta ocasión es el siguiente:

... como quiera que el mutuatario sepa muy bien que las usuras no las debe en justicia, y que el usurero no tiene derecho a ellas, no puede pretender pagar una verdadera deuda ya que no existe. Sólo podrá pretender saldar la deuda de la fidelidad humana a la palabra dada. Prometió transferir el dominio, aunque no de forma gratuita sino por el beneficio recibido con el mutuo, y aunque esto no sea merecedor de un precio, el mutuatario quiere dar por ello más de lo que en realidad vale sólo porque así lo prometió. (Lugo 25: 207).

A partir de esta cita Langholm concluye:

Lugo's treatise *De iustitia et iure* appeared in 1642. The very same year saw the publication of Hobbes's *De cive*. In this work, a novel idea of natural law finds expressions. Decisively

breaking with Aristotle, one of its main tenets is that men fulfil their promises, even when proceeding from fear, for justice pertains to the keeping of covenants, not to their terms. (1998: 76)

En este caso coincidimos plenamente con la interpretación de Langholm al respecto de la importancia que el mantenimiento de los contratos *–porque así lo prometió–* adquiere sobre los términos de los mismos *–aunque esto no sea merecedor de un precio–*.

A raíz de todo lo anterior podemos concluir,

En primer lugar, que el cobro de algo más por encima del capital sin título que lo legitime es injusto y constituye el elemento central de la visión de Lugo sobre la cuestión de los préstamos y la usura. Ahora bien, quien solicita el préstamo puede necesitarlo para subsistir o bien desearlo por otros motivos menos imperativos como el de negociar. En una u otras circunstancias el grado de coacción es distinto y distinta la voluntariedad con la que se somete a dicho préstamo y a las cargas usurarias. Lugo, como el resto de doctores escolásticos españoles de los siglos XVI y XVII, fue más proclive a pensar en términos de deseabilidad que de necesidad.

En segundo lugar, que la transferencia de propiedad de las usuras dependerá de la voluntad absoluta (*simpliciter*) con que las pague el prestatario:

- Si las paga voluntariamente bien por liberalidad y gratitud, bien por fidelidad a la palabra dada, no existe lugar a dudas sobre la transferencia de propiedad
- Si las paga sin intención de hacerlo, es claro que no se adquiere el dominio por el usurero o de hacerlo sólo se adquiere un dominio débil y con obligación de restituir.

La voluntad sigue siendo esencial en su planteamiento, como lo era con anterioridad. Sí hemos de reconocer, no obstante, que Lugo ve a un prestatario más dispuesto a pagar algo por encima

del capital. La generalización y diversificación de las prácticas mercantiles hace que los límites entre la coacción y un razonable interés se difuminen, lo cual no implica que la intención no siga siendo determinante.

En tercer lugar, convenimos con Langholm que en Lugo se perfila la transición entre respeto a la justicia conmutativa –característico de la tradición aristotélica– y al cumplimiento de los contratos –característico del derecho natural– como pilar de las transacciones económicas. Esta transición obviamente no hay que entenderla como una ruptura brusca. Para Lugo la justicia conmutativa sigue siendo un elemento esencial como se desprende de su tratado sobre la compra-venta. No obstante, sí es posible apreciar la incorporación de ciertos matices de los que el texto citado es un buen ejemplo.

2. Necesidad, voluntad y compra venta

El tratamiento escolástico de la compra-venta gira nuevamente en torno al concepto de libertad económica con sus componentes de necesidad, voluntad y poder. La defensa que los doctores hicieron de la fijación de precios por la estimación común de mercado hay que enmarcarla dentro de ese esquema.¹²

In the medieval context, it makes more sense to interpret the market estimate of the just price, understood in the sense explained previously, as a means to combat the exploitation of individual economic need. (Langholm 1998: 88)

El análisis escolástico sobre el precio justo trata pues de evitar la explotación de la necesidad por parte del más poderoso.

¹² En este sentido existe una amplia discusión sobre si el precio justo es el mismo concepto que el precio. Entre los que asimilan ambos conceptos tenemos a Grice-Hutchison, Chafuen y Roover. Entre los defensores de la diferenciación se sitúan Gómez Camacho y Langholm.

Este principio rector hubo de confrontarse con tres principios del derecho romano que, en su formulación literal, lo negaban.

1. *una cosa vale tanto cuanto puedes obtener por ella*;¹³
2. *quien voluntariamente consiente en algo no se le injuria*;¹⁴ y,
3. *cada uno es el moderador y árbitro de sus propias cosas*.¹⁵

La asunción de estos principios *strictu sensu* concedería total libertad contractual a los agentes económicos. La parte más poderosa podría aprovecharse de la necesidad del débil. La capacidad de elección quedaba limitada. Por otra parte, estos principios tornaban irrelevante la cuestión de la voluntariedad. Todo esto llevó a una reinterpretación de estos principios por parte de los doctores escolásticos para adecuarlos a sus planteamientos morales y económicos (Langholm 1982).

La adecuación del primer principio se hizo de dos modos: reescribiéndolo y modificándolo. En el primer principio –el más devastador con respecto a la cuestión del precio justo– el verbo *poder* se asocia al significado de *deber*; por lo tanto, el poder adquiere una connotación moral y no factual. Por otra parte, ya en la tradición salmantina, Domingo de Soto modificó dicho principio para aclarar el concepto: *una cosa vale tanto cuanto puedes obtener por ella en ausencia de fuerza, fraude y engaño, razones que anularían la voluntad del comprador*. La modificación de Soto, enlazaría con el segundo principio y la cuestión de la voluntad. Se señala que el consentimiento debe ir acompañado de la ausencia de fuerza, fraude o engaño, en cuyo caso no existiría voluntariedad. Además, la necesidad puede obligar a una parte a

¹³ «Res tantum valet quantum vendi potest». Digesto 9, 2, 33.

¹⁴ «Volenti ac consentienti non fit injuria». Digesto 39, 3, 1.

¹⁵ «In re sua univusque est moderator et arbiter». Código de Justiniano 4, 35, 21

consentir en un contrato injusto, lo cual ha de interpretarse también como involuntariedad, pues estaríamos hablando de un consentimiento condicionado por la fuerza de las circunstancias. Finalmente, el tercer principio se reinterpreta afirmando que sólo existe total libertad sobre el precio de los bienes si éstos no son necesarios, es decir, son bienes de lujo. Vemos como los tres preceptos se refinan para incorporar las significaciones que dotan de sentido a la construcción escolástica, tal y como venimos señalando. Así, la dimensión moral se incorpora en el primero, la cuestión de la voluntad en el segundo y la de la necesidad en el tercero.

Lo presentado hasta el momento sería la tradición dominante en la corriente escolástica. Sin embargo, en el siglo XVI Cayetano introduce un matiz que sería ampliamente seguido y que supone un punto de inflexión en el tratamiento de la necesidad y la compulsión económica que afecta a la voluntariedad. Cayetano distingue entre el *modo* de compra-venta y la *causa* de la misma (Langholm 1998: 112ss). Para Cayetano la justicia ha de fijarse atendiendo al primero y no a la segunda (*modus than causa*). De esta forma, el individuo ha de someterse a la estimación común del precio sin que sus circunstancias particulares influyan en el mismo. Esta distinción hace que se desvanezca la relevancia de la necesidad y la compulsión en el contrato de compra-venta. El énfasis se pone en que cuando se concurre al mercado se hace libremente y supone un mutuo acuerdo entre ambas partes. Si el precio es justo, el acuerdo es justo y la transacción es justa.

La justicia del contrato de compra y venta depende fundamentalmente de la justicia del precio, pues la igualdad entre los contratantes, objeto de la justicia, no se guarda cuando el precio es superior o inferior al justo. Hay que explicar, pues, cuál sea el precio justo que el comprador debe pagar y el vendedor debe exigir. (Lugo 26: 38)

El acento pues hay que ponerlo en garantizar la justicia del precio y evitar situaciones de abuso de poder tales como la especulación, la colusión o el monopolio. Ésta es la mejor garantía para evitar la explotación económica de la necesidad individual.

En relación con la voluntad y el *modus than causa* planteado por Cayetano encontramos en Lugo una postura similar.

También crece este valor vulgar o natural por la escasez de lo que se vende, por la abundancia que hay de dinero, y decrece por los motivos contrarios. No basta, sin embargo, para aumentar el precio la mayor necesidad que el comprador pueda tener del bien, o la oportunidad que tendrá de obtener de él una mayor ganancia. Por tanto, no puede venderse el pan más caro a un hambriento por el simple hecho de que tenga hambre el comprador, ni un haz de hierbas comunes se puede vender más caro porque el comprador conozca el secreto para obtener de ellas un medicamento valioso y apreciado, pues estas circunstancias no varían la común estima de los bienes... Finalmente, el precio vulgar o natural varía dependiendo del modo en que se compran o venden los bienes. Se suele vender más caro cuando se venden al por menor que cuando se venden al por mayor; porque el primer modo de venta acarrea mayores gastos y trabajos al vendedor, por lo que se sube el precio de venta con razón. También se venden más baratos los objetos que el vendedor ofrece espontáneamente y de forma insistente que los que se compran en el almacén del mercader, pues las mercancías no buscadas o demandadas bajan su precio en una tercera parte... (Lugo 26: 43-44)

Por tanto, si la causa –la necesidad– con la que se acude a la realización de la compra-venta no es relevante, también deja de serlo la compulsión y la voluntariedad. La defensa de la parte más débil hay que buscarla en la justicia en el precio y no en la especial atención a unas circunstancias particulares.

Así pues, la prevalencia del modo sobre la causa introduce un nuevo elemento de despersonalización de la realidad

económica. En esta cuestión Lugo se manifiesta como continuador de la tradición escolástica desde Cayetano.

IV. CONCLUSIONES

A lo largo de la tradición escolástica la compulsión no se consideró como un atenuante de la voluntad, en la medida en que, en consonancia con la tesis de Aristóteles sobre las *acciones mixtas*, el agente siempre actuaba eligiendo entre diversas alternativas, dadas unas circunstancias. Otra cuestión era que esas circunstancias le fueran adversas. Así pues, la voluntad condicionada (*secundum quid*) no dejaba de ser voluntad. Esta severidad, sin embargo, no era aplicable al campo de la economía, donde la necesidad como compulsión sí se consideró como un elemento atenuante de la voluntad y por tanto susceptible de invalidar los contratos. La interpretación más plausible de esta divergencia de tratamiento radica en la defensa de la parte más débil de la transacción económica. La construcción doctrinal escolástica tuvo la finalidad de combatir la explotación de la necesidad económica del agente individual. En un entorno histórico en que las relaciones económicas eran relaciones interpersonales con un alto componente individual la amenaza del abuso por parte del más poderoso era una realidad presente.

Lugo se mantuvo fiel a esta tradición, sin embargo, el diferente entorno mercantil y financiero del siglo XVII le obligó introducir matizaciones que armonizaran el corpus escolástico con la nueva realidad.

En relación con la usura tres de ellas son especialmente relevantes. En primer lugar, la consideración de que el préstamo puede solicitarse por necesidad o por otros muchos motivos, de ahí que devolver algo por encima del principal no haya de

ser siempre involuntario. La concepción del dinero como capital no es ajena a este cambio. En segundo lugar, la consideración de que cierto grado de involuntariedad no invalida la eficacia de los contratos. La relevancia que Langholm concede a esta idea conviene matizarla con otros textos en los que Lugo sí defiende claramente la importancia de la voluntad. En tercer lugar, la consideración de que la justicia de los contratos va a depender no tanto de los términos del mismo cuanto de su cumplimiento.

Estas tres ideas cuestionan el pilar central del edificio escolástico en relación con la necesidad, la voluntad y la coacción y cuestionar este pilar se traduce en una pérdida de consistencia lógica de todo el análisis económico escolástico.

En cualquier caso, y pese a las anteriores «ideas revolucionarias» la figura de Lugo no puede entenderse como la de un revolucionario del pensamiento económico escolástico. Lugo se mantuvo fiel a la tradición en la que se educó y su metodología, presupuestos, principios y principales conclusiones fueron los de aquella. Sí percibió algunos de los nuevos retos pero su fidelidad le llevó a tratar de armonizarlos mediante refinamientos dialécticos y no mediante un cambio radical.

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ÉTICA, ECONOMÍA Y PROSTITUCIÓN

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El ser humano es propietario pleno de sí mismo, de su mente y su cuerpo. Las personas pueden tener relaciones sexuales de cualquier tipo con quien libremente deseen si respetan la propiedad privada, si la relación es aceptada voluntariamente por las partes implicadas y nadie es agredido o estafado. Una persona puede proponer a otra las condiciones que desee para practicar el sexo, como por ejemplo una contraprestación económica. Es legítimo dar y recibir dinero a cambio de sexo, y sexo a cambio de dinero (o cualquier otro bien no monetario).

La legitimidad ética universal de la prostitución es diferente de su valoración moral para diferentes sensibilidades y culturas. Algunas religiones utilizan prostitutas sagradas en sus templos; algunas religiones defienden la castidad y la virtud, o consideran pecaminoso el sexo y repugnante la prostitución. Algunas personas pueden considerar a una prostituta como una fuente de placer y de conocimiento de técnicas sexuales; algunas personas pueden considerar que el sexo sólo es aceptable dentro del matrimonio, o como expresión de afecto, y sentir asco y repulsa respecto a la prostitución. Ninguna percepción moral legítima la prohibición estatal de la prostitución.

Defender con argumentos la legalidad de la prostitución no implica ser intelectualmente malvado ni tener intereses

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inconfesables en el asunto. Los que promueven la prohibición de la prostitución no son moralmente superiores ni necesariamente bienintencionados.

La prostitución no es un delito por ninguna de las partes, prostituta (hombre o más frecuentemente mujer) o cliente (mujer o más habitualmente hombre). Si la relación entre prostituta y cliente es voluntaria, su prohibición perjudica a ambos ya que les impide una relación que ambos desean. La criminalización de la prostitución provoca su marginación, la clandestinidad, aumenta su precio, dificulta los controles de calidad (por ejemplo sanitarios, facilitando la expansión de enfermedades de transmisión sexual), hace posibles abusos de los policías (algunos deben ser sobornados con dinero o sexo gratuito) y fomenta la existencia y el enriquecimiento de grupos criminales (acostumbrados a quebrantar la ley y a esclavizar personas) que la controlan en un mercado negro.

La persona que se prostituye puede trabajar por libre de forma autónoma, puede integrarse como asalariada en una empresa de servicios sexuales (con un contrato laboral que especifique las condiciones de su actividad) o puede contratar con un especialista la protección y gestión de su actividad. El proxeneta no es un delincuente si su relación con la prostituta es voluntaria y no violenta (puede protegerla de clientes potencialmente peligrosos o servir de intermediario captador de clientes); prostitutas con más experiencia pueden ejercer como empresarias para quienes otras prostitutas trabajen como asalariadas (con sueldos fijos o comisiones variables) o asociadas. Criminalizar a todos los proxenetes implica dificultar que las prostitutas se organicen y defiendan libremente.

Obligar por la fuerza a otra persona a ejercer la prostitución es un delito equivalente a una violación indirecta (sexo no consentido) y un robo (si se apropia de lo que paga el cliente). Igual que un cliente puede seleccionar qué prostituta desea, una prostituta puede negarse a mantener relaciones sexuales sin

más explicaciones, excepto si ello implica un incumplimiento de un contrato legítimo previo. La mujer no es necesariamente la parte más débil. Una prostituta no es siempre una víctima. Para algunas la prostitución es sólo un trabajo (o una oportunidad esporádica de ganar dinero de forma ocasional), una forma de obtener riqueza más interesante que otras alternativas menos atractivas.

Las prohibiciones, regulaciones o restricciones estatales a la actividad sexual son violaciones de la propiedad privada individual típicas de autoritarismos conservadores o colectivismos violentos que pretenden imponer por la fuerza su moral arbitraria particular, y dañan a todas las partes que están dispuestas a mantener relaciones sexuales libremente consentidas. Algunas leyes son tan arbitrarias y absurdas que prohíben la prostitución pero permiten la pornografía, en la cual no sólo hay sexo a cambio de dinero sino que además se filma y se difunde ampliamente. No son nada extraños los casos de individuos hipócritas que condenan en público la prostitución pero se sirven de ella en privado.

Basar la prohibición de la prostitución en la dignidad del ser humano o la degradación de la mujer es tratar a las mujeres como un colectivo uniforme, o quedarse en una idea abstracta dissociada de la realidad concreta. Cada mujer es un ser humano diferente, con sus preferencias subjetivas y sus capacidades específicas. Lo que para una persona es denigrante para otra puede ser algo placentero, o algo molesto pero que merece la pena por lo que se obtiene a cambio.

La prostituta ha sido a menudo insultada y vilipendiada. El hombre acusa a la mujer infiel (o que no desea relaciones sexuales con él) de ser una puta; el indeseable es un hijo de puta. A menudo los clientes exigen confidencialidad y discreción porque no quieren que se sepa que utilizan los servicios de prostitutas. Algunas prostitutas asumen su condición y que ésta sea conocida; otras prefieren mantener una imagen falsa para

evitar el estigma social. El hombre suele ser celoso y difícilmente acepta emparejarse o casarse con una mujer que practica el sexo con otros.

Algunos hombres presumen de utilizar prostitutas, otros prefieren mantenerlo en secreto. Algunos se sienten culpables (si son creyentes religiosos pueden vivirlo como un pecado), otros lo asumen con más naturalidad. Algunas personas desprecian a los hombres que utilizan los servicios de las prostitutas, creen que lo hacen por sentirse machos fuertes y dominadores, que no pueden controlar sus necesidades fisiológicas, que son egoístas miserables y compulsivos que sólo buscan su placer personal sin preocuparse del bienestar ajeno. Algunos creen que la prostituta necesita humillarse para ejercer su actividad y que esto conlleva un inevitable e irreversible deterioro físico y psicológico (hay que prohibir la prostitución, aunque sea voluntaria, por el presunto bien de la prostituta que ella misma no conoce o conoce peor que el ingeniero social). Algunos creen que la prostitución es una forma de dominación masculina, pero entonces el pago monetario no tendría sentido. Algunos hombres pueden utilizar prostitutas por comodidad (prefieren pagar a probar a seducir a una mujer, lo cual no tiene garantías de éxito especialmente si el hombre no es atractivo), por timidez (se evita el dolor del rechazo) o simplemente por evitar la soledad (se paga más por la compañía que por el sexo).

Algunas prostitutas pueden sentirse molestas por lo que otras personas piensan de ellas o por la mala imagen de su profesión, por un posible estigma o repudio social. Las prostitutas no tienen derecho a controlar las mentes de las demás personas, a decidir qué es adecuado que piensen de ellas. No pueden pretender mantener un honor o prestigio de forma coactiva. Toda persona es dueña de sus pensamientos, opiniones y declaraciones, y puede pensar y decir lo que quiera acerca de la prostitución. La honorabilidad es una cuestión subjetiva que

no puede imponerse legalmente. Por otra parte, lo que la mayor parte de la sociedad piense acerca de la prostitución es irrelevante para su carácter ético y no les da derecho a legislar al respecto.

La regulación estatal es mejor que la prohibición, pero no es lo mismo que el ejercicio libre de la prostitución. La regulación gubernamental no defiende derechos sino que los viola: impide el anonimato y la confidencialidad, y obliga a los trabajadores del sexo a pagar impuestos confiscatorios y a participar en el sistema coactivo y fraudulento de la seguridad social. Una mujer que desea dejar de ejercer la prostitución puede naturalmente hacerlo, pero no tiene derecho a utilizar recursos ajenos para recibir formación o encontrar otro trabajo.

La prostitución puede ejercerse en un burdel, en domicilios particulares, en hoteles, o en cualquier lugar con el consentimiento del propietario. El problema de las prostitutas que buscan clientes en espacios públicos como calles, parques o carreteras se debe a que dichos lugares son públicos y su utilización origina conflictos de intereses: unos desean prostituirse y otros buscan prostitución en la calle, otros no desean ver a las prostitutas en sus barrios, cerca de sus casas, sus escuelas, sus parques, sus iglesias o sus comercios. La acotación estatal de zonas donde se permite o prohíbe la prostitución es arbitraria. El propietario de un espacio privado es quien está legitimado para decidir qué actividades son permitidas o prohibidas en el mismo. Quienes deseen vivir en espacios libres de prostitución pueden prohibirla dentro de su propiedad o llegar a acuerdos con otros propietarios.

La prostitución no requiere ninguna formación académica o profesional, por lo cual puede ser una fuente de ingresos para personas sin estudios ni capital. En los países más pobres, las mujeres que viven del sexo pueden ser el principal o el único soporte económico de su familia, y no tienen por qué avergonzarse de ello. Prohibir su actividad implica condenarlas a

la pobreza o a actividades más duras o menos productivas. La facilidad con la cual una mujer puede utilizarse como prostituta explica que las mafias las exploten como esclavas mediante engaños y violencia.

El problema fundamental de las drogadictas que se prostituyen es la prohibición de las drogas: el aumento de los precios y su marginalización social fomentan que algunas personas recurran a la prostitución para pagar las dosis que necesitan. El problema principal de las inmigrantes ilegales que se prostituyen radica en la violencia y la pobreza de sus lugares de origen, la actividad criminal de las mafias que las secuestran o estafan, y en la dificultad de controlar a los inmigrantes en los lugares de recepción. El turismo sexual es una actividad perfectamente legítima: el cliente viaja a otro lugar para obtener servicios sexuales a mejor precio o de mejor calidad, y las prostitutas locales disponen de más clientes. Recurrir a la prostitución en otros países (o con mujeres extranjeras) no implica colonizarlos, explotarlos, abusar de ellos, despojarles de sus recursos.

