UNIVERSIDADE DE BRASÍLIA
FACULDADE DE ECONOMIA, ADMINISTRAÇÃO, CONTABILIDADE E GESTÃO DE POLÍTICAS PÚBLICAS
DEPARTAMENTO DE ECONOMIA
PROGRAMA DE PÓS-GRADUAÇÃO EM ECONOMIA

Hayek, Institutions, and Coordination: Essays in the History of Economic Thought and Methodology

Keanu Telles da Costa

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Dissertação apresentada ao Programa de Pós-Graduação em Economia, da Faculdade de Economia, Administração, Contabilidade e Gestão Pública, da Universidade de Brasília como requisito parcial para a obtenção do título de Mestre em Economia.

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Orientador: Prof. Dr. Mauro Boianovsky
Departamento de Economia, Universidade de Brasília

Prof. Dr. Rodrigo Peñaloza
Departamento de Economia, Universidade de Brasília

Prof. Dr. Fabio Barbieri
Departamento de Economia, Universidade de São Paulo – Ribeirão Preto

Brasília
2020

Agradecimentos

O motivo principal de minha preferência, e ao final de minha escolha, pelo programa de pós-graduação em Economia da Universidade de Brasília (UnB) se resume na oportunidade de poder partilhar, absorver e trabalhar com a principal referência latino-americana e uma das referências mundiais na área de história do pensamento econômico e metodologia, áreas de meu intenso e juvenil interesse desde os meus anos iniciais de formação. Desse modo, presto meus profundos agradecimentos ao meu orientador, Prof. Dr. Mauro Boianovsky, por tudo o que me proporcionou nos últimos dois anos de convivência. Mesmo com as naturais dificuldades e certa divergência de expectativas iniciais, o exemplo de dedicação, erudição, e scholarship que o Prof. Mauro sintetiza e expõe tão bem influenciou-me imensamente - é algo que sempre terei como referência em minha vida. O mero contato com um personagem de tamanho gradiente intelectual me trouxe enormes ganhos de troca nas mais diferentes esferas e sem dúvida contribuiu para o meu entusiasmo durante a realização da presente dissertação.

O segundo motivo que me levou a escolher a UnB foi a capacidade do departamento de oferecer um treinamento teórico sólido nos core courses e as várias possibilidades adjacentes de pesquisa em matérias eletivas. Nesse sentido, uma matéria eletiva que muito me marcou foi a do Prof. Dr. Bernardo Mueller, o qual agradeço por transmitir a sua profunda seriedade acadêmica em temas transversais da profissão. Em um nível mais pessoal, agradeço ao Prof. Bernardo a considerável ajuda que me deu ao longo de nosso relativo breve contato.

Agradeço aos dois membros da banca, Prof. Dr. Rodrigo Peñaloza e Prof. Dr. Fabio Barbieri, pelos comentários, sugestões e críticas. Em especial, agradeço os extensos e detalhados comentários do membro externo da banca, Prof. Fabio Barbieri, que muito contribuiu para uma melhor apreciação dos pontos frágeis dos argumentos levantados nos ensaios que formam a dissertação. Ademais, agradeço a indispensável assistência financeira na forma de bolsa de mestrado do Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), do Ministério de Ciência e Tecnologia.

Eu agradeço enormemente a Lucas Panico de Lara, a pessoa que talvez mais devo por tudo o que fez em minha causa em meu último ano de mestrado (2019). Se há algo pelo qual mereço algum e qualquer mínimo mérito nesse período, tal se deve a Lucas. Last but not least, eu não poderia deixar de mencionar a égide e suporte incomensuráveis que tive em meu ano final de graduação (2017) na Universidade Federal do Paraná (UFPR) e nos oito primeiros meses de mestrado (2018) de Ana Victoria Fantin Gonçalves, a que conheci e a que me amou. O que Ana me deu nos mais variados âmbitos de minha vida é muito mais do que eu poderia expressar nesse espaço – e muito mais do que talvez jamais poderei expressar em qualquer espaço. A levarei comigo até que a chama de minha vela se apague e o ator se despeça do palco. Obrigado.

CONTENTS

Coase, Hayek, and the Institutional Structure of Production and Exchange

ABSTRACT. The multi-dimensional intellectual influence of Friedrich A. Hayek and the shared context at the LSE in the 1930s on Ronald Coase's most famous theoretical contributions, especially concerning his general institutional emphasis, are investigated in detail in this essay. The same pattern of institutional reaction to the formal similarity proposition of general equilibrium theory is recognized in both authors. In particular, the economic calculation debate molded Coase's transaction cost institutional argument in "The Nature of the Firm" (1937) and his account on the so-called Coase Theorem in "The Problem of Social Cost" (1960), the latter especially by the influence of his friend Abba Lerner. Coase's 1937 article can only be put in context as a reaction to this debate. Such debate did not *cause* Coase to come with the transaction costs notion but it was the contextual environment in which he was dealing with and thus molded the argument and its implications. This contextual character of the transaction cost argument would play again a role in the welfare corollary theorem of the formal similarity proposition in "The Problem of Social Cost." With zero transaction costs and given equal institutional alternative coordination capacity, the formal similarity proposition appeared. With zero transaction costs and given tradable property rights endowments, the allocation pattern will always be conducted to the highly social valued optimum independent of the initial allocation of property rights, the Stiglerian Coase Theorem appears and no real externality problem exists in this world. When positive transaction costs are considered, different legal arrangements have a major impact on the resource allocation. Coase's institutional theory is a reaction to the institutional sterilization of neoclassical economics as exposed by the excessive focus on equilibrium states by general equilibrium theorists. This pattern can be identified both in the general economic coordination context (as exposed in the economic calculation debate) or in the Pigouvian tradition in welfare economics.

Key-words. Ronald Coase, Friedrich A. Hayek, transaction cost, Coase theorem, institutions.

JEL. B20, B31, I30.

I. PROLOGUE: THE YEARS OF HIGH CONTROVERSY

The year is 1937. In a relatively short temporal spectrum and small spatial locus, many simultaneous challenging seminal ideas were arising at the center of economic theory, culminating in the publishing of Friedrich A. Hayek's "Economics and Knowledge" (1937), Ronald Coase's "The Nature of the Firm" (1937), John Maynard Keynes' response to his critics in "The General Theory of Employment" (1937), and one could also argue the lesser-known article by Terence W. Hutchison, "Expectation and Rational Conduct" (1937b). The common theme in these four articles of so distinctive authors was a profound critique of economic theory of the 1930s and its postulates. It was the plea for the analytical internalization of the domains of dynamics, uncertainty, and ignorance, that is, the "dark forces of time and ignorance which envelop our future" (Keynes, 1936, p. 161). The locus was, at the time, the center of the economic profession, England, especially in the rivalry of the London School of Economics (LSE) and the University of Cambridge.

Hayek was invited by Lionel Robbins to give four advanced lectures in economic theory in the lent term of 1930-1 at the LSE. After a quite striking entrance in the English academic world and a refusal of Jacob Viner to take the vacant Tooke Chair in February 1931, soon after the lectures given by Hayek, Hayek was first invited, in April, to hold a visiting professorship position using the Tooke Chair at LSE. After two terms, in 1932, it was offered to him by William Beveridge the permanent Tooke Chair in Economic Science and Statistics. Hayek, with the revision of Robbins, soon collected his four lectures in his famous and controversial *Prices and Production* (1931). Hayek's entrance in the English scene was marked by two main controversies that completely influenced the intellectual environment at LSE. The first was the subject of his four lectures, the business cycle. Hayek's business cycle theory started with the Wicksellian distinction between savings and investment and the concept of natural and monetary (or market) rates of interest. Within the Wicksellian roots, Hayek followed the lines of his mentor, Ludwig von Mises, by emphasizing the distributional nature of monetary expansion cumulative processes (the Cantillon effect) and the real effects of this redistribution of resources on the heterogeneous structure of capital during the economic cycle.

Following the Austrian theory of capital tradition, the distinct element in Hayek's theory, the structure of capital is seen as subjective and heterogeneous capital integrated within a broader complementary coordinated macro-structure of value imputation. Such a complex structure is a

consequence of the sustained level of productive specialization in an advanced industrial economy. Therefore, the effects of some expansion or contraction of this capital structure are highly costly. Capital is not a homogenous mass that can be molded, moved, and reshaped without any economic cost. Capital is specific, subjective, and heterogeneous goods that are inserted in a determined order and place in the production structure. These capital goods are not totally and only determined by its objective physical properties but by the subjective and creative imaginary perception of the entrepreneur. Implicit in this view, of course, is the cost of changing, repositioning, and modifying capital in an organic complementary structure analogous with the transaction costs in the factors of production market. Also implicit is the rate of interest (i.e., the time preference of consumers) coordination function in the capital structure. Naturally, a particular analogous to the price mechanism coordination role in Coase's theory. The second great and influential controversy in which Hayek was actively involved was the socialist economic calculation debate, analyzed in the next section.