Algunas feministas colectivistas quieren abolir la prostitución. No se atreven a aclarar si quieren prohibirla (prohibición es prácticamente sinónimo de abolición) o simplemente que sin coacción legal y de algún modo que no explican deje de existir el intercambio de sexo por dinero. Parece que la prostitución es contraria a la dignidad humana, que denigra al trabajador sexual (generalmente mujer) y lo convierte en una persona de clase inferior. Afirman que pretenden ayudar a las prostitutas diciéndoles que son ciudadanos de segunda. No aclaran si también habría que abolir la pornografía, donde además de sexo y dinero el asunto se exhibe públicamente por más dinero. Insisten en que la prostitución no puede considerarse una profesión porque no es un oficio cualquiera, es la comercialización y compraventa de un cuerpo humano para algo íntimo y personal como el sexo. Ignoran que la prostitución no es la

venta ni el alquiler de un bien sino la prestación de un servicio. Abominan del lucro, del beneficio y del empresario, les repugna que alguien pueda ganar sucio dinero ejerciendo de intermediario o protector entre prostitutas y clientes. Repiten de forma monótona y machacona sus tópicos y son incapaces de aprender: algunas han dedicado toda su vida a una causa y sería horrible descubrir que ha sido en vano, que no ha tenido sentido porque estaban fatalmente equivocadas.

Algunos conservadores quieren prohibir la prostitución porque según ellos es inmoral. No aclaran si defienden que la moral es obvia, objetiva y universal (y cuáles son todos sus contenidos o preceptos y cómo es posible conocerlos) o si es posible que existan distintas morales en diversos grupos humanos; parecen asumir que si algo es inmoral es legítimo prohibirlo, es decir utilizar la coacción sistemática del estado para castigar a quienes cometan actos inmorales. Inquieren a quienes quieren mantener legal la prostitución (o mejor alegal, apartada de la regulación estatal) si les gustaría que su mujer, su madre o sus hijas (o maridos, padres, o hijos) se dedicaran a ello, como si el hecho de que no te guste algo implique automáticamente que debes intentar conseguir su prohibición.

No está claro por qué debe ser inmoral algo que hace tanta gente desde hace tanto tiempo (la profesión más antigua del mundo) sin agredir a nadie y produciendo beneficios (monetarios y psíquicos) para todas las partes directamente involucradas. Tal vez el moralista es incapaz de entender que lo que a él le parece repugnante en grado sumo a otro puede resultarle interesante o un mal menor que merece la pena a cambio de algo mejor (o un mal no tan menor para el que hay que mentalizarse, bloquearse emocionalmente o incluso drogarse, pero si es la elección libre es la preferencia demostrada, aunque a posteriori pueda haber arrepentimiento). El hombre de bien quizás no tiene en cuenta que si no hubiera prostitutas el deseo sexual de muchos hombres podría dirigirse hacia su madre, su

mujer, sus hijas u otras potenciales víctimas de seducción o violación. Algunas mujeres pueden sentir miedo ante la posibilidad de que sus maridos obtengan sexo fácilmente (y quizás mejor o más variado) fuera del matrimonio. Algunos puritanos o reprimidos pueden intentar imponer su estrecha moral a los demás de forma coactiva. Algunas personas que quizás disfrutaran de poca actividad sexual placentera pueden sentir envidia o rencor por el poder sexual de una prostituta.

La prostitución frecuentemente es una forma de esclavitud y explotación asociada al crimen organizado y a la inmigración ilegal, pero no siempre. Hay prostitutas (pobres o ricas) que ejercen su trabajo libre y voluntariamente. Las que son pobres y no tienen muchas alternativas son tan libres como las menos pobres si nadie las obliga por la fuerza a ejercer. Los prohibicionistas confunden y mezclan todas las situaciones (por interés o incapacidad intelectual), no analizan las diferencias relevantes, y en vez de luchar contra la violencia de las mafias (para lo cual las instituciones estatales son incompetentes) pretenden agredir o acosar a los clientes (y a los empresarios o intermediarios), porque aparentemente son quienes fomentan la prostitución: hay prostitución porque ellos pagan (tautología para la cual sólo hay que conocer la definición del fenómeno analizado).

Efectivamente que haya más clientes dispuestos (demanda) incentiva que haya más prostitutas (oferta). Si se quiere ayudar a las prostitutas libres conviene incrementar la demanda para que puedan subir el precio. Si se quiere eliminar la prostitución que se ejerce con violencia no parece muy acertado utilizar más violencia institucional para prohibir la prostitución voluntaria que se ejerce sin violencia. Si se quiere ayudar a las prostitutas forzadas conviene atrapar a sus agresores y obligarles a que las compensen por los daños causados.

En lugar de luchar contra la pobreza causada por el colectivismo (muchas prostitutas, libres o esclavas, proceden de

países socialistas) parece que es mejor eliminar los síntomas y las vías de escape. Los colectivistas hablan en nombre de personas a quienes no representan y se refieren a clases, no a individuos. Les preocupa la dignidad de la mujer como colectivo, no el bienestar de cada mujer particular. Asumen que la prohibición ayudaría a la prostituta, no imaginan que podría dañarla marginándola aún más y quitándole una fuente de ingresos más necesarios cuanto más pobre sea y más cargas familiares tenga. Cuando quieren subvencionar a las mujeres para que abandonen la prostitución suele ser con el dinero de los demás. El colectivista insiste falsamente en que la prostitución es un problema y que concierne a todos por igual, hombres y mujeres, prostitutas y no prostitutas, clientes y no clientes. Los igualitaristas que quieren prohibir la prostitución por igualar a hombres y mujeres no exploran la alternativa igualadora de fomentar que más hombres se prostituyan y más mujeres paguen por sus servicios.

Algunas prostitutas y quienes las defienden pretenden que puedan pagar impuestos, sindicarse e inscribirse en la seguridad social: ingenuamente desconocen la auténtica naturaleza del estado o piensan que van a obtener más que lo que tengan que aportar. Algunas prostitutas querrían poder organizarse de forma cooperativa sin intermediarios, pero parece que en este negocio es imprescindible alguien con habilidad y contactos para pagar los sobornos adecuados a policías, jueces y políticos corruptos (aun considerando que la prostitución es muchos lugares no es ilegal).

Prohibir la prostitución puede tener como efecto colateral incrementar su interés (el atractivo de lo prohibido). Además los ciudadanos pacíficos aprenden que las leyes estatales son coactivas y absurdas, por lo cual tal vez se acostumbren a violar otras normas que sí son socialmente funcionales.

La prostitución no es competencia desleal contra las mujeres casadas. Que un cónyuge utilice los servicios de una

prostituta implica el incumplimiento del deber de fidelidad sexual, con un perjuicio para la parte traicionada, pero el responsable es el cónyuge, no la prostituta, quien no está ligada por ningún contrato con ninguno de los dos cónyuges. Para una mujer puede ser perjudicial que su marido gaste parte de su dinero en prostitutas y que no atienda a sus necesidades sexuales, y para defenderse de ello puede especificar compensaciones contractuales en el pacto matrimonial. Para la mujer suele ser más peligroso que su marido se enamore de otra y la abandone, lo cual es más raro que suceda con una prostituta.

La prostitución infantil (idea que a casi todos seguramente parezca especialmente repugnante) es un complejo dilema ético. No existe ningún límite absoluto no arbitrario que delimite y distinga a los adultos de los niños, y la mayoría de edad legal es un concepto que implica un cambio drástico irreal. Un niño difícilmente decide por sí mismo prostituirse cuando seguramente no conoce el sexo y sus repercusiones emocionales y biológicas. Algunas familias pueden ser tan pobres que prostituir a sus hijos puede significar obtener algún ingreso para no morir de hambre. Obligar por la fuerza a un niño a prostituirse es completamente ilegítimo igual que lo es hacerlo con un adulto.

La relación entre un cliente pacífico y una prostituta forzada por un tercero plantea un problema ético. El cliente tiene una relación sexual no deseada por la mujer, pero es posible que no lo sepa porque aunque se lo pregunte la prostituta puede mentir por miedo a las represalias de quienes la esclavizan. En ciertos aspectos es una situación semejante al receptor de bienes robados o producidos por mano de obra esclava. No es una situación éticamente legítima, pero el cliente no es el causante de la ilegitimidad (aunque tal vez se aprovecha de ella de forma consciente o inconsciente). Si no hubiera ningún cliente los opresores no forzarían a las mujeres a que se prostituyeran, pero eliminar legalmente la demanda de sexo a cambio de

dinero es prácticamente imposible (la ilegalización de las drogas no elimina su consumo ilegal y agrava el problema); si una prostituta no consigue clientes y dinero para sus opresores seguramente será castigada, por lo cual un cliente es en estas circunstancias un mal menor.

Aunque los razonamientos biológicos de la psicología evolucionista acerca de la naturaleza humana y los argumentos económicos de la praxeología les parecen espantosos e inválidos a los colectivistas que no pueden o no quieren entenderlos (creen que todo es cultura y todo puede cambiarse con el adoctrinamiento estatal adecuado), explicar la desigualdad de hombres y mujeres respecto a la prostitución es relativamente simple.

El sexo es esencial en los seres humanos, organismos vivos preocupados por reproducirse y transmitir sus genes de forma eficiente para ser competitivos en la historia evolutiva. El hombre y la mujer son biológicamente y sexualmente diferentes, no sólo en su anatomía y fisiología sino también en su psicología. Sus estrategias de apareamiento (conductas reproductivas eficientes para la transmisión de sus genes) son diferentes debido a la dispar inversión de recursos como progenitores: el hombre produce fácilmente gran cantidad de espermatozoides y no se queda embarazado, por lo cual es más proactivo y menos selectivo; la mujer sólo produce un óvulo en cada ciclo menstrual y si es fecundado se queda embarazada nueve meses y luego suele querer cuidar de sus hijos, lo que supone un alto coste que explica que sea mucho más selectiva y exigente para el sexo (obviamente los anticonceptivos han cambiado la situación, pero las emociones básicas permanecen porque evolucionaron en un entorno ancestral muy distinto del actual).

El hombre suele tener el poder físico y económico: el hombre es en general físicamente más fuerte que la mujer (resultado de largos periodos evolutivos de lucha entre los machos por las hembras), y a menudo es quien trabaja para otros y quien

tiene el dinero (resultado de la división evolutiva del trabajo según roles sexuales, el hombre cazaba y guerreaba, la mujer recolectaba y cuidaba de los niños). Pero respecto al sexo es la mujer quien tiene el poder, ya que conoce el deseo del hombre y puede ocultar el suyo (los seres humanos no tienen periodos anuales de celo como otros animales, y las hembras humanas no muestran abiertamente su periodo fértil). La mujer suele pedir algo a cambio de sexo (regalos, compromiso afectivo o legal, dinero), y el hombre tiende a estar dispuesto a ofrecer algo por el sexo. Después del sexo es la prostituta la que se queda con el dinero, mientras que el hombre tuvo un placer psíquico efímero. Mantener relaciones sexuales sin afecto o con alguien no atractivo o repulsivo puede resultar desagradable para la prostituta, pero el hecho de que se haga voluntariamente implica que el dinero cobrado compensa subjetivamente el malestar sufrido. Y si la prostituta disfruta con el servicio sexual entonces su satisfacción es doble.

THE PROBLEM OF ACCURACY OF ECONOMIC DATA

PHILIPP BAGUS*

In his classic book *On the Accuracy of Economic Observation* Oskar Morgenstern deals with a common, yet widely neglected problem with which economic historians are faced, namely the quality of economic data. For the economic historian in the Austrian tradition, the quality of economic data is of utmost importance, since false data or belief in inaccurate data can lead the economic historian to faulty interpretations of the past.

The quality of economic data is at least as important for economists who adhere to positivism in economics, since they use economic data to confirm or falsify their models.

Likewise, Morgenstern's insights are relevant for mathematical economists, as it makes sense to perform computations and solve a system of mathematical equations only if one has reliable data. Morgenstern illustrates this in the following example.

The equations

$$\begin{aligned}x - y &= 1 \\x - 1.00001y &= 0\end{aligned}$$

have the solution $x = 100001$, $y = 100000$, while the almost identical equations

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$$\begin{aligned}x - y &= 1 \\x - 0.9999999y &= 0\end{aligned}$$

have the solution $x = -99999$ $y = -100000$.

The coefficients in the two sets of equations differ by at most two units in the *fifth* decimal place, yet the solutions differ by 200,000.¹

Morgenstern's sample equations show the significance of a small error in the observation. Yet, in more complex equations with extensive mathematical operations the extent of error due to unreliable data may increase (or, depending on the equation, the errors may cancel out). It is indeed surprising to note how much the problem of accuracy in economic data has been neglected.

This is not so in the physical sciences. There the error of observation is always explicitly mentioned. Yet in economics there is simply no error estimate. This means that we do not know the accuracy of the economic data presented to us. This is even more troubling when we consider that in social or economic data there are more possible sources of error than in the physical sciences. We therefore face the question of why the problem of accuracy of economic data is rarely mentioned or passed over in silence in economics, while in the physical sciences this problem is widely acknowledged.

SOURCES OF ERRORS IN ECONOMIC STATISTICS

Oskar Morgenstern names several sources of error that influence the accuracy of economic observation. One is a lack of designed experiments. The observations are not produced by the user of an experiment, as in the natural sciences, but rather, statistics

¹ See Morgenstern (1963), p. 109.

are simply a byproduct of business and government activities. There is a complete lack of incentive to provide accurate information for government statistics and economic researchers on the part of companies, because to do so would require a costly and burdensome process.

In addition to the lack of accurately designed collections of data, there exists a related problem, also absent in the physical sciences – namely, the possibility of hiding of information or outright lying.

Companies have strong incentives to hide information or lie in order to mislead their competitors about their competitive strategy or strength. Companies also have an incentive to lie to the tax authorities and to the government in general in order to seek subsidies or avoid taxation. Sometimes companies manipulate profits in order to pay out fewer dividends.

Likewise, governments themselves have an incentive to falsify statistics, thereby improving their economic record. Doing so improves the ruling party's chances of staying in power. Falsification of economic statistics can also improve the likelihood of receiving some kind of foreign aid or foreign recognition. A recent example involved the Greek government, whose officials falsified the Greek budget deficit in order to gain entrance into the European monetary union.

Another potential source of error consists in the inadequate training of those who observe economic data. Whereas in the physical sciences the observers are the scientists conducting the experiment, the observers of economic data are often not trained at all. A lack of training can lead to error in data collection. From instance, errors may stem from questionnaires. The conductor of the research, does not normally conduct all interviews. Instead, the interviews are likely conducted by different persons. As a result, the delivering of the questions, the setting up, the interpretation and the recording of the answers are additional sources of error. The errors in mass observation do

not necessarily cancel each other out. Frequently, such errors are cumulative.

An additional potential source for errors is the lack of clear definitions or classifications. These problems apply, for instance, in the classification of goods, types of employment, or classification of companies within industries. Companies like General Electric operate in various industries, making it difficult to assign its revenues or profits to distinct industries.

PRICE STATISTICS

One of Morgenstern's examples of the questionable accuracy in which economic observations are presented is that of price statistics. Almost all possible sources of error mentioned above apply to price statistics: the desire to hide or lie about the true price, problems of classification or definition, and quality changes.

Moreover, in reality a certain good has multiple prices. The price changes when the goods are sold in different units, at different times and different qualities. Which price should be chosen? There are also non-monetary components to prices, for instance the quality of service before, during, and after the sale, which might vary. These, however, are not taken into account by merely measuring the monetary price.

When observed prices enter the calculation of index numbers, further problems are created. For one thing, the method of calculation itself is arbitrary, since many methods of calculating averages or price indexes exist. They all lead to different results. Furthermore, the components and their (changing) weight in the index is arbitrary.

Keeping all of those problems in mind, it is surprising that no error estimate of price level statistics is provided. Even more surprising is that economists take changes in price indexes up

to 1/10 of one percent at face value, without questioning their validity. However, those changes in price indexes are totally irrelevant for practical life. As Ludwig von Mises points out:

A judicious housewife knows much more about price changes as far as they affect her own household than the statistical averages can tell. She has little use for computations disregarding changes both in quality and in the amount of goods which she is able or permitted to buy at the prices entering into the computation. If she «measures» the changes for her personal appreciation by taking the prices of only two or three commodities as a yardstick, she is no less «scientific» and no more arbitrary than the sophisticated mathematicians in choosing their methods for the manipulation of the data of the market.²

NATIONAL INCOME STATISTICS

Another of Morgenstern's examples is that of national income statistics. National income statistics are widely considered to be relevant. They supposedly reflect the success of the government and are used in econometric models. These statistics are also of international importance. Morgenstern notes that, shortly after World War II, Japan and the United States «negotiated» the national income of Japan, because the national income influenced the size of economic help by the United States.

Morgenstern mentions several conceptual problems with national income statistics. The first involves the difficulty of the imputation of value. The problem lies in assigning a monetary value to goods and services produced. As Morgenstern states:

A classical illustration is that of persons living in houses they own themselves. If these same houses were owned by others,

² Mises (1998), p. 224.

rent would have to be paid (in money, goods, or services), thereby swelling the national product. To avoid this, a value has to be imputed to owner-occupancy. This is, obviously, a tricky affair, with less certain results than finding out about rent payments made in money. These estimates are uncertain and many arbitrary decisions have to be made.³

A similar problem arises when domestic help, which involves money payments, is substituted by housewives' labor, which does not involve money payments. Money payments are also reduced when the amount of barter in an economy increases.

A second problem in calculating national income statistics arises from the treatment of government services. They are not sold on the market. How should we account for them in the national income? The common practice is to account for them with factor costs. However, this seems arbitrary. The monetary cost of a service is not important as a measure of wealth production. Important, rather, is what people are willing to pay for a service on the free market. One could even make the case that government expenditures should instead be subtracted from national income, because the government withdraws resources from the productive private sector and uses them for its purposes.⁴ As an example of the absurdity of adding government services positively into national income statistics, consider the case of a government that builds a bomber and a bomb and destroys a newly built house in its own country. In today's national income statistics, the costs of building the bomber and the bomb are added into the national income, as is the house.

A third problem arises from depreciation allowances. Estimates of depreciation are made by corporations themselves and are guided by tax considerations and sometimes misleading

³ Morgenstern (1963), p. 246.

⁴ See Rothbard (2000), pp. 253-5.

ideas about the inflation process. Companies, therefore, fail to give a realistic accounting of the depreciation of capital in an economy.

Besides these conceptual problems, there are, as Morgenstern notes, three principal types of errors in constructing the statistics of national income. First, there are errors in the basic data that occur because they are a mere byproduct of other activities, because of classifications difficulties, lying, hiding of information, transmitting errors, etc. A second type of error results from the adjustment of the basic data to a conceptual framework, as the collected data is not directly suitable for use in national income statistics. A third type of error arises when gaps must be filled where basic data is not available, for example for a range of years or for industries where estimates are not known.

With all these difficulties in mind, would it not be very important, not to mention more honest, to provide an error estimate for national income statistics? However, nothing is said about the degree of accuracy in the publications of the national income statistics. We have to rely on our own estimates about their accuracy or about the expertise of those who make these judgments.

Simon Kuznets, an expert on national income statistics, argues that an average margin of error for national income estimates of about *10 percent* is reasonable.⁵ Considering this, it makes no sense to state changes in GDP with an accuracy of 1/10 of one percent! That is like having a yardstick and stating that a certain distance would be 4,312 yards. It aspires to an accuracy that is impossible. However, many economists take national income statistics at face value and use them, for instance, to confirm or falsify econometric models of the business cycle. In the light of Morgenstern's analysis this is completely futile.

⁵ See Morgenstern (1963), p. 255.

International comparisons of national income statistics are even more difficult to conduct due to different classifications, definitions, different hidden non-monetary incomes, interventions of the government into their respective price systems, and different measurements of inflation and deflation in the respective countries.

From the difficulties of national income statistics, it also follows that growth rates too should not be taken at face value. Obviously, the choice of the basic year introduces ambiguity and the base year estimate will contain error. The margin of error in the base year (again Kuznets suggests an average error of 10 percent) has a huge influence on the growth rate. For international comparisons the problem increases again. Morgenstern concludes that one can only make qualitative judgments about growth over longer periods of time.

CONCLUSION

In contrast to physics, there is still no estimate of statistical error within economics. The various sources of error that come into play in the social sciences suggest that the error in economic observations is substantial. This is a widely neglected problem and should be taken into account by the economic historian. Economic statistics cannot be accepted at face value.

Moreover, Morgenstern's *On the Accuracy of Economic Observation* has an important implication for modern economics. It shows that the solution of a system of economic mathematical equations or econometric models is, due to the quality of the data, completely devoid of meaning.

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Documentos

CIENCIA SOCIAL Y CIENCIA NATURAL*

LUDWIG VON MISES

1.

Los fundamentos de las ciencias sociales modernas fueron puestos en el siglo XVII. Hasta entonces, sólo encontramos historia. Naturalmente, los escritos de los historiadores están llenos de implicaciones que pretenden ser válidas para toda acción humana independiente de tiempo y ambiente, y aun cuando no establecen explícitamente tales tesis, necesariamente basan su comprensión e interpretación de los hechos en supuestos de este tipo. Pero no se realizó ningún intento por aclarar estos supuestos tácitos con un análisis especial.

Por otro lado, prevalecía la creencia de que en el campo de la acción humana no podía ser usado ningún otro criterio que el de lo bueno y lo malo. Si una política no alcanzaba su finalidad, su fracaso era atribuido a la insuficiencia moral del hombre o a la debilidad del gobierno. Con buenos hombres y gobiernos fuertes todo era considerado factible.

Entonces, en el siglo XVIII, hubo un cambio radical. Los fundadores de la Economía Política descubrieron regularidad en la operación del mercado. Descubrieron que a cada estado del mercado correspondía un cierto estado de precios, y que una tendencia a restaurar tal estado se manifestaba cada vez que algo intentaba alterarlo. Esta intuición abrió un nuevo capítulo en la ciencia. Las personas comprendieron

(*) Publicado originalmente en *Journal of Social Philosophy and Jurisprudence*, vol. 7, n.º 3 (abril 1942). Capítulo 1 de la recopilación *Money, Method, and the Market Process* (Auburn, The Ludwig von Mises Institute, 1990). Las notas aclaratorias fueron incorporadas por el editor Richard M. Ebeling.

que las acciones humanas estaban abiertas a investigación desde puntos de vista diferentes al del juicio moral y fueron obligados a reconocer una regularidad que compararon con aquellas que ya les eran familiares en el campo de las ciencias naturales.

Desde los días de Cantillon, Hume, los fisiócratas y Adam Smith, la teoría económica ha hecho progresos continuos, aunque no de modo estable. En el curso de este desarrollo, se ha convertido en mucho más que una teoría acerca de las operaciones del mercado, en el contexto de una sociedad basada en la propiedad privada de los medios de producción. Por algún tiempo ha sido una teoría general de la acción humana, de la decisión humana y de las preferencias.

2.

Los elementos de la cognición social son abstractos y no se pueden reducir a ninguna imagen concreta aprehensible por los sentidos. Para facilitar la visualización se debe recurrir a lenguaje metafórico. Durante un tiempo las metáforas biológicas fueron muy populares y hubo autores que las explotaron hasta extremos ridículos. Baste citar el nombre de Lilienfeld.¹

Hoy en día la metáfora del mecanismo es la más usada y la base teórica para su aplicación se encuentra en la visión positivista de la ciencia social. El positivismo rechazó jovialmente todo lo que enseñaban la historia y la economía. A sus ojos, la historia simplemente no es ciencia, y la economía es una clase especial de metafísica. En lugar de ambas, el positivismo postula una ciencia social que debe construirse por el método experimental, tal como es aplicado idealmente en la física newtoniana: la economía tiene que ser experimental, matemática y cuantitativa. Su tarea es medir porque la ciencia es medición y toda afirmación debe estar abierta a verificación por los hechos.

¹ «Cuando un gobierno toma un préstamo de Rothschild, la sociología orgánica comprende el proceso como sigue: ... La operación de Rothschild es precisamente similar a la acción de un grupo de células corporales que cooperan en la producción de la sangre necesaria para nutrir el cerebro, con la esperanza de ser compensadas por una reacción de las células de la materia gris que necesitan para reactivar y acumular nuevas energías». Paul von Lilienfeld, *La Pathologie Sociale* (París, 1896), p. 104. Citado en Ludwig von Mises, *Socialism*, (Indianapolis, Ind.: Liberty Classics, 1981), p.257n.

Cada proposición de esta epistemología positivista está equivocada.

Las ciencias sociales en general, y la economía en particular, no pueden estar basadas en la experiencia en el sentido en que este término es usado por las ciencias naturales. La experiencia social es experiencia histórica y cada experiencia es la experiencia de algo pasado. Pero lo que distingue a la experiencia social de la que forma la base de las ciencias naturales, es que siempre es la experiencia de un fenómeno complejo. La experiencia a la que deben todo su éxito las ciencias naturales es la experiencia del experimento. En los experimentos, los diferentes elementos de cambio son observados por separado. El control de las condiciones de cambio proporciona al experimentador los medios para asignar a cada efecto su causa suficiente. Sin considerar el problema filosófico involucrado en ello, procede a acumular «hechos» que son los ladrillos con los que los científicos construyen sus teorías: constituyen el único material a su disposición y su teoría no debe contradecirles. Los hechos son los elementos últimos.

Las ciencias sociales no pueden hacer uso de experimentos. La experiencia de la que se ocupan es la de los fenómenos complejos. Están en la misma posición que tendría la acústica si el único material para sus científicos fuese escuchar un concierto o el ruido de una cascada. Actualmente, está de moda actuar acorde a los laboratorios y oficinas estadísticas. Esto es engañoso. El material que la estadística proporciona es histórico, lo que significa que es resultado de fuerzas complejas. Las ciencias sociales nunca disfrutaron la ventaja de observar las consecuencias de un cambio sólo en un elemento, conservando iguales las demás condiciones.

Por lo tanto, las ciencias sociales nunca pueden usar la experiencia para verificar sus afirmaciones: cada hecho y cada experiencia de la que se ocupan está abierta a diferentes interpretaciones. La experiencia de un fenómeno complejo nunca puede probar o refutar una afirmación de la manera en que un experimento lo hace. No tenemos ninguna experiencia histórica cuya importancia sea idénticamente juzgada por todas las personas.

Indudablemente, hasta ahora en la historia, únicamente las naciones que han basado su orden social sobre la propiedad privada de los medios de producción han alcanzado algún estado superior de bienestar y civilización. No obstante, nadie consideraría esto como una refutación incontestable a las teorías socialistas. En el campo de

las ciencias naturales, también hay diferencias de opinión respecto a la interpretación de hechos complejos. Pero aquí la libertad de explicación está limitada por la necesidad de no contradecir afirmaciones verificadas satisfactoriamente por experimentos. En la interpretación de hechos sociales tal límite no existe: todo puede ser afirmado acerca de ellos, siempre y cuando no estemos reclusos en los límites de los principios de cuya naturaleza lógica pretendemos hablar después. Aquí, sin embargo, ya hemos mencionado que cada discusión referida al significado de la experiencia histórica pasa, imperceptiblemente, por una discusión de estos principios sin referencias adicionales a la experiencia. Las personas pueden comenzar discutiendo las lecciones a aprender de un arancel o del sistema soviético ruso, y rápidamente estarán discutiendo la teoría general del comercio interregional o la teoría no menos pura del socialismo y del capitalismo.

La imposibilidad de experimentar implica la imposibilidad de medición. El físico tiene que tratar con magnitudes y relaciones numéricas porque tiene el derecho de asumir que subsisten ciertas relaciones invariables entre las propiedades físicas. El experimento le proporciona los valores numéricos que han de asignarse a las relaciones. En la conducta humana no hay tales relaciones constantes, no hay estándar que pueda usarse como medida, y no hay experimentos que establezcan uniformidades de este tipo.

Lo que el estadístico establece al estudiar las relaciones entre precios y oferta o entre oferta y demanda, es sólo de importancia histórica. Si determina que, entre 1920 y 1930, un aumento del diez por ciento en la oferta de patatas en la Atlántida fue seguida de una caída de ocho por ciento en su precio, no dice nada acerca de qué ocurrió o pudo ocurrir con un cambio en la oferta de patatas en otro momento o en otro país.

Tales mediciones, como la de la elasticidad de la demanda, no pueden ser comparadas con las de los físicos (por ejemplo, la densidad específica o peso de los átomos). Naturalmente, todos comprenden que la conducta de los hombres, en lo concerniente a las patatas y a cualquier otro bien, es variable. Individuos distintos valoran la misma cosa de una manera diferente, y la valoración varía incluso en el mismo individuo bajo condiciones cambiantes. No podemos clasificar a los individuos en clases que reaccionan de la misma manera, y no podemos determinar las condiciones que provocan la misma reacción. Bajo estas circunstancias, debemos comprender que el economista estadístico es

un historiador y no un experimentador. Para las ciencias sociales, las estadísticas constituyen un método de investigación histórica.

En toda ciencia, las consideraciones que resultan en la formulación de una ecuación son de un carácter no matemático. La formulación de la ecuación tiene una importancia práctica porque las relaciones constantes que incluye son establecidas experimentalmente y porque es posible introducir valores específicos conocidos en las funciones para determinar aquellos desconocidos. Estas ecuaciones no son sólo consumación del análisis teórico: son punto de partida del trabajo práctico y base del diseño tecnológico. Pero en economía, donde no hay relaciones constantes entre magnitudes, las ecuaciones están vacías de aplicación práctica. Aunque fuera posible alejar todos los escrúpulos referidos a su formulación, todavía deberíamos comprender que carecen de todo uso práctico.

Pero la principal objeción que debe plantearse al tratamiento matemático de los problemas económicos proviene de otro terreno. En realidad, dicho tratamiento no se ocupa de las verdaderas operaciones de las acciones humanas sino de un concepto ficticio que los economistas construyen para propósitos instrumentales: el concepto de equilibrio estático.

Con el objeto de comprender las consecuencias del cambio y la naturaleza del beneficio en la economía de mercado, los economistas construyen un sistema ficticio en el cual no hay cambio. Hoy es como ayer y mañana será como hoy. No hay incertidumbre acerca del futuro y, por tanto, las actividades no involucran riesgo. Y para mayor interés, la suma de los precios de los factores de producción complementarios iguala exactamente el precio del producto, lo que significa que no hay espacio para el beneficio. Pero este concepto ficticio no sólo es irrealizable en la vida real: ni siquiera puede ser llevado consistentemente a sus últimas conclusiones. Los individuos de este mundo ficticio no actuarían ni tendrían que tomar decisiones: sólo vegetarían. Es cierto que la economía, justamente porque no puede hacer experimentos, está limitada a aplicar este y otros conceptos ficticios de un tipo similar. Pero su uso debería estar restringido a los propósitos para los que está diseñado. El propósito del concepto de equilibrio estático es el estudio de la naturaleza de los beneficios, es decir, de las relaciones entre costes y precios. Fuera de esto, es inaplicable y ocuparnos de él es inútil.

Todo lo que las matemáticas pueden hacer en el campo de los estudios económicos es describir el equilibrio estático. Las ecuaciones y las curvas de indiferencia se ocupan de un estado de cosas ficticio, que

nunca existió en ningún sitio. Lo que ellas proporcionan es una expresión matemática de la definición de equilibrio estático. Dado que los economistas matemáticos comienzan desde el prejuicio de que la economía debe ser tratada en términos matemáticos, ellos consideran al estudio del equilibrio estático como toda la economía. El carácter puramente instrumental de este concepto ha sido eclipsado por esta preocupación.

Naturalmente, las matemáticas no pueden decirnos nada acerca de la manera en que este equilibrio estático puede ser alcanzado. La determinación matemática de la diferencia entre cualquier estado verdadero y el estado de equilibrio no es un sustituto para el método por el cual, los economistas lógicos o no matemáticos, concebimos la naturaleza de esas acciones humanas que necesariamente ocasionarán equilibrio, siempre y cuando no suceda ningún cambio adicional en los datos.

Ocuparse del equilibrio estático es una evasión engañosa del estudio de los principales problemas económicos. El valor pragmático de este concepto de equilibrio no debería ser subvalorado, pero es un instrumento para la solución de un único problema. En cualquier caso, la elaboración matemática del equilibrio estático es sólo un juego secundario en economía.

Esto es similar al uso de curvas. Podemos representar el precio de un bien como el punto de intersección de dos curvas, la curva de demanda y la curva de oferta. Pero debemos comprender que no conocemos nada acerca de las formas de estas curvas. Conocemos los precios *a posteriori*, que suponemos son los puntos de intersección, pero no conocemos la forma de las curvas, ni del pasado ni para el futuro. La representación de las curvas es, por lo tanto, nada más que un medio didáctico para presentar gráficamente la teoría y hacerla más fácilmente comprensible.

El economista matemático es propenso a considerar al precio, ya sea como una medida de valor o como equivalente al bien. A esto debemos decir que los precios no están medidos en dinero sino que ellos son la cantidad de dinero intercambiado por un bien. El precio no es equivalente a un bien. Una compra sucede sólo cuando el comprador valora al bien más que el precio, y el vendedor valora al bien menos que al precio. Nadie tiene el derecho a abstraerse de este hecho y asumir una equivalencia donde hay una diferencia en valoración. Cuando una de las partes considera al precio como el equivalente del bien, no ocurre ninguna transacción. En este sentido, podemos decir que cada transacción es, para ambas partes, un «negocio».

3.

Los físicos consideran a los objetos de su estudio desde fuera. No tienen conocimiento de lo que sucede en el interior, en el «alma», de una piedra que cae. Pero tienen la oportunidad de observar su caída en experimentos y, con ello, descubrir lo que denominan leyes de la caída. De los resultados de tal conocimiento experimental, ellos construyen sus teorías yendo de lo especial a lo más general, de lo concreto a lo más abstracto.

La economía trata de acciones humanas y no, como es dicho a veces, de bienes, cantidades económicas o precios. No tenemos el poder para experimentar con acciones humanas, pero tenemos, siendo seres humanos nosotros mismos, un conocimiento de lo que sucede dentro de un hombre actuante. Sabemos algo acerca del significado que los hombres actuantes incorporan a sus acciones. Sabemos por qué los hombres desean cambiar las condiciones de sus vidas. Sabemos algo sobre la inquietud, que es el último incentivo de los cambios que ellos ocasionan. Un hombre perfectamente satisfecho, o uno que aunque insatisfecho no viera forma de mejorar, no actuaría.

Así, como dice Cairnes, cuando el economista prepara sus estudios ya está en posesión de los últimos principios que gobiernan el fenómeno que constituye el tema de su investigación, mientras que la humanidad no tiene conocimiento directo de los principios físicos últimos.² En esto radica la diferencia entre las ciencias sociales (morales, *Geisteswissenschaften*) y las ciencias naturales. Lo que hace posible a la ciencia natural es el poder de experimentar; lo que hace posible a la ciencia social es el poder de abarcar o entender el significado de la acción humana.

Debemos distinguir dos clases muy diferentes de esta comprensión del significado de acción: nosotros concebimos y nosotros comprendemos.

Nosotros concebimos el significado de una acción, es decir, tomamos un acción como tal. Vemos en la acción el esfuerzo por alcanzar un objetivo con el uso de medios. Al concebir el significado de una acción la consideramos como un esfuerzo deliberado por alcanzar alguna finalidad, pero no consideramos la calidad de los fines propuestos ni de

² [John E. Cairnes, *The Character and Logical Method of Political Economics* [1875] (New York: Augustus M. Kelley, 1965), pp. 89-97. Nota del editor inglés.]

los medios aplicados. Concebimos la actividad como tal, sus cualidades y categorías lógicas (praxeológicas). Todo lo que hacemos en esta concepción es por análisis deductivo, para iluminar todo cuanto es contenido en el primer principio de acción y aplicarlo a diferentes clases de condiciones pensables. Este estudio es el objeto de la ciencia teórica de la acción humana (praxeología) y en particular de su rama más desarrollada, la economía (teoría económica).

Por tanto, la economía no está basada en la experiencia ni es derivada (abstraída) de ella. Es un sistema deductivo que parte de la intuición acerca de los principios de la razón y de la conducta humana. De hecho, toda nuestra experiencia en el campo de la acción humana está basada en (y condicionada por) la circunstancia de que tenemos esta intuición en nuestra mente. Sin este conocimiento a priori y los teoremas derivados de él, no podríamos comprender qué está sucediendo en la actividad humana. Nuestra experiencia de la acción humana y de la vida social está basada en la teoría praxeológica y en la teoría económica.

Es importante ser consciente de que este procedimiento y método no es peculiar de la investigación científica, sino que es el modo ordinario de aprehensión diaria de los hechos sociales. Estos principios apriorísticos y las deducciones de ellos son aplicados no sólo por el economista profesional sino por todo aquel que trata de hechos o problemas económicos. El lego no procede de una manera significativamente diferente de la del científico: sólo que en ocasiones es menos crítico, menos escrupuloso en examinar cada paso en la cadena de sus deducciones, y por tanto, más sujeto a error. Uno sólo necesita observar cualquier discusión sobre problemas económicos corrientes para comprender que su curso cambia muy pronto a la consideración de principios abstractos sin ninguna referencia a la experiencia. Por ejemplo, no se puede discutir el sistema soviético sin caer en los principios generales del capitalismo y del socialismo. No se puede discutir una ley sobre salario y jornada laboral sin regresar a la teoría de los salarios, beneficios, intereses y precios, es decir, la teoría general de una sociedad de mercado. El «hecho puro» –dejemos a un lado la cuestión epistemológica sobre si existe tal cosa– está abierto a diferentes interpretaciones, y estas interpretaciones requieren aclaración por aproximación teórica.

La economía no sólo no es derivada de la experiencia: es imposible verificar sus teoremas apelando a la experiencia. Como se ha dicho, cada experiencia de un fenómeno complejo puede ser y es

explicado de diferentes maneras. Los mismos hechos, las mismas cifras estadísticas son reivindicadas como confirmaciones de teorías contradictorias.

Es instructivo comparar la técnica de trato con la experiencia en las ciencias sociales con la de las ciencias naturales. Tenemos muchos libros de economía que, tras desarrollar una teoría, adjuntan capítulos en que intentan verificar la teoría desarrollada apelando a los hechos. Esto no es lo que hace el científico natural. Él comienza desde hechos establecidos experimentalmente y construye su teoría usándolos. Si su teoría permite una deducción que prediga un estado de cosas aún no descubierto en experimentos, él describe qué clase de experimento sería crucial para su teoría. La teoría parece ser verificada si el resultado es conforme a la predicción. Esto es algo radical y significativamente diferente de la aproximación usada por las ciencias sociales.

Al confrontar la teoría económica con la realidad, no tenemos que intentar explicar de una manera superficial los hechos que otras personas interpretan de modo diferente, de modo que parezcan verificar nuestra teoría. Este dudoso procedimiento no es la manera en que puede tener lugar la discusión razonable. Lo que debemos hacer es esto: debemos averiguar si las condiciones especiales de acción que hemos implicado en nuestro razonamiento, corresponden a las que hallamos en el segmento de realidad que estamos considerando. Una teoría del dinero (o más bien del intercambio indirecto) es correcta o no sin referencia a la cuestión de si el verdadero sistema económico bajo examen emplea intercambio indirecto o trueque.

El método aplicado en estas consideraciones teóricas apriorísticas es el método de las construcciones especulativas. El economista –y el lego en su razonamiento económico– construye una imagen de un estado de cosas inexistente. El material para esta construcción proviene de la intuición acerca de las condiciones de la acción humana. Si el estado de las cosas descrito con estas construcciones especulativas corresponde o pudiera corresponder a la realidad, es irrelevante para su eficiencia instrumental. Incluso construcciones irrealizables pueden prestar valiosos servicios al darnos la oportunidad de concebir qué las hace irrealizables y en qué aspectos difieren de la realidad. La construcción especulativa de una comunidad socialista es indispensable para el razonamiento económico a pesar de que se cuestione si tal sociedad puede o no ser realizada.

Ya hemos mencionado antes a una de las construcciones especulativas mejor conocidas y más frecuentemente aplicadas: la de un

estado de equilibrio estático. Somos totalmente conscientes de que este estado nunca puede ser realizado, pero no podemos estudiar las implicaciones de los cambios sin considerar un mundo inmutable. Ningún economista moderno negará que la aplicación de este concepto especulativo ha prestado servicios invaluable en la aclaración del carácter de los beneficios y pérdidas del empresario, y de la relación entre costos y precios.

Todo nuestro razonamiento económico opera con estos conceptos especulativos. Es cierto que el método tiene sus peligros y se presta a errores fácilmente, pero debemos usarlo porque es el único disponible. Naturalmente, hemos de ser cuidadosos en su uso.

A la pregunta obvia de cómo una deducción puramente lógica, proveniente de principios apriorísticos, puede decirnos algo acerca de la realidad, replicaremos que tanto el pensamiento como la acción humana dependen de la misma raíz: son productos de la mente humana. Por tanto, los resultados correctos de nuestro razonamiento apriorístico no sólo son irrefutables lógicamente sino que, al mismo tiempo, son aplicables con toda su certidumbre apodíctica a la realidad, siempre y cuando los supuestos involucrados estén dados en la realidad. La única forma de refutar una conclusión de la economía es demostrar que contiene una falacia lógica. Otra cuestión es si los resultados obtenidos se aplican a la realidad: esto sólo puede ser decidido demostrando que los supuestos involucrados tienen o no una contraparte en la realidad que pretenden explicar.

La relación entre experiencia histórica –cada experiencia económica es histórica en el sentido de que es la experiencia de algo pasado– y teoría económica es, por tanto, diferente de la que generalmente se asume. La teoría económica no es derivada desde la experiencia: es la herramienta indispensable para comprender la historia económica, que a su vez no puede probar ni refutar las enseñanzas de la teoría económica. Por el contrario, es la teoría económica la que nos hace posible concebir los hechos económicos del pasado.

4.

Pero para orientarnos en el mundo de las acciones humanas necesitamos hacer más que concebir el significado de la acción humana. Tanto el hombre actuante como el historiador observante no sólo deben concebir las categorías de acción como hace la teoría económica:

además tienen que comprender (*Verstehen*) el significado de la decisión humana.