Coase went to LSE in 1929 to complete the last year of his Bachelor of Commerce. Although his initial predisposition was a career in law, his exposition and intellectual "revelation" to Arnold Plant's seminar in 1931 changed entirely his plans. Plant had been a student of Edwin Cannan and was brought to LSE from South Africa one year earlier, in 1930, by his contemporary, the recently hired and young head of the economics department, Lionel Robbins. Cannan had resigned his position in 1927 and his substitute, Allyn Young, suddenly died in 1929. Thus the young Robbins was called. Plant had a tremendous influence on Coase's research interests and in his personal academic life. Plant was a common sense and institutional applied economist with an interest in the industrial organization and suspicion with more abstract high theory. Soon after Coase's final examinations, with Plant's support, he was awarded a Sir Ernest Cassel Travel Scholarship to the United States for the academic year of 1931-2.

In the period ready before his final examinations, Coase (1988a, pp. 37-8) was particularly interested in costs and the construction of cost curves. However, "the subject which dominated the discussion of economics at LSE in the last few months the final examinations was far from my interest. It was the structure of production - not the organizational structure of production that was going to absorb me but the Austrian capital structure of production, both teachers and students at LSE having been captivated by Hayek's public lectures given at LSE in February 1931." As Coase (1982b, pp. 8-9) recalled, Hayek's intellectual impact was very significant, including on his own

thinking. It could be mentioned especially, at the first moment, the notion of change cost in the capital structure, i.e., the cost of market (ex)change.

> "They [the lectures] were undoubtedly the most successful set of public lectures given at LSE during my time there, even surpassing the brilliant lectures Viner gave on international trade theory. The audience, notwithstanding the difficulties of understanding Hayek, was enthralled. What was said seemed to us of great importance and made us see things of which we had previously been unaware. After hearing these lectures, we knew why there was a depression. Most students of economics at LSE and many members of the staff became Hayekians or, at any rate, incorporated elements of Hayek's approach in their own thinking. With the arrogance of youth, I myself expounded the Hayekian analysis to the faculty and students at Columbia University in the fall of 1931."

Coase spent most of his time in the U.S. travel making primary source empirical research in vertical integration. The embryonic insight of "The Nature of the Firm" was, as it is well known, developed by Coase in this travel. Soon after his return to London, in Summer 1932, Coase started to conceptualize the notion of transaction costs. In Fall 1932, with Plant's recommendation, Coase was hired by Dundee School of Economics and Commerce. Coase presented for the first time the systematized ideas contained in his 1937 paper in the first lecture of his course on organization of the business unit at Dundee. He drafted the first version of "The Nature of the Firm" in 1934 and would return to LSE in 1935, after a brief passage at the University of Liverpool in 1934-5 as an assistant lecturer. Even when Coase (1982a, p. 31) was not at the LSE between 1931 and 1935, his "association with LSE never ceased." Coase's correspondence with his "friend and fellow student, Ronald Fowler, who had received an appointment in the Commerce Department," had kept him "informed of the developments" at the school. Moreover, during his period at Dundee and Liverpool, Coase spent his vacations at LSE collaborating in his study of the pig cycle with Fowler on what would culminate in the first elaboration of the rational expectations notion (Coase and Fowler, 1935, 1937, 1940).

By his turn, Hutchison studied at Cambridge and, after completing in 1934 his Bachelor's degree in Economics, spent one year at LSE before getting a position in Germany in 1935. Keynes, of course, was the most prominent figure at Cambridge. With the exception of Keynes, the three men

- Hayek, Coase, and Hutchison - shared during some time the physical spatial and temporal locus at LSE. They also shared the same intellectual context that served as the background of each individual particular contribution. The 1930s were years of multiple controversies. One great example is the Hayek and Keynes controversy in 1931 on the foundations of macroeconomic theory, very soon followed by a debate between Hayek and Piero Sraffa on the Wicksellian legacy and significance in 1932. Hayek's ideas had a great impact on the first years of the decade and this is also visible in Coase and Hutchison.