Esta comprensión del significado de acción es el método específico de la investigación histórica. El historiador tiene que establecer los hechos en la medida que sea posible, usando todos los medios proporcionados tanto por las ciencias teóricas de la acción humana –praxeología y su parte más desarrollada hasta ahora, la economía– como por las ciencias naturales. Pero entonces debe ir más allá. Él tiene que estudiar las condiciones únicas e individuales del caso en cuestión. *Individuum est ineffabile*. La individualidad está dada para el historiador y es exactamente lo que no puede ser explicado ni rastreado exhaustivamente a otras entidades. En este sentido, la individualidad es irracional. El propósito de la comprensión específica, tal como es aplicada por las disciplinas históricas, es comprender el significado de la individualidad por un proceso psicológico. Ella establece el hecho de que enfrentamos algo individual, fijando las valoraciones, fines, teorías, creencias y errores; en una palabra, la filosofía total de los individuos actuantes y la manera en que imaginaron las condiciones bajo las que tuvieron que actuar. Nos pone en el entorno de la acción. Naturalmente, esta comprensión específica no puede ser separada de la filosofía del intérprete. Ese grado de objetividad científica, que puede ser alcanzado en las ciencias naturales y en las ciencias apriorísticas de la lógica y la praxeología, nunca puede ser obtenido por las ciencias históricas o morales (*Geisteswissenschaften*) en el campo de la comprensión específica. Cada uno puede comprender de diferentes maneras y la historia puede ser escrita desde diferentes puntos de vista. Los historiadores pueden estar de acuerdo en todo lo que puede ser establecido de una manera racional, y sin embargo estar en amplio desacuerdo en sus interpretaciones. La historia, por lo tanto, siempre tiene que ser reescrita. Las nuevas filosofías demandan una nueva representación del pasado.

La comprensión específica de las ciencias históricas no es un acto de racionalidad pura. Es el reconocimiento de que la razón ha agotado todos sus recursos y que no podemos hacer nada más que intentar una explicación de algo irracional, que es resistente a la descripción exhaustiva y única. Estas son las tareas que la comprensión debe cumplir. Es, sin embargo, una herramienta lógica y debería ser usada como tal. No se debería abusar de ella con el propósito de traficar oscurantismo, misticismo y elementos similares en el trabajo histórico. No es una licencia para los disparates.

Es necesario enfatizar este punto porque a veces ocurre que los abusos de un cierto tipo de historicismo están justificados por una apelación a la «comprensión» erróneamente interpretada. El razonamiento de la lógica, de la praxeología y de las ciencias naturales no puede ser invalidado por la comprensión bajo ninguna circunstancia. A pesar de lo fuerte de la evidencia ofrecida por las fuentes históricas, y pese a lo comprensible que pudiera ser un hecho desde el punto de vista de teorías contemporáneas, si no se ajusta a nuestra razón no podemos aceptarlo. Aunque la existencia de brujas y la práctica de brujería están abundantemente testificadas por documentos legales, no los aceptaremos. Aunque los registros judiciales de muchos tribunales afirman que algunas personas han depreciado la moneda de un país por trastornar la balanza de pagos, no creeremos que tales acciones tengan esos efectos.

No es tarea de la historia reproducir el pasado; intentarlo sería inútil y requeriría una duplicación humanamente imposible. La historia es una representación del pasado en términos de conceptos, y los conceptos específicos de la investigación histórica son de categorías. Estas categorías del método histórico sólo pueden ser construidas usando la comprensión específica y son significativas en el contexto de la comprensión a la que deben su existencia. Por lo tanto, no todo concepto de categoría que sea lógicamente válido puede ser considerado útil para el propósito de la comprensión. Una clasificación es válida en un sentido lógico si todos los elementos unidos en una clase presentan una característica común. Las clases no existen en verdad: siempre son un producto de la mente que al observar descubre similitudes y diferencias. Otra cuestión es si una clasificación, que es lógicamente válida y está basada en consideraciones sólidas, puede ser usada para la explicación de los datos dados. Por ejemplo, no hay duda de que una categoría o clase, «fascismo», que incluye no sólo al fascismo italiano sino también al nazismo alemán, al sistema español del general Franco, al sistema húngaro del almirante Horthy, entre otros casos, puede ser construido en una forma lógicamente válida y contrastada con una categoría llamada «bolchevismo», que incluye al bolchevismo ruso, al sistema de Bela Kun en Hungría y el breve episodio soviético de Munich. Pero que esta clasificación y la inferencia de que se vea al mundo de los últimos veinte años dividido en dos partidos, fascistas y bolcheviques, sea la manera correcta de comprender las condiciones políticas presentes está abierto a discusión. Se puede comprender este período de la historia en una manera muy diferente

usando otras categorías. Se puede distinguir entre «democracia» y «totalitarismo», y permitir que la categoría «democracia» incluya el sistema capitalista occidental y que la categoría «totalitarismo» incluya tanto al «fascismo» como al «bolchevismo». Que se aplique la primera o la segunda categorización depende enteramente del modo en que se vean las cosas. La comprensión es la que decide la clasificación a ser usada, y no es la clasificación la que decide la comprensión.

Los conceptos categóricos de las ciencias históricas o morales (*Geisteswissenschaften*) no son promedios estadísticos y es imposible que lo sean: la mayoría de las características usadas para clasificación no están sujetas a determinación numérica. Estos conceptos categóricos (en alemán se usa la expresión *Ideal-Typus* para distinguirlos de los conceptos categóricos de otras ciencias, especialmente, los de la biología) no deben ser confundidos con los conceptos praxeológicos usados para concebir las categorías de la acción humana. Por ejemplo, el concepto de «empresario» es usado en teoría económica para representar una función específica: la provisión para un futuro incierto. En este aspecto, todos pueden ser considerados como un empresario en alguna medida. Naturalmente, la tarea de esta clasificación en teoría económica no es distinguir entre hombres sino distinguir entre funciones, explicando las fuentes de beneficios o pérdidas. En este sentido, empresario es la personificación de la función que resulta en beneficio o pérdida. En historia económica y al ocuparnos de los problemas económicos presentes, el término «empresario» significa una clase de hombres que están comprometidos en negocios, pero que puede diferir en tantos otros aspectos que el término parece sin sentido y debe emplearse con una calificación especial: por ejemplo, tamaño (gran, mediana o pequeña empresa), «Wall Street», industria de armamentos, negocio alemán, etc. La categoría «empresario», tal como es usada en historia y política, nunca puede tener la exactitud conceptual que tiene el concepto praxeológico de empresario. En la vida nunca hallaremos hombres que sean nada más que la personificación de una sola función.³

³ Para completar la explicación debemos comentar que hay un tercer uso del término «empresario» en derecho, que debe ser cuidadosamente distinguido de los dos mencionados con anterioridad.

5.

Los comentarios precedentes justifican la conclusión de que hay una diferencia radical entre los métodos de las ciencias sociales y aquellos de las ciencias naturales. La ciencia social debe su progreso al uso de sus métodos particulares y tiene que ir más allá del frente, lo que es requerido por el carácter especial de su objeto. No tienen que adoptar el método de las ciencias naturales.

Es una falacia recomendar a las ciencias sociales el uso de las matemáticas y creer que con ello se harán más «exactas». La aplicación de las matemáticas no le da más exactitud ni hace más cierta a la física. Citemos un comentario de Einstein: «hasta que las proposiciones matemáticas se refieran a la realidad ellas no son ciertas, y hasta que sean ciertas no se refieren a la realidad». Es diferente con las proposiciones praxeológicas: estas se refieren con toda exactitud y certeza a la realidad de la acción humana. La explicación de este fenómeno está en el hecho de que ambos –la ciencia de la acción humana y la acción humana en sí misma– tienen una raíz común: la mente humana. Sería un error asumir que la aproximación cuantitativa pudiera dar más exactitud pues cada expresión numérica es inexacta debido a las limitaciones inherentes de las facultades humanas de medición. Para lo demás, hemos de referir a lo que ya ha sido dicho antes sobre el carácter puramente histórico de las expresiones cuantitativas en el campo de las ciencias sociales.

A veces, los reformistas que desean mejorar a las ciencias sociales adoptando los métodos de las ciencias naturales intentan justificar sus esfuerzos destacando el estado de atraso de aquellas. Nadie negará que las ciencias sociales, y en especial la economía, están lejos de ser perfectas: todo economista sabe cuánto queda por hacer. Pero dos consideraciones deben ser tenidas en cuenta. Primero, el presente estado insatisfactorio de las condiciones económicas y sociales no tiene relación con la alegada incapacidad en teoría económica. Si las personas no usan las enseñanzas de la economía como guía para sus políticas, no pueden culpar a la disciplina de su propio fracaso. Segundo, si alguna vez fuese necesario reformar radicalmente a la teoría económica, este cambio no irá en la dirección sugerida por los críticos presentes, cuyas objeciones están completamente refutadas para siempre.

*Reseñas
bibliográficas*

A TALE OF TWO SCHOOLS:
MARK SKOUSEN'S
VIENNA & CHICAGO:
FRIENDS OR FOES?

PHILIPP BAGUS*

Vienna & Chicago: Friends or Foes? A Tale of Two Schools of Free-Market Economics

Mark Skousen

Capital Press, Washington D.C. (2005)

While both the Austrian and Chicago schools are commonly associated with free-market ideals, there have been rivalry and lively discussions between them. In *Vienna & Chicago: Friends or Foes?*, Mark Skousen asks whether the two schools are separated by an unbridgeable difference or if, rather, they can become closer allies. After providing an overview of the history of the two schools, Skousen compares the schools' positions on four subjects, namely methodology, the ideal money standard, macroeconomics, and the proper role of government. After describing the positions of both schools on a particular subject, Skousen concludes with a judgment about which school has the stronger position in that regard. After declaring a 2:2 tie, in the last three chapters Skousen writes about the view of both schools on other economists, about their faith in capitalism, and about his strategic recommendations concerning the advance of free-market economics and a possible alliance of both schools.

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A TALE OF TWO SCHOOLS

The subtitle of the book is honest and clear: *A Tale of Two Schools of Free-Market Economics*. So those who do expect a tale will not be disappointed. Those, however, who look for a scientific and rigorously argued comparison and in-depth study of the Chicago and Austrian schools will not find what they expect, since Skousen, indeed, sets out to tell a tale from his personal perspective. Unfortunately, his tale is loaded with contradictions, misunderstandings, inconsistencies, inaccuracies, and erroneous conclusions. However, the tale is an easy read, since Skousen is an entertaining narrator. He mixes his analysis with numerous interesting anecdotes. So, for instance, we learn that Joseph Schumpeter «...engaged in outrageous behavior, was an infamous womanizer, and once declared his personal goals to be the world's best horseman, best lover, and best economist. He said that he accomplished two out of the three.» (p.39)

Interestingly, Skousen dedicates a subchapter to Schumpeter as a member of the Austrian school, leaving out his contemporaries Fritz Machlup, Richard von Strigl, or Oskar Morgenstern. While Schumpeter was, by virtue of his nationality, Austrian, his membership in the Austrian school must be disputed. Curiously, Skousen even cites Schumpeter praising Léon Walras as the «greatest of all economists» for discovering general equilibrium analysis. But that does not lead Skousen to question his classification of Schumpeter as a member of the Austrian school. Arguing with Schumpeter's positivist methodology, set out in 1908, and later adopted by Milton Friedman, one might even make the case that Schumpeter was more a pioneer of the Chicago school than an Austrian economist.

Another anecdote concerns the rumor that Ludwig von Mises supported state subsidies for operas which Skousen throws light upon with the help of his private correspondence with Bettina Greaves. In fact, Mises was asked if he would have

favor[ed] government subsidizing anything at all?' Mises answered something along the lines, 'Well, the voters should be free to vote for anything they want. And if the pros and cons of subsidies are fully explained to them, and if they still want to subsidize something, I would suggest they subsidize the opera, because I like to go to the opera. (p. 267)

The personal correspondences are another point that makes the book an easy read. Skousen has many friends among both Austrians

and Chicagoites and weaves his personal correspondence with them into his tale. When Skousen shares the treasures of his insights on the profession, he is certainly at his best. The opinions of the economists about each other can be very interesting for historians of economic thought. However, the advantage of having friends in both schools might also involve the disadvantage of not being as critical as is necessary when it comes to judging their theoretical positions. Another ingredient in this tale is Skousen's intellectual autobiography, since he mixes his own experiences with both schools into it, telling his readers how he started as an Austrian economist and became ever more open to the Chicago school.

SOME PROBLEMS OF THE BOOK EXAMINED

After naming the merits of the books for historians, tale readers, and lovers of biographies, we must discuss and show some more of the shortcomings that we mentioned above. To name an inaccuracy, Skousen maintains that the Habsburg Empire was partly located in what is today Yugoslavia, obviously escaping him that Yugoslavia no longer exists (p. 22). Also, there are some inconsistencies in the tale. Skousen seems to contradict himself when he maintains that Habsburgs ruled their empire for 400 years with «an iron fist» (p.22) while on the following pages he tells how enlightened Empress Maria Theresa abolished serfdom and torture and how in 1867, economic and political freedom was expanded by establishing a new constitution. Inconsistencies also lie in his treatment of Adam Smith, when he admits in a footnote (p. 16) that there were predecessors of Smith who advocated a free market and provided a more consistent exposition of economic theory like Juan de Mariana, Richard Cantillon, A.R.J. Turgot, and Etienne Bonnot de Condillac. However, instead of devoting more in-depth analysis to these predecessors, Skousen seems to spend an inordinate amount of his analysis on Adam Smith who is presented as a great classical liberal and economist leading to a revolution in economic theory of the good. Even though Adam Smith might be important for the intellectual tradition of the Chicago school, Skousen seems to get side-tracked from his original goal by his treatment of Adam Smith in a book intended to analyze both the Austrian and Chicago schools (According to the index Mises appears on 39 pages, while Smith on 44 pages). One is inclined to think that Skousen prefers

to show off his knowledge of the history of economic thought in general, and Smith in particular, rather than to provide an in-depth theoretical analysis of Chicago and Austrian schools.

Yet, even in what appears to be his strength in this work, history of economic thought, there are other errors and misleading conclusions in Skousen's tale. For instance, he states that the socialist calculation debate was initially lost by the Austrians. However, this has been shown to be a myth by Jesús Huerta de Soto (2005). Moreover, Skousen believes that it is possible to reconcile the opinions of both schools on the Classical school. Yet, it seems that the Austrian school has become ever more critical towards Adam Smith and the classics while the Chicago school continues to admire Smith. This interpretation also runs against another thesis of Skousen's that the difference between Chicago school and Austrian school is diminishing. But with respect to the appraisal of Smith it seems to be the other way around, especially since Murray Rothbard's critical treatment in his monumental *History of Economic Thought*.

Along with errors in fact, inconsistencies, and misleading conclusions, the results of Skousen's theoretical analysis are sometimes dubious to say the least. One error concerns the assessment of Friedman's monetarist rule, i.e., the automatic increase in the money supply between 2%-4%, which Skousen regards as anti-inflationary (pp. 76). He claims the rule to be a positive restriction of monetary policy. That might even have been Friedman's intention when pronouncing it. However, one must look deeper on the real significance and effects of that rule. First, it gives the control of the money supply ultimately to the government. Second, this rule serves as a final legitimation for a constant increase in the money supply, which from an Austrian point of view is constant inflation. In comparison to a gold standard proposed by the Austrians, the monetarist rule is therefore highly inflationary.

Another point of concern is Skousen's giving primacy to academic and political approval over theoretical rigor. Skousen recommends that those in the Austrian school use empirical methods to convince people of free-market ideas, because he thinks that people are more easily convinced by statistical data than by pure logical reasoning. However, in the process of persuading others to accept a particular view point, a coherent theory should win over an opportunistic strategy. Science always must tell the truth. If Austrians believe that it is unscientific to use empirical data to prove a proposition, how can they be expected

to use an inappropriate methodology, i.e., empirical data, to convince «non-believers» (p.11)? That would be an intellectual vice. One should not overthrow principles, tell an untruth, or lie just to persuade others to a particular point of view. Such a strategy is not ethical.

Furthermore, doing so will destroy one's consistency and undermine one's argumentative basis, so much so, that in the long run this strategy becomes self-defeating. In the long run, it thwarts the one's own aims as a theorist, to make compromises in theory, as Skousen seems to recommend. He says that the Chicago school has had more influence in academics and politics through making compromises and adhering to some interventions. However, what is important for an economist or an economic school is not to have influence but to tell the truth. *Fiat veritas, et pereat mundus* to change a famous Latin phrase.¹ Ultimately, compromises in theory cannot strengthen the influence of a particular school of thought. Nothing is more attractive in theory than a coherent, consistent, and stringent position. It will attract a hard core of followers and students strongly committed to the cause of truth. By sticking to the truth one will not need rhetoric that makes compromises to convey a position since the truth seekers will find the truth. Neither will one need to approve of others' inconsistent, compromising, and socialistic positions. One must even pronounce their failure. In contrast, an inconsistent theory will lead to false conclusions and will attract those with shallow reasoning that will easily abandon the cause of truth. At this point, one loses respect for his own position. Moreover, once having started with compromises, there is no logical end in continuing with compromises until the whole original theory is abandoned and falls apart. Skousen unfortunately fails to understand all that. Therefore, he is baffled by the apparent success of the Ludwig von Mises Institute (p. 274). It is no wonder, that he denounces Mises for leaving a Mont Pelerin Society meeting and for announcing «'You're all a bunch of socialists'» (p. 274). Again, Skousen fails to see how important it was that Mises defend his coherent position as others opted for interventionist ideas instead.

¹ The original phrase is: *Fiat iustitia, et pereat mundus*. There shall be justice even if the world perishes. This was the motto of the Habsburg Emperor Ferdinand I (1503-1564).

AREAS OF COMPARISON BETWEEN THE SCHOOLS

Let us now look at the four different subjects – methodology, the ideal money standard, macroeconomics, and the proper role of government which Skousen examines and judges. The most serious problems can be detected in the chapter on methodology. Skousen fails to point out that the unbridgeable differences between Chicago and Austrians schools ultimately stem from their opposed methodological approaches. Moreover, he maintains that Austrians have not linked theory with history (p. 100). This is simply not true. One link that Austrians have drawn between history and theory is the need of a theory to interpret and understand history. *Verstehen* needs theory. Hence, Austrians have written many books on history in which they apply Austrian theory to interpret history, like Rothbard's *America's Great Depression*, Higgs' *Crisis and Leviathan*, Vedder and Gallaway's *Out of Work*. Another link that Austrians make between history and theory is that history directs theory to the relevant and interesting fields of investigation. In a world of barter it would only be an intellectual game to develop a monetary theory. Therefore, economists in a world of barter would probably not engage in developing a theory of indirect exchange or money. When money emerged in a historical process, monetary theory ceased to be an intellectual game and became an important theory to explain the real world.

A preposterous allegation of Skousen is to declare Mises' methodology as «quite unreal» (p. 107). Realism is exactly what characterizes Mises's methodology. Its realism lies not in the building of simplifying models, not in freezing the dynamics of reality by mathematics or graphs, not in pretending to be able to measure utility or make interpersonal-utility comparisons, not in calculating some collective social welfare, but rather its realism lies in its investigation of universal laws of human action by deductive reasoning. In contrast to Mises' realism stands Friedman's positivism and Chicago methodology. Skousen even quotes Friedman:

In a 1953 article, «The Methodology of Positive Economics», Friedman argues that an economic model should be judged solely on its predictive power, 'the only relevant test, in general, the more significant a theory, the more unrealistic the assumptions.' A theory with 'realistic' assumptions will undoubtedly be 'useless,' Friedman contends.» (p. 115)

Albeit Friedman's disinterest in realism, Skousen names Mises' methodology as unreal instead of Friedman's. Unsurprisingly, in Skousen's opinion, Chicagoites win the round on methodology because they conduct quantitative work. This is justified not by epistemological arguments but by his opinion that it is easier to gain influence in academics and convince people by using statistics.

Another startling analysis of Skousen concerns the two school's perspectives on the ideal monetary standard. Skousen shows the advantages of a gold standard and rebuts Friedman's argument that a gold standard would be too costly. However, at the end of the chapter, he comes to the surprising conclusion that Chicago has an advantage on the subject of the ideal monetary standard with their fiat money approach. This just does not seem to follow from Skousen's theoretical arguments in favor of a gold standard. As a justification for his conclusion Skousen names pragmatism. Once again, he does not distinguish clearly between what is right in theory and what is most easy to convince politicians or the masses of. It is probably true that the Chicago monetary reforms are more easily accepted by politicians than Austrian reforms. However, Keynesian monetary reforms might be even easier to persuade politicians to accept and, therefore, more pragmatic. Pragmatism is simply not the question for a theoretician who searches for an ideal monetary standard (the subtitle of the fifth chapter is «What is the Ideal Monetary Standard?»). In theory, one must always advocate the right solution to a problem. In politics, it will then be decided how close one gets to the essential solution.

In his chapter on macroeconomics, which includes a treatment of the Great Depression, and business cycle theory, Skousen lets the Austrians win. Skousen's neglect of microeconomics implies that there are no significant differences in this respect between the two schools. Hence, he glosses over an important source of difference between both schools. Apparently, he does not see that the Chicagoite Coasian theory of social costs implies a justification of state interventions to internalize external effects and reallocate property rights virtually without a limit. By weighing the social costs and benefits case by case, property rights are not the starting points of the analysis but rather become dependent variables. This difference is ultimately caused by the fact that the Chicago school does not start (micro)economic analysis with a subjective value theory which is a core pillar of Austrian economics, but rather with a more objectivist approach of trying to calculate utility changes.