As Coase (1982a, p. 32) recalled, the LSE in the 1930s lacked doctrinal commitment resulting in a very receptive and open intellectual environment to new theoretical ideas. Hayek and John Hicks were perhaps the most notable examples, with the first introducing the Continental Austrian and Wicksellian thought and the last reaffirming the Continental general equilibrium perspective of Lausanne. Hayek, particularly, was a gravitational reference figure around which the various controversies occurred. According to Coase (ibid.), "Hayek nonetheless exerted considerable influence through his profound knowledge of economic theory, the example of his own high standards of scholarship, and the power of his ideas." One consequence is that, in the controversial disputes within the walls of the school, the modern post-1930 economic theory took its shape in the context of this intellectual atmosphere. This is recognized by Coase (1982a, p. 34), for whom "[w]hat was done by the economists at LSE, principally by Robbins, Hayek, and Hicks, was to play a leading role in what we can now see was an international movement which brought into being, for good or ill, the modern age in economics."

Before the appearance of Keynes' *General Theory* (1936), the most influential theme of the time at LSE was the socialist economic calculation debate - along with the Austrian business cycle discussed above. The socialist economic calculation debate is the background in which the 1937 contributions of Coase, Hayek, and Hutchison can be better reconstructed. Although this is widely known in Hayek's case, the same cannot be said for Coase or even for Hutchison.[1] This is just one of the many not sufficiently explored connections between Hayek and Coase. In an interview with James M. Buchanan, this influence on Coase is hinted and admitted by Hayek (1983, pp. 247-8) but is not developed in his remarks. Buchanan asked, "[a]mong prominent thinkers, who are the men you think you have influenced most?" Hayek answers saying that he could not think of anyone

[1] For an investigation on the intellectual relationship of Hayek and Hutchison, with also the historiographical importance of the socialist economic calculation debate, see Telles (2019).

in that category, especially of the older generation at the 1930s. But he found that much of the younger generation at the 1930s seem to be greatly influenced by his ideas. Hayek especially mentions George L. S. Shackle. Buchanan replied: “Oh, I don’t think there is any question of the group at [London School of Economics]: Shackle and Ronald Coase. Surely his ideas on cost were --.” Hayek agrees but does not detail his comment: “Yes, Ronald Coase probably, too.”

In this essay, we attempt to provide a historiographical detailed discussion of the influence of Hayek on Coase’s ideas. The multi-dimensional intellectual influence of Hayek and the shared context of the LSE in the 1930s on Coase’s most famous theoretical contributions, especially concerning his general institutional emphasis, are investigated in the following sections. The same pattern of institutional reaction to the formal similarity proposition of general equilibrium theory is recognized in both authors. In particular, the economic calculation debate molded Coase’s transaction cost institutional argument in “The Nature of the Firm” (1937) and his account on the so-called Coase Theorem in “The Problem of Social Cost” (1960), the latter especially by the influence of his friend Abba Lerner. Hayek’s agenda of the institutional mechanisms of creation, transmission, and retention of knowledge in the sphere of ignorant agents and knowledge-based economic coordination is very influential on and traced parallels with Coase’s long-life institutional transactions cost project. The contextual character of the transaction cost argument would again play a role in the welfare corollary theorem of the formal similarity proposition in the Stiglerian Coase Theorem.

II. HAYEK, SOCIALIST ECONOMIC CALCULATION DEBATE, AND “THE NATURE OF THE FIRM”

The English-speaking phase of the socialist economic calculation debate was initiated by Fred Taylor’s 1928 American Economic Association presidential address in which he restated the formal similarity of the maximization marginal preconditions to the efficient allocation of resources in an economy, be that economy a market decentralized or central planned. Taylor suggested the implicit practical mathematical solution to the same set of simultaneous equations that describes any economy. Other economists - as Henry D. Dickinson, Maurice Dobb, Abba P. Lerner (1934), Evan F. M. Durbin, and Oskar Lange (1937, 1938) - developed in more rigorous and elegant general equilibrium verbal theoretical frameworks the normative consequences and

practical feasibility of the theoretical similarity conclusion by the equilibrium theory. In this context, Hayek reacts to this incipient English literature in *Collectivist Economic Planning* (1935), where he recaptures the German-speaking phase of the debate in the 1920s soon after the publication of the inaugural piece by Ludwig von Mises (1920). Hayek's main point was that the English speaking participants of the debate were neglecting the insights and certain common knowledge of the Continent, especially the anticipations and advancements of Friedrich von Wieser, Vilfredo Pareto, and Enrico Barone along with the German debate by N. G. Pierson, Mises, and Georg Halm (e.g., Hayek, [1994] 2008, pp. 79-80). In fact, one year earlier and drawing from Mises (1920, 1922), Robbins already indirectly reacted to this growing literature in chapter VII of his *The Great Depression* (1934a, pp. 148-56). Although, as the title suggests, the book was mainly an application of the Austrian Business Cycle Theory to explain the depression. This book is a symptomatic example of the Austrian influence in general, and Hayek's influence in particular, in the early 1930s. It joints the two grand controversies mentioned above, the Austrian cycle theory and the economic calculation debate.

As usual in the economic literature at the time embedded in methodological disputes, in particular for our analysis in the case of Hayek and Hutchison, Coase started "The Nature of the Firm" on some methodological ground, on the nature and significance of the foundations and assumptions of economic theory. These were not sufficiently clearly stated and explicit. Indeed, this was a common feature in the 1930s when the not so clear statements of assumptions, tautologies, and different conflicting definitions generated needless controversies. In this sense, it was needed that the concept of the firm had a clear definition and that this definition could be contrasted with what is understood as the real-world firm, i.e., that the definition could be realistic.

Before giving such a definition, Coase exposes a problem derived from the socialist economic calculation debate. Coase illustrated this problem by the description given by Sir Arthur Salter on the economic system as being coordinated by the relative price system where - now referring to Hayek's inaugural lecture at LSE, "The Trend of Economic Thinking" (1933) - society became not a top-down organization but an interdependent cooperative organism. The economic system "work itself" in the sense that all the allocative coordination of scarce resources is strictly dependent on the price mechanism. This description by Salter is quoted "with approval" by Plant in his own inaugural lecture at LSE, "Trends in Business Administration" (1932). Indeed, Coase (1937, p. 387) argued, "it is often considered to be an objection to economic planning that it merely

tries to do what is already done by the price mechanism." Reverberating in some degree the response of the so-called anti-planners to the critique of anarchy of production in the market economy, Coase added that "[t]his does not mean that there is no planning by individuals. These exercise foresight and choose between alternatives. This is necessary so if there is to be order in the system."[2]

However, the price mechanism coordination hegemony stated by economic theory is not sustained by real-world empirical facts. In a firm organization, "[i]f a workman moves from department Y to department X, he does not go because of a change in relative prices, but because he is ordered to do so" (p. 388). The firm with the entrepreneur coordinator leadership, the figure inserted in the competitive system that "take the place of the price mechanism in the direction of resources," eliminate all market transactions within the internal production. This is the appropriate definition and the distinguishing mark of the firm. Coase noted that the existence of this kind of supersession of price mechanism in the realm of the firm is a strong objection to those who are against economic planning on the ground that the problem is solved by the price system. Thus these authors (i.e., the anti-planners) "can be answered by pointing out that there is planning within our economic system which is quite different from the individual planning mentioned above and which is akin to what is normally called economic planning" (pp. 387-8).

In this passage, Coase seems to miss the main institutional point of the economic calculation problem that, even in the supersession of exchanges via prices within the firm, the firm and the entrepreneur coordinator have all the knowledge features of relative prices and costs given by the external relative price system, assuming a market for each of the inputs and products. Therefore, the economic calculation argument is perfectly compatible with this kind of planning within firms. The argument by Hayek ([1935] 1948, 1940) and Robbins against planning was not about to plan or not in an economy, but what kind of planning coordination, i.e., total central planning or decentralized planning by the individuals (that can be formed in organizations, firms, and associations within the organism of market mechanism). Probably Coase had been exposed to this argument by Hayek and Robbins but apparently he only understands decentralized planning in the

[2] Compare, for example, with all the Hutchison's writings in the period, "A Note on Tautologies and the Nature of Economic Theory" (1935), "A Note on Uncertainty and Planning" (1937a), and "Expectation and Rational Conduct" (1937b) - later collected and expanded in his famous book, *The Significance of Basic Postulates in Economic Theory* (1938).

individual strictly and restricted atomistic sense where, in consequence, no space for firms is available.