Also in the chapter on proper role of government, where Skousen deals with antitrust, public choice, and political economy, he seems to downplay deep theoretical differences between the two schools. Skousen again calls an «advantage» for the Austrian school. However, he sees the Chicago school coming ever nearer to the anti-trust position of the Austrians. It is true that the Chicago school has become less interventionist in this point; however, it must be pointed out that the Chicago school's underlying theory of «perfect competition» views all companies as automatons producing the same good at the same price. This differs greatly from the Austrian theory which regards competition as a dynamic process with the innovating and competing entrepreneur as the moving force. Skousen fails to emphasize that the Chicago school's theory of competition can be used to deduce very interventionist conclusions concerning anti-trust, i.e., the state should always intervene when reality differs from the perfect competition model.

SKOUSEN'S AIMS

With this book Skousen wishes to show that the Austrian and Chicago schools are both free market schools that have more in common than what separates them. However, Skousen is not able to attain that aim. First, there are some aspects which make it difficult to call the Chicago school a free market school at all. Its proponents advocate a nationalization of money and the control of the money supply by the government. Their practical views on competition might be more or less free market but their underlying theory of perfect competition can be used to justify interventions into the market. Coase's theory of social costs can be used to justify a virtually indefinite array of state interventions to improve social welfare. Friedman's negative income tax guarantees welfare income. Moreover, Chicagoites have proposed several other measures proposed to make the state more efficient while Austro-Libertarians want rather an inefficient state, i.e., a state that is not efficient in achieving its understood aim to exploit a productive economy. All this leads to the conclusion that only in comparison with other schools does the Chicago school look relatively free market.

Second, there seems to be more that separates the two schools than what they have in common. Skousen, himself, names many of the differences between the two schools. The methodological abyss between the realism of the Austrian school and the positivism of

Chicago school seems to be especially unbridgeable. For this reason, Skousen wants the Austrian school to adopt the positivist methodology. However, this would be the end of the Austrian school, since its methodology is its most important characteristic. Moreover, due to the large differences between Vienna and Chicago, the case even could be made that the Keynesians and Chicagoites have much more in common than Austrians and Chicagoites. Keynesians and Chicagoites both share some justifications of state interventions and the belief that the state is needed for macroeconomic management. Moreover, both schools lack an elaborate theory of capital, use aggregates in their macroeconomic analyses, and make frequent use of mathematical formalism and econometrics. Skousen himself indicates that when he tells the reader how Keynesian Friedman was, for instance, in noting Friedman's Theory of the Consumption Function or in quoting Friedman's statement that he considers Keynes a greater economist than Mises. (p. 241)

Furthermore, Skousen fails to provide evidence that the two schools move towards each other as he claims (p. 291). It is true that the Chicago school, for instance in its practical view on anti-trust lead by George Stigler, has become more free market, but the Austrian school is not moving at all towards the interventionist camp of Chicago, nor is it abandoning its realist approach. A sign that the schools are drifting apart rather than bridging their differences is the intent of some Austrian members of the Mont Pelerin Society to found the Mount Ararat Society. They want to continue theoretical discussions on free-market without the pragmatic Chicagoites.

Skousen's ultimate and well-intentioned aim is forging an alliance between the Chicago and Austrian schools to work together more efficiently for a free-market. He states that «[i]f Austrian economists will recognize the powerful tools they have at their disposal to generate a new economic way of thinking, they will join the ranks of the Chicago economists as accomplished performers in modern economics. To do so will require Austrians to advance their model building and empirical work to a new level» (p. 290). However, this equalizing of both schools does not even make sense considered from a strategic level. Even if we regard Chicago as a free market school, both schools should stay independent and follow their respective paths. May a thousand flowers of liberty blossom. A strict separation line makes it easier to differentiate the positions and improve on them, make them more coherent and powerful. The equalizing approach Skousen follows will lead to

intellectual sloth, stagnating debates, muddled positions, and compromises – an unappealing potpourri. If Skousen seeks liberty, a merging of both schools is not the road he should recommend.

CONCLUSION

In *Vienna & Chicago* Skousen fails in two respects. First, he misses a wonderful opportunity to provide a proper in-depth theoretical comparison of the Chicago and Vienna schools, which indeed, are commonly regarded by the general public as free-market schools. He might have explained in detail how the two schools arrive at sometimes similar free-market positions even though they start from irreconcilable theoretical and methodological bases. However, he passes up this opportunity by glossing over significant differences. Second, Skousen fails in his strategic recommendations, as well. A united front on the free market, achieved through Austrian pragmatism, as well as compromises on and betrayals to their methodological foundation, would not foster the cause of truth and liberty.

In sum, if the reader enjoys anecdotes, or is interested in the opinions which famous economists have about each other, or is searching for an intellectual autobiography of Mark Skousen he will find it in *Vienna & Chicago*. However, the reader should be aware of inaccuracies, contradictions, misunderstandings, inconsistencies, erroneous conclusions, and unwise strategic recommendations. He, who seeks a scientific, in-depth theoretical study of the differences and similarities of the Austrian and Chicago schools, should look elsewhere.

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RESEÑA DEL LIBRO
TIEMPO Y DINERO.
LA MACROECONOMÍA
DE LA ESTRUCTURA DEL CAPITAL,
DE R.W. GARRISON

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Datos de la obra:

Título: «Tiempo y dinero. La macroeconomía de la estructura del capital»

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Editorial: Unión Editorial, Madrid, 2005

La macroeconomía que mayoritariamente se enseña hoy en las universidades es aún un producto, si bien remoto, de la llamada «revolución keynesiana» iniciada en los años 30 del siglo pasado; a la que se han venido añadiendo distintas transformaciones que la convierten en un híbrido de teorías e hipótesis de muy diferente naturaleza. Esto hace de la macroeconomía actual un conjunto de teorías que, al margen de su mayor o menor capacidad explicativa, resulta de difícil identificación y comprensión, incluso para el lector especializado. Este libro tiene la virtud de aclarar el origen y las características definitorias de la macroeconomía moderna y, asimismo, retomar un esquema de análisis teórico alternativo que sea capaz de explicar en toda su extensión el fenómeno de los ciclos económicos. Este esquema no es otro que una actualización de la «teoría austriaca del ciclo económico», mediante su estudio prioritario de la estructura temporal del capital.

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Tal y como señala R. Garrison en el capítulo II de este libro, la influencia de la «Teoría general del empleo, el interés y el dinero» de J. M. Keynes (1936) provocó un «desvío» en el desarrollo de las propuestas teóricas y el debate académico en torno a la explicación de las fluctuaciones económicas. Tal «desvío» ha tenido importantes consecuencias, no sólo en el desarrollo teórico posterior y la interpretación de los procesos explicativos de los ciclos económicos, sino también en la propia concepción del papel del Estado en las economías de mercado. Si bien desde la década de los 70 ha habido una significativa reforma de las teorías keynesianas, la vuelta atrás no ha sido neutral en modo alguno: la teoría macroeconómica ha reducido el campo de acción de los poderes públicos en materia de política económica, pero mantiene un enfoque metodológico iniciado en los años 30 que arrastra hasta la actualidad carencias explicativas significativas. Este libro resalta tales carencias y propone el estudio de la que denomina como «macroeconomía basada en el capital» como alternativa.

Desde las primeras líneas del libro se explica el nacimiento y desarrollo de la Macroeconomía en los años 30 como una especie de subdisciplina de la Economía, con objetivos y metodología propias. Con el fin de crear una nueva ciencia susceptible de una fácil modelización y aplicación práctica, el foco de análisis de los economistas se desplazó hacia el estudio de un número muy reducido de variables agregadas representativas, como veremos, de una economía muy particular: como el consumo, la inversión, la renta y el nivel general de los precios. Asimismo, el método de análisis se alejaba de la consideración de la Economía como la ciencia que estudiaba la adecuación personal y subjetiva de los medios disponibles a los fines propuestos en el tiempo. Esta desviación originaria de la macroeconomía del subjetivismo e individualismo metodológicos ha sido un factor determinante para entender, tanto su desarrollo durante la llamada «era keynesiana» (hasta los años 70), como las reacciones y transformaciones que se han ido incorporando hasta la actualidad.

Por su parte, el autor hace hincapié en el hecho relevante de que la «teoría austriaca del ciclo económico» permaneciera ajena a tal desviación keynesiana. Su explicación de las fluctuaciones económicas, basada en el estudio de la estructura temporal del capital, ha estado plenamente vigente desde que autores como Mises o Hayek la introdujeran en los años 20 y 30 del siglo pasado. Ello ha permitido a los «economistas austriacos» considerar como elementos endógenos a su

explicación del ciclo económico factores como el tiempo y la estructura del capital; elementos que, o bien fueron parcialmente incorporados «desde fuera» en la macroeconomía keynesiana en los años 70 (el tiempo y las expectativas) o bien, sencillamente, no han sido aún tenidos en cuenta por la macroeconomía actual (la relevancia de la estructura del capital).

En este contexto teórico, el libro de R. Garrison retoma los fundamentos originales de la teoría del ciclo económico de la «escuela austriaca»; y lo hace de una manera muy novedosa y útil para el lector contemporáneo.

Tanto en su tiempo como en la actualidad, se han criticado y olvidado a los «economistas austriacos» por utilizar conceptos y términos teóricos alejados del dominio «convencional» de los macroeconomistas. En este sentido, es como si utilizaran otro lenguaje que impondría, ya a priori, una barrera para el entendimiento de sus propuestas teóricas. Para salvar esta posible barrera formal, R. Garrison expone en el capítulo III un sencillo esquema expositivo de los elementos de la «teoría austriaca del ciclo económico», en gran medida comunes a toda escuela de pensamiento económico; a saber: el estudio del mercado de fondos prestables y la Frontera de Posibilidades de Producción. A estos dos gráficos, añade un elemento teórico esencial en la «escuela austriaca»: el estudio de la estructura intertemporal de la producción en la forma de una representación sencilla del llamado «triángulo hayekiano». La interacción de estas tres gráficas le servirá para explicar en este capítulo, con un lenguaje sencillo y fácilmente comprensible, los fundamentos de la «macroeconomía basada en el capital» (resaltando así el objeto y posición prioritaria del estudio del capital de la «escuela austriaca» en la explicación de las fluctuaciones); para distinguirla de la macroeconomía keynesiana o la que denomina «macroeconomía basada en el trabajo» (que carece propiamente de una teoría del capital).

A partir de la aplicación sistemática de estos tres gráficos, irá analizando a lo largo del libro las características distintivas de las teorías de los ciclos económicos nacidas de los tres grandes paradigmas de la Economía: la «escuela clásica», la «escuela keynesiana» y la «escuela austriaca». Con ello, un único esquema teórico permite al autor diferenciar claramente los rasgos distintivos de unas y otras teorías, así como los fundamentos últimos en que se basa cada una de ellas. Asimismo, resalta e identifica las interacciones y continuas transformaciones de las teorías keynesiana y clásica de las

últimas décadas, que han venido en crear las llamadas escuelas neoclásica y neokeynesiana.

Es en el capítulo IV donde el autor sienta las bases teóricas que le permiten optar por la mayor capacidad explicativa de una teoría del ciclo económico basada en el estudio de la estructura temporal del capital. En este capítulo se distingue entre un crecimiento de la economía sostenible (o «genuino»), basado en el aumento de los recursos, la tecnología o la preferencia temporal de los agentes a favor del ahorro, de un crecimiento insostenible (o «artificial»), generado por el desarrollo de políticas monetarias expansivas. En el primer caso, un aumento de recursos, una mejora tecnológica o un aumento de la preferencia por el ahorro genera, en ausencia de medidas de política económica que influyan en este proceso, dinámicas de ajuste de los mercados de fondos prestables y de las decisiones de ahorro, inversión y consumo de los individuos que permiten que este proceso de crecimiento se desarrolle de manera coordinada. En el caso de una preferencia general hacia el ahorro, un aumento y alargamiento de los procesos de inversión va acompañado de una reducción del consumo presente, lo que permite a los empresarios destinar más recursos a un proceso productivo en expansión.

A diferencia de este caso, un aumento de la cantidad de crédito disponible, posibilitado por una política monetaria expansiva, genera un proceso inversor no sostenible en el tiempo: el aumento de la inversión estará ahora producido por un factor externo a la dinámica de las preferencias de los agentes, que no han variado su preferencia temporal de consumo. Con el paso del tiempo, será imposible desarrollar tales nuevas inversiones en un contexto en que los agentes pueden aumentar sus decisiones de consumo presente. Por su parte, la mayor y creciente rentabilidad relativa de las industrias de bienes de consumo irá provocando una progresiva reducción y, en su caso, interrupción, de los procesos de inversión a mayor plazo; lo que tendrá efectos reales sobre el empleo, la producción total y la estructura temporal de la producción. Siguiendo las aportaciones originales de Mises y Hayek, Garrison concluye que son estas expansiones artificiales las causantes de los procesos de descoordinación en la economía que se manifiestan, primero, como una sobreinversión (expansión), y después como procesos de liquidación de inversiones, que implican ajustes en la estructura temporal de la producción compatible con las preferencias de los agentes (depresión).

En los capítulos V y VI, R. Garrison extiende este análisis de las fluctuaciones económicas incorporando, no sólo los efectos de la política monetaria (elemento ampliamente tratado por los «economistas austriacos» en los años 20 y 30), sino también los efectos de la política de ingresos y gasto público del gobierno. Ello le permite estudiar los pros y contras de distintas opciones de financiación del déficit público y su influencia sobre un desarrollo equilibrado de la economía a lo largo del tiempo.

Una vez expuesto el cuerpo analítico de la «macroeconomía basada en el capital», las explicaciones keynesianas (caps. VII a IX) y monetaristas de las fluctuaciones económicas (caps. X y XI) son tratadas como casos particulares de aquella. En este sentido, R. Garrison defiende la consideración de la «teoría austriaca del ciclo económico» como la única verdaderamente general. Su incorporación genuina del tiempo y la evolución de la estructura productiva como elementos inherentes a los procesos de mercado da a la «macroeconomía basada en el capital» una mayor capacidad explicativa de los procesos de expansión-depresión que tienen lugar en la economía.

Otro de los elementos más destacables del libro es la descripción sistemática que hace el autor del «modelo keynesiano» nacido de la «Teoría General», y de la distinción original de Keynes entre dos tipos de «paro involuntario» asociados a las economías capitalistas: el paro cíclico y el paro secular. Lo relevante no es tanto la explicación de cómo se llega a ellos, sino, sobre todo, su análisis de los remedios que propone Keynes para afrontar uno y otro tipo de desempleo.

En primer lugar, tal y como señala Garrison, Keynes caracteriza una economía con unas características tan excepcionales que su aludida teoría general se convierte, de hecho, en una teoría aplicada a una economía realmente particular: «Keynes elevó las dificultades de una economía-que-va-mal a la condición de teoría general» (pág. 219). De hecho, su caracterización de la economía se vio muy condicionada por un contexto histórico presidido por los efectos de la recesión de los años 30. Ello le condujo a la descripción de una economía en términos de una serie de agregados y relaciones sencillas entre los mismos, que necesitara de la intervención correctora del Estado: «Es como si un ingeniero de una fábrica de automóviles, en su búsqueda de sencillez analítica, hubiera diseñado un vehículo de cuatro ruedas como una carretilla y entonces lo hubiese declarado como intrínsecamente inestable. Para dotar de estabilidad a la carretilla keynesiana,

algún ente externo tendría que sostener con firmeza ambos manillares» (pág. 47).

En segundo lugar, destaca con la importancia necesaria las soluciones que propone Keynes para los dos tipos de desempleo involuntario mencionados; soluciones de muy distinta naturaleza y consecuencias sobre el desarrollo de una economía de mercado. En el caso del desempleo cíclico, Keynes propone el conocido uso de las políticas fiscal y monetaria con el fin de potenciar la demanda agregada, como medios para propiciar el crecimiento de la renta y el empleo en la economía. Ahora bien, hay un componente secular en el paro involuntario que, tal y como señala Garrison en profundidad en el capítulo IX, Keynes asocia al proceso de la toma de decisiones descentralizadas en una economía de mercado y a la incertidumbre a que está sometido el empresario en sus decisiones de inversión. Ambos factores definen a un empresario temeroso y retraído, que no estaría dispuesto a invertir lo necesario para crear suficiente empleo. Ante ello, Keynes propone que un agente (el Estado) centralice y controle de manera colectiva las decisiones individuales de ahorro e inversión, como medio para alcanzar el pleno empleo. En este caso, hablaríamos de toda una serie de medidas de «reforma social» que van mucho más allá de las convencionales políticas keynesianas de «ajuste fino», correctoras de los resultados del mercado. Lo que resulta más relevante es que, en ambos casos, Keynes no confía en que la dinámica de los distintos planes de acción de los agentes, a través del proceso de mercado, pueda corregir las situaciones de desempleo descritas.

Si bien Garrison hace explícitas las diferencias metodológicas de las explicaciones monetarista y austriaca de las fluctuaciones económicas (caps. X y XI), hace igualmente hincapié en los elementos comunes a ambas teorías. En concreto, termina este libro resaltando en el capítulo XII la concordancia (e, incluso, la complementariedad) de ambas escuelas de pensamiento tanto en su demostración de la ineficacia de políticas económicas dirigidas por los poderes públicos en la persecución de determinados objetivos de renta o empleo, como en la defensa de los cauces del mercado como medios para lograr la mayor coordinación posible de los planes de los agentes: «El activismo en política macroeconómica es, pues, probablemente contraproducente. (...) Los economistas que comparten esta visión general sobre las fuerzas del mercado y el activismo en política económica son –deberían ser– aliados naturales» (pág. 352).

Por último, la claridad expositiva del autor, unido a su repaso detallado de las principales características de los distintos modelos teóricos explicativos de las fluctuaciones económicas permitirá al lector comprender el alcance y las limitaciones de la macroeconomía actual y, asimismo, entender por qué se ha llegado al estado actual de la macroeconomía. A partir de ello, su explicación basada en el análisis de la «macroeconomía basada en el capital» se convierte en una referencia teórica alternativa para la mejor comprensión de los ciclos económicos.

¿JUEGA DIOS A LOS DADOS?
RESEÑA DEL LIBRO
EL GOBIERNO DE LA FORTUNA,
DE JUAN ANTONIO RIVERA

LUIS DE FUENTES LOSADA*

Datos de la obra:

Título: «El gobierno de la fortuna»

Autor: Juan Antonio Rivera

Editorial: Crítica, Barcelona, 2000

Colección: Filosofía

Número de páginas: 412

¿PODEMOS PREDECIR EL FUTURO
O ÉSTE ES ARBITRARIO Y ALEATORIO?

El *determinismo científico* afirmaba orgulloso que el estado del Universo en un momento dado determina su estado en cualquier otro; luego conocido el estado del Universo en algún momento del pasado, podría predecirse el futuro y viceversa, conocido el futuro, podría deducirse lo que había sido el pasado.

Con el advenimiento de la *Teoría Cuántica* se redujo a la mitad lo que uno podía predecir, pero aún dejó una correspondencia directa entre los estados del Universo en diferentes momentos. El *Principio de Indeterminación* de Heisenberg demuestra que no se puede medir a la vez exactamente la posición y velocidad de una partícula, sólo se puede predecir con certidumbre una combinación de posición y velocidad.

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Por tanto, ¿Cómo puede predecirse el futuro cuando no se puede medir exactamente las posiciones y velocidades de las partículas en el instante actual?

Stephen Hawking, con sus estudios sobre los agujeros negros dio el segundo hachazo: El vacío está realmente formado por pares de partículas y antipartículas; si hay un agujero negro cerca, uno de los componentes del par podría deslizarse dentro, dejando al otro componente sin compañero y nos encontraremos con el mismo estado del Universo fuera del agujero independientemente de lo que haya sido arrojado dentro, a condición de que tenga la misma masa; por lo que perdemos irremisiblemente la información que ha caído dentro; por tanto, ya no hay una correspondencia exacta entre el estado inicial y el final, ya fuera del agujero negro. Esta pérdida de información implica que podemos predecir incluso menos de lo que sostiene la Teoría Cuántica: No podemos hacer ninguna predicción concreta, ni siquiera en términos probabilísticos, acerca de la partícula que absorbe el agujero negro y sobre la que queda desaparejada.

Einstein rechazaba la incertidumbre cuántica y afirmaba que «Dios no juega a los dados». Estaba equivocado, el azar importa mucho más de lo que creemos y este libro trata de ello.

Juan Antonio Rivera, a lo largo de 412 densas y amenas páginas, demuestra cómo el azar influye muy poderosamente en nosotros desde la explicación de la evolución y el origen del hombre sobre la Tierra hasta la esfera intra-individual, pasando por los espacios supra e Inter-individuales.

Como afirma el paleontólogo S.J. Gould, no hay nada inevitable en el hecho de que estemos aquí. El Universo se creó hace 15.000 millones de años, la Tierra se formó hace 4.500-5.000 millones de años; el *Homo Sapiens* lleva aquí sólo un 0,0001% de la Historia de la Tierra. Somos terriblemente afortunados por estar aquí, como seres vivos y, sobre todo, por ser la única especie en apreciarlo.

PERO, ¿CÓMO OPERA EL AZAR?