The young Coase understands the dichotomy of exchanges occurred by hierarchies such as the firm entrepreneur coordinator and exchanges within the price mechanism as *equivalent* to the central planning and decentralized planning debate. It seems reasonable to say that Coase did not saw in 1937 any difference in *kind* between the two mentioned planning types. That is, between exchanges made in hierarchical organizations such as the firm inserted in an institutional architecture of decentralization of knowledge and central planning within an institutional architecture of total command. It may be no surprise that for Coase the elders at LSE, especially Plant, Hayek, and Robbins, *prima facie* did not give much attention to his paper and to the transaction costs insight.

Nevertheless, soon after this statement, Coase (1937, p. 389) concedes that the firm exists, as Robbins (1932, p. 71) pointed out, "related to an outside network of relative prices and costs"- adding that it is important to discover the nature of this link between the inside firm and the outside market exchanges. Coase also quotes a passage by Dobb in which he describes the organic character of the "single unit cell in a larger organism, mainly unconscious of the wider role he fills." In a footnote on this quote, Coase (p. 389, f.n. 3) explicitly equates the suppression of market exchanges via the price system with such transactions been internally conducted by a new firm organized by an entrepreneur coordinator or by the State, suggesting that the nature of the planning is the same in both cases. "It is easy to see when the State takes over the direction of an industry that, in planning it, it is doing something which was previously done by the price mechanism. What is usually not realised is that any business man in organising the relations between his departments is also doing something which could be organised through the price mechanism. There is therefore point in Mr. Durbin's [1936] answer to those who emphasise the problems involved in economic planning that the same problems have to be solved by business men in the competitive system." Indeed, the proposition of formal similarity of the maximization problem seems like the same in both cases in a general equilibrium state perspective, but the nature of the institutional framework in which each system provided to in some way create a positive feedback emerging tendency to equilibrium or economic order in general is radically different.

When the analysis is focused on a specific industry in which the markets for the various inputs and the output product is preserved, i.e., the relative price formation of inputs and opportunity

costs are able to be formed in the outside market, the nature of the planning inside a firm directed by an entrepreneur or by the State *is* the same. Hayek and Robbins would agree with that since this is not the problem in analysis and in dispute in the economic calculation controversy. The problem is with total or quasi-total central planning, especially with the entirely suppression of capital goods markets and the incapacity of rational economic calculation formation in producers expectations. Producers expectations refers to the continued process of adequacy of the higher order goods as a means of production to the lower order goods and thus of consumers' demand. In a multi-stage, complex capital goods economy, these expectations are imputed from the evaluations by the lower order goods which are in turn imputed from consumers' demand. Mises' initial argument is about how a centrally planned economy without organized higher order goods market could realize the rational economic calculation made by the process of profit and loss accounting synthesized in monetary exchange value terms, the third function of economic calculation. Without a capital goods market, producers evaluations and imputations are trapped in subjective value terms, there is no mechanism to synthesize in an objective measurable common denominator the rational economic calculation. That is, without this market, no price formation of capital goods can be formed, without capital goods prices there is no way to check producers expectations in an objective rational form as is made by price and loss accounting.

The absence of a capital goods market would result in all economic decision on production be made without market price information about the real value of inputs by consumers because the process of imputation and economic calculation could not be done. Thus, Coase's analysis is problematic when it equates the type of planning such that market socialists were advocating with the firm creation. What is interesting is that Coase delimits an important qualitative difference in the case where a new firm emerges in the market spontaneously way and contrast this when the State takes the direction of an industry. The difference "is that economic planning is imposed on industry while firms arise voluntarily because they represent a more efficient method of organising production. In a competitive system, there is a 'optimum' amount of planning!" (ibid.). In the end, Coase somehow perceives and recognizes that there is a drastic institutional divergence between a firm and its island of planning surrounded by a sea of institutional creation, transmission, storage of knowledge and an isolated island of planning. That is, *the* total imposed generalized planning of economic sectors.