El *enfoque de la dependencia de la senda*, nos enseña Rivera, ilustra la incidencia crucial de los accidentes históricos en las rutas evolutivas de los individuos, organizaciones, tecnologías o sociedades. Explica la evolución divergente de estos *sistemas complejos adaptativos* (capaces de ganar o perder estructura o complejidad) con un punto de partida similar.

Cuando diversas tecnologías o instituciones compiten, la mera contingencia histórica puede dar lugar a pequeñas ventajas iniciales, a un cierto equilibrio –no necesariamente el óptimo– de entre los múltiples existentes que, al interactuar con los *mecanismos de autorrefuerzo*, puede decantar el resultado final a su favor.

Los mecanismos de autorrefuerzo son *las economías de escala*; *Las externalidades de red* o ventajas adicionales que recibe un consumidor cuando otros compran bienes con la misma tecnología o compatible (VHS versus Beta) o los productores al aglutinarse en «clusters»; *Los efectos de aprendizaje*, así, el teclado Qwerty, siendo inferior a otros, no es sustituido por éstos por no gastar esfuerzos los usuarios en aprender esa nueva habilidad; *Las expectativas adaptativas*, que generan predicciones autorrealizadoras y, finalmente, *la participación multitudinaria descentralizada* que, al ser múltiple, descoordinada e inconsciente en cuanto a los resultados globales, desincentiva la modificación de posturas individuales, una vez adoptadas.

Los resultados son, en estos casos, impredecibles, no superiores u óptimos y con rigidez estructural, una vez decantado un equilibrio, por lo que no hay garantías de que ese fenómeno social ya cristalizado tenga consecuencias beneficiosas para los individuos implicados.

Lo que sí podemos afirmar es que esos *efectos agregados emergentes* son *subproductos colectivos* o resultados colaterales no intencionados de lo que estamos haciendo. Paradójicamente, las más importantes instituciones de una cultura son subproductos colectivos, como el derecho o el mercado, que emergen inintencionadamente a partir de los micromotivos que guían las interacciones humanas.

LA SOCIEDAD ABIERTA Y SUS ENEMIGOS: LA TENTACIÓN TOTALITARIA

Ante la eventualidad de que este *orden espontáneo* así generado pueda ser subóptimo, se ha tratado, ya desde Platón, de convertir en otro deliberada y conscientemente construido.

La forma más extrema de ingeniería social totalitaria es el *comunismo*, que pretende infundir una racionalidad más completa al devenir histórico que, ya sabemos, genera instituciones impredecibles, no necesariamente óptimas y estructuralmente rígidas. Se pretende llegar a una meta colectiva deseada; para ello es necesario negar la multiplicidad de fines y aspiraciones individuales y encauzarlas hacia

ese único fin colectivo. Así, se construyen sociedades cerradas, en la terminología de Popper, aunque colateralmente se llegue a la alienación del hombre –la negación y supeditación del individuo y su libertad en aras de la consecución de altas metas, quinquenalmente diseñadas por la nomenklatura, ya saben, los cerdos de Orwell que siempre son más iguales que los otros– los gulags soviéticos, los genocidios camboyanos, las hambrunas coreanas y, esta vez sí, la creciente miseria del proletariado en el paraíso socialista.

La *socialdemocracia* es otra forma de intervencionismo más descafeinada, no se trata tanto de lograr ciertas metas colectivas deseadas o utópicas como de evitar algunos resultados indeseables o ineficientes, emergidos del orden espontáneo; en esto se ha basado la justificación de la intervención estatal, aunque lo que suele pasar es que agrava más los problemas que intenta solucionar.¹

La *postura liberal* –la menos intervencionista y más respetuosa con el individuo, la que más prosperidad ha generado en las sociedades y la más ferozmente criticada por la «progresía»– al negar la existencia de equilibrios subóptimos (salvo el argumento de la industria naciente y el monopolio natural) no justifica la intervención del Estado más allá de la defensa, justicia, policía y obras públicas.

Hayek piensa que la sociedad es un orden espontáneo, no diseñado por ninguna mente individual y, en consecuencia, no responde a los designios de ningún grupo, por poderoso que sea. Afirma radicalmente el individualismo metodológico; los únicos productores de acciones humanas son los individuos, no los grupos sociales.

¹ En este sentido, la Política Agrícola Común (PAC) es el paradigma del intervencionismo en los mercados, de la ineficiencia económica y de los subproductos indeseables. La PAC perjudica al consumidor, al impedir comprar al precio más barato; perjudica a los productores del Tercer Mundo, al impedirles, con las barreras arancelarias, vender sus productos en el Primero; genera excedentes que, o son desnaturalizados –con el consiguiente derroche de recursos–, o peor, son vendidos subvencionados a los países en desarrollo; así, en Nigeria es más barata la leche holandesa que la propia, que se deja de producir. Ni que decir tiene que los gastos de almacenamiento de los excedentes, la desnaturalización y la desgravación fiscal a la exportación los paga el consumidor/contribuyente de la Unión Europea. Inexplicablemente, los movimientos antiglobalización todavía no se han percibido de ello en su combate con la Organización Mundial de Comercio, que quiere eliminar esas barreras, y, por otro lado, todos los políticos están muy preocupados del incierto futuro de estos pueblos, salvo cuando negocian la partida presupuestaria de la PAC, que absorbe el 40% del presupuesto comunitario en beneficio del 3% de la población europea.

En este sentido, Hayek es un evolucionista cultural porque cree que el orden social espontáneo es, en gran parte, resultado de un proceso evolutivo. El hombre se adapta a los nuevos hechos contingentes de su entorno mediante el sometimiento a normas² que se adoptaron inintencionada y espontáneamente, comprobándose *a posteriori* que eran buenas para el grupo.

Para Hayek esas normas también están sometidas a un proceso de selección, de prueba y error,³ y las que hayan probado ser eficaces (eficacia medida por su contribución a la supervivencia, crecimiento y expansión del grupo humano) permanecerán y, probablemente, serán imitadas por otros grupos.

Frente a aquellas sociedades cerradas o de fines se oponen las sociedades abiertas o de medios, en las que no se fijan fines colectivos sino normas comunes que mejor permiten a los individuos alcanzar sus objetivos privados, generándose colateralmente los órdenes espontáneos, las instituciones sociales.

Además, las sociedades abiertas admiten holguras para que los individuos respondan con *eficiencia adaptativa* y agilidad –gracias a la descentralización– a las contingencias que se presenten, a diferencia de las sociedades cerradas que, al perseguir una meta juzgada como ideal, caen en el inmovilismo, perdiendo la agilidad necesaria para adaptarse a las circunstancias no previstas.

Por tanto, la Historia discurre, como avanza Demócrito, entre el puro azar y la necesidad (cada acontecimiento explica los siguientes y es explicado por los anteriores pero no de una forma lineal sino de acuerdo con el modelo de dependencia de la senda); luego, la concepción progresista de la Historia es falsa, como ya demostró Popper en «*La miseria del historicismo*» y la imperfección de diseño es necesaria para posibilitar la adaptación y, con ella, la historia futura.

² Normas que, lejos de ser órdenes o mandatos coactivos, se entienden como leyes generales (aplicables a todos por igual) y abstractas (sólo establecen un amplio marco de actuación individual sin prever resultado concreto alguno del proceso social). Así, Hayek opone *legislación* (órdenes y mandatos administrativos y coactivos que emanan del órgano director –democrático o no–) frente a *derecho*. En la medida en que se impone la primera desaparece el segundo.

³ Son los denominados *procesos de retroacción negativos* que pueden ayudarnos a salir de situaciones subóptimas y pasar a otras mejores.

ORDEN EN LAS NORMAS COMUNES Y DESORDEN
EN LOS FINES PRIVADOS SON LAS DOS CONDICIONES
NECESARIAS PARA UNA SOCIEDAD MEJOR

¿Qué tipos de azar existen?

Podemos distinguir, con Rivera, cuatro tipos:

- *Azar natural*: El mismo hecho de ser concebido y ser viable, pasando por nuestro sexo, inteligencia o potenciales enfermedades vienen determinadas, no se si por mucho tiempo, por el azar.⁴
- *Azar social*: Nacemos en una época, cultura, sociedad y familia no elegidas, podrían haber sido otras: Sin embargo, podemos escapar, aunque sea parcialmente, a ese fatalismo a través de la voluntad en las sociedades abiertas que permiten la movilidad social.
- *Azar eventual*: Son aquellos acontecimientos contingentes que no dependen de nuestras características personales o del entorno socio-cultural. La que consideramos, por ejemplo, mujer u hombre de nuestra vida no deja de ser alguien que azarosamente se cruzó en nuestro camino vital y con el/la que establecimos lazos afectivos y amorosos; resulta ser, no siempre, la persona ideal de la corta muestra aleatoria simple que la vida nos ofrece, pero no el *óptimo optimorum* que exige

⁴ Elster alega tres razones para justificar la elección azarosa de los genes de nuestros hijos frente a la elección racional que es, en sí misma, totalitaria: 1) Protección de la dignidad humana: Con el azar se preserva el derecho del embrión a ser tratado como un fin en sí mismo y no como un instrumento de los fines de sus progenitores. 2) La existencia de efectos agregados perversos: El azar en el nacimiento proporciona una combinación óptima de hombres y mujeres. La brutal –por genocida– selección china del sexo, que fomenta el asesinato de las niñas gracias a la política de un único hijo, ha alterado dramáticamente esta proporción natural en ese país. Además, la hiperselección Huxleyana de la raza llevaría a la depauperación del acervo genético de la especie, ya que, si todos pudiéramos optar, elegiríamos hijos, con lo que quedaríamos más expuestos a las contingencias futuras. 3) Impediríamos la existencia de subproductos (resultados que sólo se logran inintencionadamente) si solamente nacieran niños concebidos racionalmente. Sólo a partir de los años setenta, los altamente tecnificados y escasamente civilizados países nórdicos abandonaron tanto la eliminación sistemática de los *nasciturus* deformes como la castración no consentida de los ya nacidos. Estos argumentos no niegan, por otro lado, la ingeniería genética «socialdemócrata» orientada a la detección precoz de enfermedades y malformaciones genéticas hereditarias o su curación.

conocer el universo poblacional, lo cual es imposible. Igual que éste, existe un cúmulo de hechos azarosos y contingentes que tienen unos efectos cruciales en nuestras vidas.

- *Azar endógeno*: Lo inintencionado, una vez producido, se convierte en azar endógeno para los mismos que lo produjeron y para los que les sucedan.

Azar y racionalidad. Búsqueda y descubrimiento

Una vez definido el marco de actuación, podemos acotar las ideas principales de la *Teoría de la elección racional* que, como hemos visto, es perversa en el ámbito supraindividual y en otros ámbitos hasta ahora regidos por el azar, como la elección de los genes de nuestros hijos, pero que resulta un óptimo condicionado en los ámbitos inter e intra-individual.

En el modelo de elección racional, propio de la teoría neoclásica de pensamiento económico, el individuo, definido como *homo oeconomicus*, se encuentra inmerso en un proceso continuo de búsqueda de información que se supone completa, instantánea y sin costes. En este sentido, el consumidor tratará de hacerse con aquella cesta de bienes que maximice su utilidad, sujeto a su restricción presupuestaria. Por su parte, el empresario tratará de hacer máximo su beneficio en el proceso productivo sometido también a su restricción presupuestaria. Así se logran una producción, distribución y consumo que son óptimo paretianos de nivel superior. Es un equilibrio estático, no hay incentivos a alejarse del mismo y cualquier alteración del mismo implica pérdidas de bienestar.

Sin embargo, la realidad es muy distinta. El hombre no solo busca sino que también descubre,⁵ como matiza y desarrolla Israel Kirzner. Así, el descubrimiento es un subproducto, se obtiene azarosamente

⁵ De acuerdo con Rivera, cuando buscamos, ignoramos algo y a la vez sabemos que lo ignoramos. El descubrimiento es, numerosas veces, *serendípico*, casual; solamente una vez efectuado el descubrimiento caemos en la cuenta de que no sabíamos que no sabíamos. Partíamos de una ignorancia desconocida. En el descubrimiento hay un componente intelectual de sorpresa que no existe en la búsqueda. A estos efectos, se encuadra la distinción de F.H. Knight entre *riesgo* (asociado a la búsqueda, que admite la asignación de probabilidades a los diferentes resultados posibles) e *incertidumbre* (en la que no es posible asignar probabilidades a los distintos resultados posibles que pueden ser desconocidos *a priori*).

en un proceso que está orientado hacia otros fines; por tanto, no tiene coste de oportunidad como la búsqueda. Así, el descubrimiento depende de la buena suerte y de la perspicacia del descubridor,⁶ que observa y se aprovecha de lo que otros no saben ver.

Esta conciencia de lo ilimitado e impredecible de nuestra ignorancia socava los principios de la elección racional: Realmente escogemos en la vida sin conocer todas las posibles cestas potencialmente elegibles; escogemos sobre la base de una muestra aleatoria simple, no sobre el universo poblacional. Además, desarrollamos, lógicamente, una predilección sobre los bienes que, fortuitamente, tenemos más a mano. La satisfacción de nuestras necesidades a través de estos bienes nos desanima a seguir explorando otras posibles cestas potencialmente más satisfactorias.

Por tanto, el concepto de *eficiencia óptimo paretiana* se ve matizado por el de *eficiencia adaptativa*, entendida como capacidad creativa que mezcla la búsqueda de lo anticipable con el descubrimiento de lo inanticipable y es el marco social de la competencia el que más favorece dicha eficiencia adaptativa.

Así, nos podemos preguntar con Rivera: *¿Es racional actuar siempre racionalmente?*

Al margen de las supersticiones y las creencias religiosas (que han servido para combatir el azar y la indefensión ante los hechos, no siempre, incontrolados) hay ocasiones donde la elección racional descansa precisamente en el uso de mecanismos aleatorios de decisión. Así, cuando nos debatimos entre dos decisiones iguales de buenas o malas no es irracional decidir echándolo a suertes; también, cuando una decisión más ajustada comporta costes informacionales considerados excesivos; o bien si las preferencias no son conmensurables (por ser incompletas o realizarse en un entorno de incertidumbre) o porque sea imposible repartir equitativamente un bien sin que éste sufra una merma considerable de su valor (el dilema de Salomón).

⁶ En este sentido, más que elegir pareja de entre una corta muestra aleatoriamente seleccionada, sería mejor enfocar el asunto como un descubrimiento, como un subproducto que se obtiene azarosamente en la persecución de otros fines y donde la buena suerte y la perspicacia del sujeto juegan un papel importante.

La vida como juego

Salvados estos casos, en el resto, y por lo que se refiere a las relaciones interpersonales, el comportamiento racional es el adecuado. Puesto que los comportamientos estratégicos son los más habituales tanto en las decisiones empresariales como en las puramente interpersonales, por ejemplo en las relaciones de pareja –siempre estamos negociando–, la *Teoría de Juegos* es un instrumento muy útil en la toma de decisiones.

Un comportamiento estratégico es aquél en el que, a la hora de tomar decisiones, se tiene en cuenta no solo la propia función de utilidad/producción sino también la probable decisión que tomará el otro jugador. La conjunción de ambas decisiones determinará el resultado final. Cuando no se reconoce la interdependencia entre los jugadores y es un juego de suma cero, la solución final es un equilibrio de Nash, una situación subóptima y estable, no hay incentivos para modificar ninguna de las decisiones.

Sin embargo, tras n iteraciones en un juego en el que los participantes reconocen su interdependencia, la aleatoriedad de los primeros resultados puede verse sustituida por la imposición de la voluntad de uno de los jugadores y, a partir de ahí, comienza a operar la dependencia de la senda: Existiendo inicialmente equilibrios múltiples y siendo impredecible el resultado en las primeras iteraciones, una vez decantado ese resultado, fruto de la imposición de la voluntad de una de las partes, no hay garantías de su superioridad, se vuelve estructuralmente rígido y prácticamente irreversible.

Las externalidades de red convierten un liderazgo concreto en otro generalizado, pudiendo degenerar en una dialéctica amo-esclavo, en un liderazgo totalitario que no es satisfactorio ni para el esclavo –que ve anulada su capacidad de elegir– ni para el amo, que desprecia la sumisión del esclavo.

Sólo las relaciones libres, equilibradas, entre iguales, basadas en el respeto y en las normas de convivencia, son satisfactorias para las partes

Pasando, finalmente, al plano intra-individual se pregunta el autor:

¿QUÉ ES LA FELICIDAD? ¿QUÉ ES LA BUENA VIDA?

La búsqueda deliberada de la felicidad está condenada al fracaso porque la felicidad, como anuncia Elster, es un subproducto, se obtiene inintencionadamente en la persecución de otros fines. Además, las más de las veces, la felicidad no se muestra como un estado sino como una situación, es efímera. Ello es consecuencia de la distinción entre *placer y comodidad*: El placer se logra en el paso de una situación incómoda a otra que no lo es que, una vez producida, desaloja al placer. Es más, si nos instalamos en la comodidad originamos frustración, si una vez habituados a los bienes adquiridos nos vemos amenazados o privados de ellos.⁷ Conforme envejecemos preferimos más comodidad y menos placer, nos aburguesamos.

Por ello, una vida mejor no es una vida aburguesadamente indolora, incolora e insípida; debe basarse tanto en la buena voluntad como en la corrección moral (la asunción de restricciones o normas en el trato con los demás que definan los derechos mutuos).

Así, con estas premisas, vamos eligiendo sendas en la vida; caminos que forman un *árbol de decisión vital*: Al elegir, cegamos otras posibles rutas vitales en el deseo de que la elegida sea la que proporcione más felicidad. Sin embargo, elegimos en un ambiente de incertidumbre: No conocemos ni las consecuencias últimas de las decisiones adoptadas ni las de las opciones rechazadas. Por no saber, no sabemos todas las opciones posibles, ni todas aquéllas que nos pueden proporcionar felicidad; elegimos de entre las opciones que, social y culturalmente, se nos ofrecen como deseables.⁸

Una vez que, modestamente, hemos acotado nuestro rango de elección, Juan Antonio Rivera se pregunta:

⁷ Por eso, Buda enseña el camino de la iluminación, del crecimiento espiritual y de la liberación del sufrimiento. Este camino comienza con la renuncia al deseo, ya que si no se obtiene el objeto deseado hay infelicidad, y si se consigue, existe la ansiedad por su posible pérdida.

⁸ Rechazamos cultural y apriorísticamente opciones tales como la antropofagia, el incesto, la poligamia, la poliandria o el suicidio. Son tabúes de *nuestra* cultura.

¿CÓMO ORIENTARSE EN ESTA ESPESA TRAMA
DE DECISIONES POSIBLES TENIENDO PRESENTE
QUE NUESTRA INFORMACIÓN SOBRE LAS CONSECUENCIAS
DE CADA ELECCIÓN ES TAN LIMITADA?

En la pág. 255 y siguientes el autor afirma que el individuo desarrolla, a lo largo de su vida, preferencias éticas, que son preferencias acerca de las preferencias reveladas en nuestra conducta, son *meta-preferencias*, la destilación que resulta una vez que se ha formado el gusto moral, que está constituido no tanto por lo que me gusta sino por lo que me gusta que me guste (quiero que me guste Bach).

Así, podemos definir la buena vida como el conjunto de metapreferencias concretas sobre lo que queremos querer y cuándo queremos que comience a orientar nuestra vida (metapreferencias intertemporales). Las personas no solo eligen su conducta, sino que también eligen –cuando se mueven en el nivel constitucional de decisión– las restricciones a las que voluntariamente sujetarán su propia conducta en el porvenir, es *la constitución moral de la persona*.

El *autoperfeccionismo compulsivo* (imponerse metas especialmente exigentes y duras que llevan a una rutinización completa de la existencia y la pérdida de la espontaneidad vital) y la *debilidad de la voluntad* (en la que las preferencias de primer orden se imponen a las metapreferencias: se es esclavo de las pasiones) son dos formas de traicionar las metapreferencias temporales: En la primera, el individuo concede un peso al futuro superior al que él mismo puede sostener; en la segunda, la conducta efectiva del individuo revela una orientación al presente superior a la anhelada.

El débil de voluntad, para no perder el norte de las metapreferencias, acude a *técnicas de precompromiso* como los *expedientes extrap-síquicos* (cuyo objeto es limitar, mediante restricciones físicas o sociales, el conjunto de oportunidades de elección futura, eliminando las opciones tentadoras, así Ulises se ató al mástil del barco para evitar naufragar acudiendo al canto de las sirenas).⁹

⁹ Así, a nivel supraindividual, los políticos sensatos, conscientes tanto de sus propias debilidades como de las de los funcionarios frente al creciente gasto público, limitan constitucionalmente el porcentaje tanto del déficit como de la deuda pública respecto al PIB. Otro ejemplo sería el Protocolo de Kyoto, acuerdo mundial (excepto USA y Australia) para preservar la capa de ozono, básica para la protección de la especie humana de los rayos ultravioleta y, a mi juicio, inexora-

Por tanto, los deberes morales son subsidiarios respecto a las meta-preferencias, se autoimponen para proteger los fines del plan de vida, el programa de obtención de las metapreferencias. Los deberes morales no prescriben acciones concretas sino hábitos racionales, algunos voluntariamente escogidos, otros impuestos por otros, por ejemplo, los adquiridos en la infancia y que se reconstituyen como voluntarios, aceptados, en la fase constituyente de la personalidad.

Por tanto, si en la escala supra e interindividual, la imposición de metas a los otros era totalitaria o caíamos en la dialéctica amo-esclavo –concluyendo que lo racional era dejar en libertad a los particulares para fijarse sus objetivos privados, dentro de un marco de reglas común–, en el plano intraindividual, la fijación de metas se entiende en la concepción de vida como empresa, como esfuerzo de aunar todos los recursos disponibles para el logro de los fines vitales propuestos.

El plan de vida racional

La virtud moral intraindividual, afirma Rivera, no se alcanza directamente, proponiéndosela uno como meta, sino que es un subproducto de la realización de tareas concretas, la persecución de la excelencia (la educación sistemática y exigente de algún recurso innato) es muy eficaz en el logro de la virtud moral. La excelencia requiere la formación de hábitos, que son a los individuos lo que las instituciones a la sociedad.

Por tanto, tomando una explicación gráfica de Buchanan y Tullock, la *constitución moral óptima*, sería aquella que reduce al mínimo la suma de costes morales (o pérdida de autoestima caso de fracasar en la consecución de las metapreferencias) y los costes psicológicos (derivados de la compulsividad –o flagelación por el fracaso en el logro de la autodisciplina– y pérdida de espontaneidad, o el vicio de desarrollar hábitos racionales para todos los actos).

blemente deteriorada por las emisiones de CO₂, subproducto indeseado del desarrollismo cortoplacista, basado en el petróleo, de los últimos 100 años. Tácticamente no tiene objeción; estratégicamente, la apuesta debe ser la inversión masiva y coordinada en I+D para lograr un uso rentable y seguro de la fusión nuclear, fuente inagotable, casi gratuita y muy escasamente productora de residuos radioactivos.

Sin embargo, el plan de vida racional no es único para una persona; la ordenación no es total, puesto que existe ignorancia sobre algunos posibles planes y otros están vedados social y culturalmente y, finalmente, no conocemos las consecuencias últimas del plan elegido; es decir, también operan los azares natural, socio-cultural y eventual.

Además, la elección del plan de vida está sometida a unas condiciones mínimas: 1) Que no sea tan fácil, que el superarlo se vuelva una tarea aburrida y que no sea tan difícil, que acabe originando frustración. 2) Que sea constitutivamente bueno,¹⁰ que no solo parezca sino que sea sentido bueno por el individuo. 3) Que respete la libertad y el mismo derecho de otros a desarrollar sus propios planes de vida; sería moralmente inaceptable aquel plan de vida edificado sobre la comisión por el individuo de injusticias.¹¹

¿CÓMO DEBEMOS ABORDAR, POR TANTO, EL TEMA DE LA JUSTICIA?

Buchanan propone que en el ámbito colectivo, en su nivel constitucional, se eligen las reglas del juego social; en el nivel postconstitucional, se deja libertad a los agentes para que elijan los cursos de acción que maximicen sus fines y que serán siempre lícitos siempre

¹⁰ Desde la perspectiva liberal, no podemos afirmar que ciertas metapreferencias sean intrínsecamente mejor que otras; el liberal no hace juicios de valor condicionantes de los fines ajenos, sólo exige que sean respetuosos con los fines de los demás, un marco común de convivencia; a diferencia del socialdemócrata, que se inmiscuye continuamente en los fines individuales, juzgándolos y condicionándolos. Así, si considera que el tabaco es perjudicial, no sólo le grava con impuestos excesivos (más del 80% de su valor), sino que, además, limita su consumo, hasta extremos absurdos y asfixiantes: el camionero por cuenta ajena, que no el autónomo, tiene una sanción administrativa por echarse un cigarrillo en la cabina, puesto que es su centro de trabajo. Éste no es más que un ejemplo más del pensamiento único que aspira a adocenarnos, a que perdamos el sentido crítico; otros ya piensan sobre lo mejor para nosotros. Pan y circo, nada nuevo bajo el Sol.

¹¹ Sin embargo, como sugiere Rivera, no podemos supeditar la confección de nuestro propio plan de vida racional a la erradicación de las injusticias que existen en la sociedad y que no son causadas por nosotros; la distribución de los recursos y de otros bienes sociales primarios depende de mecanismos supraindividuales ciegos; el aunar multitud de voluntades para hacerlo es de difícil e incierto éxito y su sustitución por acciones colectivas deliberadas tendentes a un mejor reparto ha acarreado en el pasado multitud de consecuencias inesperadas y fatídicas. Aquí se pueden reproducir, a título de ejemplo, los argumentos en contra de la PAC, que tiene como primer fin garantizar las rentas de los agricultores.

que no contravengan las normas comunes; como dichas normas son subproductos colectivos, Buchanan concluye que ese resultado se puede considerar como emergido de una decisión constitucional, que le legitima.

Rawls, por el contrario, enjuicia a las instituciones sociales según su propio criterio de equidad y justicia: Una institución será justa, y por tanto legítima, cuando sea la que maximice la posición del peor situado en la escala social, en un contexto de incertidumbre total sobre la posición futura de todos los individuos en dicha sociedad. Primacía de lo justo sobre lo bueno. La justicia supraindividual confiere derechos preservadores de la dignidad del individuo, son derechos moralmente previos a las personas. La justicia, para Rawls, no consiste tanto en el reparto directo del bienestar como en el reparto de los *medios generalizados* (los bienes sociales primarios) para alcanzarlo; será el individuo y no la sociedad, el responsable de la gestión que haga de esos recursos y del fin que les de.

El poder político no puede erigirse en responsable de la felicidad de los ciudadanos porque, con ello, no solo está coartando la libertad individual, sino que también se enfrenta a una tarea imposible: ¿Cómo satisfacer los gustos ofensivos o los gustos dispendiosos de algunos que conducen a un reparto desigual de los recursos?

En la moral privada, por el contrario, la concepción del bien que tenga el individuo, dada por sus preferencias morales, es la que fija su normativa interna.

EPÍLOGO Y CONCLUSIÓN A MODO DE MANTRA

Este magnífico libro nos deja una serie de enseñanzas que conviene repetirse mentalmente, como los mantras budistas, para acotar el ámbito de la racionalidad e inmunizarnos de la tentación totalitaria:

- No podemos soslayar la importancia capital que ejerce el azar, bajo sus distintas formas, en nuestra vida.
- Elegimos en un ambiente de incertidumbre: No conocemos ni las consecuencias últimas de las decisiones adoptadas ni las de las opciones rechazadas. Por no saber, no sabemos todas las opciones posibles, ni todas aquéllas que nos pueden proporcionar felicidad; elegimos de entre las opciones que, social y culturalmente, se nos ofrecen como deseables.

- Muchos acontecimientos e instituciones sociales e interindividuales siguen el enfoque de dependencia de la senda: Existiendo inicialmente equilibrios múltiples y siendo impredecible el resultado en las primeras iteraciones, una vez decantado ese resultado, no hay garantías de su superioridad, se vuelve estructuralmente rígido y prácticamente irreversible. Estos *efectos agregados emergentes* son *subproductos colectivos* o resultados colaterales no intencionados de lo que estamos haciendo.
- En el plano social, hemos afirmado que el orden en las normas comunes, basadas en la noción de justicia de medios no de fines, y desorden en los fines privados son las dos condiciones necesarias para una sociedad mejor. Sociedades abiertas frente a cerradas. Las sociedades abiertas son las que mejor permiten cierta movilidad social, gracias al esfuerzo y afán de superación de los individuos. Los ensayos de ingeniería social son totalitarios, reducen, sin excepción, la libertad individual y en su versión extrema, la comunista, llevan, irremisiblemente, al desastre social y a un infinito sufrimiento humano.
- Las sociedades abiertas, las únicas que garantizan la libertad del individuo; permiten cierta negociación entre libertad y un cierto grado de igualdad hacia los más desprotegidos. El objetivo a maximizar es la libertad sujeto a la restricción de la protección de los más desamparados.
- En el plano interindividual, por su lado, solo las relaciones libres, equilibradas, entre iguales, basadas en el respeto y en las normas de convivencia son satisfactorias para las partes. Si pretendemos imponer metas a los otros en el plano interindividual caemos en la dialéctica amo-esclavo.
- En el plano intraindividual, la fijación de metas, o plan de vida racional, entendido como la persecución de la excelencia (la educación sistemática y exigente de algún recurso innato) es muy eficaz en el logro colateral de la virtud moral. Además, es el camino para la conquista de mayores grados de libertad personales y la condición necesaria para la exigencia de los sociales a los políticos.

Noticias

William R. White, Consejero Económico y Economista Jefe del Banco de Pagos Internacionales, reclama la recuperación de la teoría monetaria hayekiana

El Banco de Pagos Internacionales, a través de su economista jefe W.R. White, ha criticado recientemente la forma de ejecución de la política monetaria de los países desarrollados en los últimos años. White sostiene que el interés exclusivo de los banqueros centrales en la inflación y el crecimiento, ha dado lugar a un período de tipos de interés históricamente (y artificialmente) bajos que ha creado «graves distorsiones» en los mercados de las principales potencias económicas (Estados Unidos, Japón y Europa).

El Economista Jefe del Banco de Pagos Internacionales, afirma que la globalización, la revolución tecnológica, y los procesos de desregulación y liberalización de los mercados financieros, han alterado y continúan transformando el funcionamiento de las economías del planeta. Las continuas innovaciones del mundo actual, dificultan cualquier intento de representar el funcionamiento de las economías nacionales a través de modelos matemáticos complejos.

Los responsables de la política económica son cada vez más conscientes de las limitaciones de sus modelos, y de la necesidad de reconocer el importante estado de incertidumbre en el que se mueven los agentes económicos. En este sentido, puede afirmarse que nadie conoce con exactitud el modelo adecuado que permite representar una economía. Igualmente, nadie puede estar seguro de la magnitud de las reacciones de causa y efecto que se producen dentro de un modelo específico. Así, el signo de las relaciones de causalidad puede depender en muchas ocasiones de la amplitud del período temporal que se está analizando.

De igual modo, las investigaciones acerca de la efectividad de las políticas económicas, no pueden hacerse en base a experimentos de laboratorio «en campanas a las que se ha practicado el vacío». En particular, los supuestos (experimentos) *ceteris paribus* suelen ignorar la reacción de los agentes privados a las medidas de política económica, sin tener en cuenta que estas reacciones pueden trastocar completamente los objetivos del gobierno –la conocida «crítica de Lucas»–. Sin embargo, los datos necesarios para controlar y supervisar la economía y sus reacciones a las medidas de política monetaria, son pobres y están frecuentemente sometidos a profundas revisiones. Por otro lado, además del problema mencionado, la economía está sujeta a *shocks* exógenos y a errores estocásticos en las relaciones individuales.

Otro desafío surgido de las importantes transformaciones vividas en los últimos años (especialmente la globalización financiera), es el creciente reconocimiento de que los problemas macroeconómicos todavía pueden seguir vinculados a ciclos financieros y oscilaciones de los tipos de cambio (es el caso de la crisis mexicana de 1994 y del correspondiente «efecto tequila», o de la crisis asiática de 1997-98, entre otras).

White sostiene que las medidas tradicionales de inflación como objetivo intermedio de la política monetaria no son suficientes, ya que no tienen en cuenta otra forma de inflación: el aumento del precio de los activos financieros o de los inmuebles. Por ello, reclama que los bancos centrales tengan en cuenta esa otra forma de inflación que puede llegar a tener efectos devastadores.

Así, el reventón de la burbuja financiera japonesa de finales de la década de los ochenta –alimentada por un fuerte crecimiento del crédito bancario–, tuvo efectos demoledores sobre el sistema bancario nipón y sobre la economía real en su conjunto. Esos mismos resultados pudieron observarse en la América de los años treinta o en la crisis asiática de 1997-98.

Partiendo de esa experiencia, actualmente se siguen con preocupación las burbujas surgidas al abrigo de los mercados bancarios en países como Estados Unidos, España, o Italia, donde el legado de las fuertes expansiones crediticias vividas en los últimos años (y de unos tipos de interés artificialmente bajos), ha sido una burbuja inmobiliaria cuyo reventón podría tener efectos reales sustanciales.

White se pregunta como podría orientarse la política monetaria para afrontar las burbujas financieras e inmobiliarias surgidas al amparo de los mercados de crédito. ¿Podría hacer algo la política monetaria

para anticiparse e impedir ciclos financieros con efectos reales negativos como los descritos? Y, si es así, ¿debería hacerlo?... Por otro lado, ¿de qué forma podría determinarse si los precios se desvían de sus valores fundamentales? ¿En qué precios y qué activos debería fijarse la política monetaria?

El economista jefe del Banco de Pagos Internacionales sugiere que tal vez un indicador compuesto resultante de la combinación del crecimiento del crédito doméstico, los aumentos en los precios de los activos, y las expansiones de los niveles de inversión (mobiliaria e inmobiliaria), podría ofrecer un mecanismo de pronto aviso (*Early Warning Indicator*) fiable que evidenciase el inicio de un ciclo financiero antes de que éste surgiese.

De este modo, el Banco de Pagos Internacionales retoma el gran debate que tuvo lugar en los años treinta entre las dos máximas autoridades en materia macroeconómica del momento, Friedrich A. von Hayek y John Maynard Keynes. Sus ideas sobre la política monetaria diferían significativamente: Hayek no sólo reivindicaba que la intervención de las autoridades monetarias en la determinación de los tipos de interés era la causa última de las recesiones, sino también que la aplicación de políticas monetarias expansivas en los períodos recesivos sólo pospondría los ajustes económicos necesarios (es decir, las fases de «sana recesión»), acentuando la mala asignación de recursos surgida de las distorsiones monetarias creadas en la estructura intertemporal del proceso productivo.

White cita oportunamente al gobernador Hyami del Banco de Japón, quien afirma que «si los tipos de interés (artificialmente) bajos mantienen vivas a las compañías «zombi» (durante los períodos recesivos), e impiden una necesaria reducción del exceso de capacidad, entonces los beneficios nunca se recuperarán. Sin (el incentivo de) los beneficios no puede haber margen para una recuperación económica.» Por otro lado, continúa el gobernador japonés, impedir el reventón de una burbuja de precios con nuevas inyecciones de dinero y tipos de interés artificialmente bajos, sólo contribuiría a alimentarla más conduciendo finalmente a una recesión más profunda.

MIGUEL A. ALONSO
Procesos de Mercado

Conferencia del Profesor Huerta de Soto sobre los Escolásticos españoles

El pasado sábado 21 de octubre de 2006 el profesor Huerta de Soto, director de Procesos de Mercado, disertó sobre «La Escuela de Salamanca y el pensamiento económico de la Escuela Austriaca, entre España y América», dentro del *Simposio Internacional del Instituto de Pensamiento Iberoamericano* que, dedicado al «Pensamiento hispánico en América: siglos XVI-XX», tuvo lugar en el Aula de Grados de la Universidad Pontificia de Salamanca, del 18 al 21 de octubre de 2006.

Ante un auditorio constituido mayoritariamente por filósofos y teólogos, el profesor Huerta de Soto puso de manifiesto las íntimas relaciones que existen entre los conceptos de eficiencia y ética, y cómo los mismos pueden retrotraerse a las aportaciones originales de nuestros escolásticos del Siglo de Oro español que como Diego de Covarrubias y Leyva, Luis Saravia de la Calle, Jerónimo Castillo de Bovadilla, Juan de Lugo, Juan de Salas y Juan de Mariana, ya teorizaron sobre el carácter dinámico del mercado y la competencia, el carácter disperso del conocimiento empresarial, y la imposibilidad de organizar coactivamente la economía por falta de información.

Tras la conferencia se mantuvo un animado coloquio, que fue seguido de vivos debates que tuvieron lugar durante el vino español que se sirvió a continuación.

Un seminario subversivo

Una vez más, algunos mexicanos tuvimos la fortuna y el placer de escuchar el seminario del Dr. Miguel Ángel Alonso Neira y de ver las reacciones que su seminario provoca en los intelectuales mexicanos.

En efecto, este verano de 2006 asistimos a un seminario que se antoja subversivo en un ambiente donde únicamente se hablaba de Marx y Keynes. Algunos alumnos y profesores cambiaban de color ante un discurso que hablaba del papel fundamental del empresario como ente que detecta necesidades, oportunidades y asume el riesgo de invertir su capital para obtener lucro.

¿Alguna vez habíamos escuchado del papel social, del beneficio que obtiene el pueblo, por el simple hecho de que un hombre de negocios gane mucho dinero? Sonaba a completa subversión y varios asistentes entraron en una especie de colapso nervioso. No era menos de esperar, cuando sus profesores les enseñan que ser rico es un pecado, que los hombres de empresa son ladrones y que la ganancia nunca debe ser considerada legítima. Ideas izquierdistas que se habían tomado como autoevidentes.

El seminario, que se impartió en tres instituciones (Universidad Autónoma Metropolitana, Universidad Autónoma Chapingo, e Instituto Mora de México), empezó por repasar los orígenes de la Escuela Austriaca. Con grata sorpresa supimos que los orígenes se remontan a pensadores españoles: la Escuela de Salamanca del siglo XVI. Así, por ejemplo, Francisco de Vitoria (1483-1546) sostenía que

Si los bienes se poseyeran en común, serían los hombres malvados e incluso lo avaros y ladrones quienes más se beneficiarían. Sacarían más (para ellos mismos) y pondrían menos en el granero de la comunidad.

Una idea que si se hubiera entendido desde entonces, hubiese evitado que se dejara que el petróleo o las escuelas quedaran en manos de burócratas que «administran con *sabiduría* los bienes de todos».

Igualmente, Domingo de Soto (1494-1560) defiende la diferencia de precios en la usura considerándolo compatible con el «justiprecio». Martín de Azpilcueta (1493-1586) es precursor de la Teoría Cuantitativa del Dinero y hace una de las primeras exposiciones del concepto de preferencia temporal, base de la idea de interés de la Escuela Austriaca.

Juan de Mariana (1536-1623) sostenía que «*el rey no es dueño de la propiedad privada de sus vasallos y por este motivo no puede demandar impuestos sin el consentimiento de su pueblo*». Si esta visión se hubiera aplicado desde entonces, no existirían los gobiernos que se atreven, por si mismos, a dictar todo tipo de impuestos aprobados, en todo caso, por *sus* cámaras de diputados o senadores, es decir, *de ellos mismos*.

Luis de Molina (1535-1600) rechazó la teoría del precio justo basado en los costes. El «precio justo» lo definía como el precio natural de cambio. Es decir, es aquél que logran acordar el comprador con el vendedor de manera libre y voluntaria. Un concepto que nunca entenderán los marxistas. Es sorprendente que ya Juan de Mariana aportase el germen de la imposibilidad del socialismo basado en que ningún gobierno, rey, líder o burócrata puede concentrar la enorme cantidad de información dispersa en la gente, y con la cual los ciudadanos toman decisiones coherentes y más eficientes que cualquier hombre de estado pudiera tomar.

Francamente, hasta ahora pude entender por qué algunas ideas de Adam Smith (a quien siempre lo he tenido en gran estima) sentaron las bases del nefasto marxismo. En efecto, su teoría del valor trabajo, que se contrapone a la teoría subjetiva del valor, fue tomada por Carlos Marx para desarrollar su teoría de la explotación del trabajo, y promover la destrucción del capitalismo. Por otro lado, la idea smithiana de que los precios «de equilibrio» se pueden determinar matemáticamente, supuso la eliminación del papel esencial que juegan los individuos en una economía de mercado y, por tanto, dejó en un segundo plano la importancia de los procesos de mercado. Sorprendente.

De esta manera, el profesor Alonso fue pasando revista a muchos pensadores que han contribuido a formar la verdadera ciencia económica –la escuela Austriaca de Economía– hasta llegar a los pensadores actuales como Jesús Huerta de Soto, Hans Herman Hoppe,

Israel Kirzner... Por supuesto, pasando por autores como Menger, Böhm Bawerk, Mises, Hayek, que aunque ya no viven nos han dejado un portento teórico de la mayor valía.

Por cierto, todos estos autores están proscritos de las universidades latinoamericanas (salvo en la Universidad Francisco Marroquín de Guatemala y en el ESEADE de Argentina). El clima intelectual de nuestros países tercermundistas sigue dominado por el pensamiento de izquierdas. Por tal razón, debemos reconocer y agradecer el esfuerzo que hace el Dr. Alonso, quien disfruta sus vacaciones impartiendo seminarios y discutiendo con marxistas y keynesianos, además de dirigir tesis doctorales de alumnos que alcanzan a comprender la importancia de estas nuevas ideas en México. Cuánto se beneficiarían nuestros países latinos si existiesen más teóricos de la Escuela Austriaca que sembraran sus ideas en nuestros pueblos pobres e ignorantes. Por eso mismo, le decimos al Dr. Alonso: «¡Ojalá seas cada vez más subversivo! y ¡Muchas gracias!»

SANTOS MERCADO REYES
*Profesor de la Universidad Autónoma
Metropolitana de México*

Asistencia de los Profesores
Ángel Rodríguez y Óscar Vara al
*VI International Symposium on Catholic
Social Thought
and Management Education*

En la primera semana del mes de octubre, los profesores Angel Rodríguez y Oscar Vara han participado en el sexto *International Symposium on Catholic Social Thought and Management Education*. El simposium, organizado por las universidades Pontificia Santo Tomás (Angelicum) de Roma y Saint Thomas de Minnesota, estaba dedicado al análisis de la relación entre la Responsabilidad Social Corporativa y la Doctrina Social de la Iglesia, y en él han participado los profesores Stefano Zamagni, Bruno Frei, Antonio Argandoña o Albino Barrera, entre otros. Los profesores Rodríguez y Vara presentaron un trabajo titulado «Forms of property and the doctrine of the Church».

Conferencias de los Profesores Jesús Huerta de Soto y Gabriel Calzada en Murcia

El pasado lunes 2 de octubre de 2006, los profesores Jesús Huerta de Soto y Gabriel Calzada disertaron sobre los principios liberales esenciales de la Escuela Austriaca en sendas conferencias que tuvieron lugar a lo largo de casi cuatro horas en el salón de actos de la Caja de Ahorros del Mediterráneo de la Ciudad de Murcia. Cada conferencia fue seguida de un animado coloquio, obteniendo la cobertura del canal de televisión de Libertad Digital.

El nacionalismo y el liberalismo, a debate en los Cursos de Verano de San Lorenzo de El Escorial

El pasado mes de julio se celebró el curso de verano de la Universidad Complutense *Una visión liberal de España y del mundo*, organizado por el grupo Recoletos y patrocinado por Telefónica y Endesa. Los profesores y especialistas invitados al mismo debatieron si es posible un nacionalismo liberal.

Aunque las opiniones fueron diversas, sí se alcanzó la conclusión de que liberalismo y nacionalismo pueden caminar juntos en ciertos aspectos. El profesor Jesús Huerta de Soto, Catedrático de Economía de la Universidad Rey Juan Carlos, sostuvo que el verdadero nacionalismo debe ser por fuerza liberal. «Un nacionalista intervencionista es el principal enemigo de su país», afirmó.

En palabras del profesor Huerta de Soto, «el nacionalismo produce desconfianza y confusión a los liberales de siempre, ya que a lo largo de la historia han generado distintos conflictos antiliberales. No obstante, también ha habido momentos históricos en que se han unido. Por ello, desde el punto de vista liberal, el nacionalismo como tal no es malo. El peligro llega cuando el nacionalismo se impregna de socialismo.»

Huerta de Soto criticó la tendencia que tienen muchos liberales a exigir la unidad de mercado como garantía liberal: «El capitalismo no exige un mercado común, lo único que pide es respeto a la propiedad privada y a la libertad de empresa» (Extraído del diario *Expansión* de 21 de julio de 2006.)

En su participación en el curso, el Catedrático de Economía de la Universidad Rey Juan Carlos dejó claro que su ideal es un *estado nacionalista liberal* (incluso de «ciudades estado»), modelo que suscribieron otros participantes del seminario –como el profesor Manuel Jesús González– a pesar de que reconocieron la dificultad de su aplicación real.

Creación del Instituto Madrileño de Estudios Avanzados (IMDEA)

El pasado mes de junio, la presidenta de la Comunidad de Madrid, Esperanza Aguirre, presentó en la «Casa de Correos» el Instituto Madrileño de Estudios Avanzados (IMDEA). El plan contempla la creación de diez institutos de ciencia e investigación que comenzarán a trabajar a partir de mayo de 2007. A esta decena de institutos –cuyos trabajos tratarán de dar respuesta a problemas sociales relacionados con el agua, la energía, las matemáticas aplicadas, los materiales, el software libre, la nanotecnología, la biomedicina, la información y la comunicación, y las ciencias sociales– se incorporarán doscientos investigadores de prestigio internacional y cuatrocientos jóvenes investigadores en los próximos cuatro años.

Para crear este entorno de excelencia científica, el Gobierno regional invertirá trescientos millones de euros, a los que sumarán otros doscientos más para la creación de seis grandes instalaciones científicas de dimensión y calidad internacionales.

El IMDEA se crea con el objetivo de fomentar las actividades de I+D+i y su transferencia a la sociedad, desarrollar ciencia y tecnología punteras propias y competitivas, tener equipos de investigadores y equipamientos de calidad internacional, captar y formar capital humano de excelencia e impulsar la colaboración interdisciplinar.

En el área de Ciencias Sociales, el Instituto Madrileño de Estudios Avanzados contará con la presencia y la guía de doce personalidades de reconocido prestigio internacional, que actuarán como patrones del Instituto dentro de las materias consideradas como prioritarias: 1. Democracia y estado de bienestar; 2. Población y sociedad; 3. Instituciones y desarrollo; 4. Empresa e innovación; 5. Regiones, naciones y organizaciones supranacionales; 6. Geografía y ecología; y 7. Educación y formación de capital humano.

Entre estos profesionales cuyos trabajos han tenido una gran repercusión y reconocimiento internacional, se halla la figura del director de Procesos de Mercado, Dr. Jesús Huerta de Soto, Catedrático de Economía de la Universidad Rey Juan Carlos. Otros economistas de enorme aceptación internacional son los profesores Timothy Kehoe (Universidad de Minnessota), Andreu Mas Colell (Universidad Pompeu Frabra), o John H. Coatsworth (Universidad de Harvard), que se suman a la lista de prestigiosos investigadores.

Edmund Phelps,
Premio Nobel de Economía de 2006
por sus análisis de corto y largo plazo
de la política macroeconómica

La Academia Real Sueca de las Ciencias decidió conceder el premio Nobel de Economía de 2006 a Edmund S. Phelps de la Universidad de Columbia (Nueva York), por su análisis de los efectos de exclusión intertemporales que surgen en política macroeconómica. El profesor Phelps ha mejorado nuestra comprensión de la relación que existe entre los efectos de corto y largo plazo de la política macroeconómica. Sus contribuciones han tenido un impacto importante en la investigación económica así como en la política.

Durante los años 50 y 60, muchos políticos y economistas creyeron que podía explotarse de manera sistemática (y estable) la relación inversa entre inflación y desempleo contenida en la conocida curva de Phillips.¹ Según esta construcción, el precio de una reducción de los niveles de desempleo era un aumento de la tasa de inflación.

A finales de la década de los sesenta, Phelps (1967)² desafió esta idea a través de un análisis microfundamentado de la determinación

¹ Utilizando datos estadísticos de la economía británica durante el período 1861-1957, Phillips (1958) había observado la existencia de una relación inversa entre la tasa de inflación y la tasa de desempleo. Además, sostenía que esta relación era estable a largo plazo, lo que suponía que las autoridades económicas podían reducir permanentemente el nivel de desempleo a través de un uso acertado de las políticas de demanda.

² Posteriormente lo haría Friedman en 1968. Igualmente, Lucas (1972 y 1973) y Sargent y Wallace (1975), entre otros autores, mostrarían que el uso de un mecanismo de formación de expectativas alternativo al considerado por los llamados autores *aceleracionistas*, implicaría que el gobierno no podría hacer un uso sistemático de la curva de Phillips para mantener la tasa de desempleo por debajo de su nivel *natural* (o de equilibrio a largo plazo). Este mecanismo sería las *expectativas racionales* neoclásicas.

de los precios y los salarios, teniendo en cuenta los problemas de información existentes en la economía. Los agentes individuales disponen de información incompleta sobre las acciones de los demás y, por tanto, deben basar sus decisiones en expectativas. El profesor de la Universidad de Columbia, formuló la hipótesis de la curva de Phillips *aumentada por las expectativas*, según la cual la inflación no sólo depende del desempleo sino también de las expectativas de inflación. Cuando deciden los precios y los salarios, las empresas y los trabajadores basan sus decisiones en estimaciones sobre la evolución futura de los precios y los salarios en general. De este modo, para una tasa de desempleo dada, un aumento esperado de la inflación en un 1% también elevará la inflación presente en un 1%.

Esta reformulación de la curva de Phillips tendría importantes consecuencias. Concretamente supone que, en el largo plazo, a medida que los individuos sean conscientes de la verdadera tasa de inflación, la economía retornará a su tasa natural de desempleo (o de equilibrio). Esto significa que no es posible alcanzar cualquier tasa de desempleo a largo plazo través del uso activo de políticas de demanda agregada.³ En su lugar, la tasa natural de desempleo estará determinada por el funcionamiento del mercado de trabajo (y no por la tasa de inflación).

Si el Banco Central trata de mantener la tasa de desempleo por debajo de su nivel natural –o de equilibrio a largo plazo– a través de políticas de demanda activas, el resultado no será una tasa de inflación elevada pero estable, sino un crecimiento acelerado de la misma.

La curva de Phillips aumentada por las expectativas clarifica lo que no está permitido a las políticas de demanda. En nuestros días, como consecuencia de esta construcción, los bancos centrales tratan de valorar rutinariamente cuál es la tasa de paro de equilibrio a largo plazo (o natural utilizando la terminología friedmaniana), y utilizan la política monetaria para estabilizar la tasa de desempleo efectiva en torno a su nivel natural, en lugar de intentar desviarse de ella.⁴

³ Por tanto, se deduce que la política de estabilización sólo puede moderar las fluctuaciones de los niveles de desempleo en el corto plazo.

⁴ Para una diferenciación de las teorías monetarias del ciclo económico véase Alonso, M.A. (2005), «Las teorías monetarias del ciclo en el marco de la literatura económica sobre ciclos económicos», *Libertas*, n.º 43, ESEADE (Argentina).

Igualmente, Phelps muestra como las posibilidades de la política de estabilización en el futuro dependen de las decisiones de política económica adoptadas hoy. Es decir, unos bajos niveles de inflación en el presente conducen a la expectativa de una baja inflación futura, lo que incrementa el margen de maniobra de las políticas de estabilización y permite que las autoridades monetarias consigan sus objetivos a un menor coste.

Otra cuestión en la que entran en juego los efectos de exclusión intertemporales, se refiere a *la tasa deseable de formación de capital en una economía*. ¿Qué proporción de recursos debe destinarse al consumo y a la inversión en el presente para incrementar el *stock* de capital y, de este modo, impulsar la producción y el consumo futuros? ¿Cómo debe distribuirse el consumo y el bienestar entre generaciones? En este punto, Phelps introduce el concepto de *regla de oro*, que se define como una caracterización de la tasa de ahorro que ofrece el mayor nivel de consumo posible a largo plazo.

Este autor plantea la posible existencia de conflictos distributivos intergeneracionales. Dicho de otra forma, al trasladar recursos desde el consumo presente hacia la inversión, la generación presente puede elevar el bienestar de las generaciones futuras.⁵ No obstante, puede haber situaciones en las que todas las generaciones obtengan ganancias (en términos de bienestar) como resultado de las variaciones en la tasa de ahorro. Según Phelps, la economía puede caracterizarse por lo que él denomina *ineficiencias dinámicas*. Así, por ejemplo, considera que el nivel de ahorro puede ser excesivo, de forma que todas las generaciones podrían beneficiarse de una reducción en el mismo. Igualmente, en el caso de las economías socialistas, el nivel de inversión puede ser tan alto que existan problemas para cubrir la depreciación del *stock* capital sin forzar una depresión excesiva del consumo.

Finalmente, el economista norteamericano también ha sido uno de los pioneros en el análisis de la importancia del *stock* de capital humano como elemento clave en la difusión de las nuevas tecnologías y, por tanto, como motor del crecimiento económico.

⁵ A costa de que los primeros reduzcan sus posibilidades de consumo (al menos en el presente).

Phelps y la teoría austriaca del ciclo económico

Aunque rechaza la visión austriaca del ciclo económico, Phelps responde a las críticas lanzadas por Robert Batemarco en el *Wall Street Journal* de 13 junio de 2003 («The Credit Expansions that Fool entrepreneurs») de la siguiente forma:

Debemos honrar a los teóricos austriacos como los primeros en contemplar las aventuras (empresas) capitalistas como viajes a lo desconocido, conducidas por las visiones de los empresarios y las corazonadas de los prestamistas y los inversores, y cargadas de consecuencias inesperadas.

(«The Internet Boom Took Up Slack», *Wall Street Journal*, 1 de julio de 2003.)

En respuesta a la crítica de Batemarco –fundamentada en la teoría austriaca del ciclo económico– sobre la explicación de Phelps de la crisis de finales de la década de los noventa, el economista de la Universidad de Columbia sostiene:

La cuestión difícil fue por qué el desempleo posterior al boom [de inversión de la década de los noventa], superior al 6%, había superado el nivel del 5% previo al boom.⁶ La escuela austriaca del período de entreguerras de Mises y Hayek (1928-1939) sostenía que los excesos de un boom causan esta sobrerreacción [de la tasa de desempleo]: un desplome es la cura. Observo debilidad en su argumento de la sobreinversión. Los austriacos contestan con un argumento revisado fundamentado en las ‘malas inversiones’. Dado que las inversiones inútiles desplazan a las buenas, el *boom* [de inversión] genera infra-inversión, de manera que ‘el stock de capital es incapaz de soportar los niveles superiores de empleo del período de expansión’, tal y como sostiene el Dr. Batemarco.

⁶ Nota del redactor: Recuérdese que la teoría del ciclo monetario (basada en la curva de Phillips aumentada por las expectativas) desarrollada inicialmente por Phelps (1967), y completada posteriormente por Friedman (1968), sostiene que tras un período en el que las expansiones monetarias no esperadas sitúan a la tasa de desempleo por debajo de su nivel natural (o de equilibrio a largo plazo), en el ajuste de medio y largo plazo la tasa de paro retorna a ese nivel (es decir, aquél en el que se situaba la economía antes de la sorpresa monetaria). Este enfoque, coincidente en grandes líneas con el modelo matemático ulteriormente desarrollado por Lucas (1972), les permite concluir que las expansiones monetarias no esperadas son neutrales a largo plazo pero no a corto plazo.

Pero ese modelo no encaja. Si ahora existiese escasez de capital, los tipos de interés reales a largo plazo estarían por encima de su nivel previo al boom, y no lo están. Si las inversiones sólidas de la vieja economía hubiesen sido desplazadas a finales de la década de los noventa, los tipos de interés netos de inflación se habrían elevado, y no lo hicieron...

Esto sería cierto a menos que alguien en la economía decidiese mantener los tipos de interés en unos niveles artificialmente bajos, como fue el caso de la Reserva Federal Americana, o hasta hace pocos meses del Banco Central Europeo.⁷

⁷ Por otro lado, los modelos de Phelps (1967), Friedman (1968) o Lucas (1972) muestran algunas limitaciones desde la perspectiva de la teoría macroeconómica del capital. Véase al respecto Alonso (2005).

Publicación en Francia del libro *Histoire du Libéralisme en Europe*

El pasado mes de octubre de 2006 Presses Universitaires de France (PUF) ha publicado, bajo la dirección de los profesores Philippe Nemo y Jean Petitot, un monumental volumen de 1427 páginas dedicado a estudiar la historia del liberalismo en la Europa Continental, y en el que presentan contribuciones treinta y siete prestigiosos catedráticos y pensadores de toda Europa, entre la los cuales se encuentra el Prof. Huerta de Soto, director de *Procesos de Mercado*.

La obra está destinada a tener gran repercusión en toda Europa y destaca, sobre todo, por los dos siguientes aspectos: primero, el reconocimiento, con carácter unánime, de que el origen del liberalismo y del pensamiento económico moderno tiene su origen en las contribuciones de nuestros escolásticos del Siglo de Oro español –reconocimiento especialmente meritorio teniendo en cuenta que por primera vez adquiere carta de naturaleza precisamente en un libro publicado y ampliamente difundido en Francia–. En este sentido conviene resaltar la inclusión, como capítulo 2 de la obra, de un trabajo del Prof. Huerta de Soto titulado «Juan de Mariana et la Seconde Scolastique espagnole».

En segundo lugar, destaca la importancia dada a la Escuela Austriaca de economía y a sus grandes pensadores liberales (especialmente Mises y Hayek), a la que se dedica nada menos que nueve capítulos en la parte quinta del libro.

Estamos seguros que este libro alcanzará una gran difusión e influencia en toda la Europa continental, no sólo por su amplitud y enfoque, sino porque además llega en un momento histórico en que es especialmente importante que los intelectuales europeos redescubran las raíces liberales de nuestra propia cultura y civilización.

*Sugerencias
de nuevas lecturas*

En su artículo titulado «An Improved Annual Chronology of U.S. Business Cycles since the 1790s» en *The Journal of Economic History*, Vol. 66, No.1, Joseph Davis muestra que la frecuencia y la duración de los ciclos económicos antes de la guerra civil americana, después de ésta, antes de la primera guerra mundial, entre las dos guerras mundiales, y después de la segunda guerra mundial, no muestran grandes diferencias. Con su tesis, Davis está en contra de la opinión sustentada por los estudios del NBER, de que después de la segunda guerra mundial las recesiones fueron menos frecuentes y los auges más duraderos. Para identificar los ciclos, Davis utiliza 43 componentes anuales de la manufactura y de la minería. Curiosamente, aplicando el «índice Davis», algunas de las recesiones del siglo XIX identificadas por el NBER desaparecen por completo y otras son más cortas. Así, Davis se plantea la pregunta: «*Did persistent deflationary episodes lead the nineteenth-century NBER chroniclers to mistake declines in nominal aggregates for falls in real output?*» Teniendo en cuenta la fobia a la deflación difundida entre muchos economistas, la respuesta es probablemente afirmativa. Dado que con la cronología de Davis el sector industrial americano ha permanecido algún período más en constante estado de recesión desde 1790 hasta nuestros días, este autor estudia e ilustra históricamente que las políticas de estabilización keynesianas y monetaristas han fracasado.

* * *

James Ronald Stanfield, en su artículo titulado «From OIE and NIE toward EE» en el *Journal of Economic Issues*, Vol. XL, No 2, hace un resumen de las «evolutionary economics» poniendo énfasis en la importancia de las instituciones y la dinámica de la ciencia económica. Se apoya también en el austriaco F.A. von Hayek para mostrar la importancia del cambio en la economía. Sin embargo, al final de su artículo Stanfield cae en la fatal arrogancia que avisara el propio Hayek, al exigir el diseño de instituciones y despreciar la aportación de Hayek de que las instituciones humanas más importantes no han sido ni pueden ser diseñadas por nadie de manera consciente.

* * *

En su nota titulada «A Note on Walter Block's Defending the Undefendable, The Case of the 'Heroic' Counterfeiter», Robert P. Murphy critica la tesis de Walter Block de que la falsificación del papel moneda del Estado está justificada. Block sostiene que falsificar lo falsificado es legítimo. Murphy responde que los billetes de hoy ya no son títulos falsificados, sino dinero propio. Por eso, actualmente los agentes económicos no tienen, como mantiene Block, propiedad robada en sus bolsillos, y falsificar dinero constituye un robo. Se podría añadir que falsificar títulos de propiedad nunca es legítimo.

* * *

El artículo «La economía virtual en Rusia» de Ángel Rodríguez García-Brazales, Jorge Turmo Arnal y Óscar Vara Crespo (*Cuadernos de Economía*, Vol. 29, 2006, p. 25-42), intenta contestar a la pregunta de por qué los resultados de la transición del socialismo real a una economía menos socialista fueron peores en Rusia que en otros países. Escriben los autores: «*Construir instituciones requiere mucho tiempo y, en el interin, los agentes se apoyan en estructuras intermedias necesarias y adecuadas para sobrevivir.*» Así, en Rusia hay dos tipos de empresas: las empresas de mercado y las empresas tipo Blat, que son viejos proveedores soviéticos que mantienen redes de pagos no-monetarios. El trueque o la búsqueda de mejores medios de intercambio no es en sí mismo un problema, pero sí es problemático que estas últimas empresas compitan con las de mercado teniendo el privilegio de poder retrasar sus pagos monetarios, ya que con la complicidad de las autoridades

locales no pagan a sus trabajadores ni sus impuestos puntualmente. Por eso, las empresas de mercado tienen una desventaja que impide un mejor desarrollo de la economía rusa, que se mantiene gracias a la exportación de materias primas.

* * *

En el artículo «Was the Federal Reserve Constrained by the Gold Standard During the Great Depression? Evidence from the 1932 Open Market Purchase Program» (publicado en *The Journal of Economic History*, Vol. 66, No. 1, marzo de 2006), Chang-Tai Hsieh y Christina D. Romer se preguntan por qué la expansión crediticia llevada a cabo por la Reserva Federal en 1932 no fue aún más expansiva. Existen dos hipótesis en la literatura al respecto. La primera, parte de Friedman y Schwartz y mantiene que fue la incompetencia de la Reserva Federal la causa de que no se produjese una mayor expansión. La otra, que defienden Barry Eichengreen, Peter Temin y Ben Bernanke, afirma que el patrón oro impedía una expansión crediticia mayor. Hsieh y Romer concluyen que la Reserva Federal terminó su expansión no porque temiera un ataque especulativo sobre el dólar y el patrón oro, sino porque pensó que ya había sido suficiente la expansión monetaria a través de la cual la Fed había llegado a duplicar sus tenencias de deuda del gobierno mediante operaciones de mercado abierto en tan solo veinte semanas. Esa política era conocida por la prensa sin provocar ataques especulativos sobre el dólar. Así, Hsieh y Romer citan los comentarios del *Commercial and Financial Chronicle* acerca de la política de la Reserva Federal: «*The purpose is perfectly plain, the country is to be flooded with credit and with currency on the idea that thus it will be possible to stop deflation.*» Desgraciadamente, los autores extraen conclusiones erróneas de sus estudios históricos y sugieren que una expansión de la Reserva Federal en 1931 en vez de en 1932, pudiera haber tenido éxito. Sin embargo, lo único que puede acelerar la recuperación es dejar de inyectar nuevo dinero, facilitando de este modo la liquidación de las malas inversiones cuanto antes, así como una mayor libertad económica, especialmente de precios para que pueda adaptarse más rápidamente la estructura productiva a las preferencias de los agentes económicos.

PHILIPP BAGUS
Procesos de Mercado

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