Hence, the existence of internal organization to solve the resource allocative problem by the firm is a consequence of the cost of using the market coordination device been superior the cost of undertaking an internal arrangement of the inputs by the entrepreneur coordinator. The main item of marketing costs are perhaps the costs of discovering what the relevant prices are. The inevitable incompleteness of long run contracts is also a fundamental factor for the existence of the firm and for vertical integration. The upper bound of the firm is defined, first, by the "decreasing returns to the entrepreneurial function, that is, the costs of organising additional transactions within the firm may rise." Second, with more additional market transactions being organized by the entrepreneur, the coordinator suffers from declining marginal gains, he is more inclined to make mistakes on the optimum allocation of factors. These two reasons are synthesized by the diminishing returns to management. Third, the supply function of one or more factor may be more price-elastic to large firms, the supply price may be greater to large firms. Thus, "a firm will tend to expand until the costs of organising an extra transaction within the firm become equal to the costs of carrying out the same transaction by means of an exchange on the open market or the costs of organising in another firm" (Coase, 1937, p. 395).

An interesting example of the intrinsic connection of Coasean argument for the existence and size of the firm with the economic calculation debate is that Murray N. Rothbard (1974, p. 75) adopted the original economic calculation argument and applied it to the upper bound of the firm. "This means that, just as Socialist central planning could not calculate economically, no One Big Firm could own or control the entire economy. The Mises analysis applies to any situation where a market for capital goods has disappeared in a complex industrial economy, whether because of socialism or because of a giant merger into One Big Firm or One Big Cartel." Therefore, during the process of formation of the One Big Firm in the incorporation of other firms in vertical and horizontal integration, the capital goods market would be gradually eliminated for all the direct and indirect inputs. With no capital goods markets, the connection between the firm internal coordination with the set of knowledge derived from the price mechanism coordination (such as consumers values external to the big firm) disappears. In this situation, the nature of the planning within the firm became equal in economic calculation terms of a centrally planned society. Hence, in the process of enlargement, the One Big Firm would necessarily have economic calculation problems. The economic calculation problem imposes an upper bound limit to the extent of the firm (cf. Klein, 1996).

Rothbard (1974, p. 76) explicitly acknowledged that this analysis "also serves to extend the notable analysis of Professor Coase on the market determinants of the size of the firm, or of the relative extent of corporate planning within the firm against the use of exchange and the price mechanism." Along with the diminishing returns (benefits) of internal organization and the increasing costs of management, the persistent and increasing costs of internal organization that necessarily closed down capital goods markets become prohibitive in a certain point because of the economic calculation problem. Economic calculation costs are included in the equimarginal decision formula of the marginal benefits and costs for internalization of one more transaction into the firm. Rothbard agrees with Coase's proposition that the difference in planning in a decentralized economy is that there is an optimum degree of *business* planning, adding that if his view is correct then the market economy also had a safeguard mechanism that hampers the elimination of complete capital goods market which is the *sine qua non* condition for the economic calculation process.

Business planning exercised by the firm is dependent on external markets (i.e., external knowledge) to the imputation of value of consumers' demand and check of producers expectations. A convergence position is noted with the neoclassical response on the nature of firms by Harold Demsetz (2011), which regarded the firm as a necessary product of the division of labor in the market voluntary cooperation and productive specialization. According to Demsetz, neoclassical theory does not comprehend firms as alternative allocation mechanisms to markets because the market (understood as the price coordination system) does not directly produce goods, only firms (individuals or group of individuals) inserted in the market process produce goods. The price system produce goods only in the indirect way by serving as an intermediate in the exchange process by the real producer, i.e., other firms. The market itself as a coordination device does not have its own production black-box, only firms do. The market is not an alternative producer of goods, "it does not marshal resources for the production of goods. It offers information as to do which goods can be secured from which firms." Thus, for Demsetz (2011, pp. 9-10), the suppression of the price mechanism by the entrepreneur coordinator as the central manager director of resources, capital and labor, "is not a requirement for neoclassical theory's firm to exist. Specialization of production for sale to others is the requirement."

If the Coasean dichotomy of the coordination mechanisms is denied, therefore the proposition that in a zero transaction cost environment firms do not exist is also denied. The neoclassical firm

can exist even in a zero transaction cost world, for such it is sufficient that the firms' productive specialization only be more productive than in self-sufficiency autarchic organization. The consequence is that the firm is seen as a complementary phenomenon within the price system institutions, a reduction of transaction costs increases the production from firms that are exchanged in the market and diminishes the production from self-sufficient households. The relative importance of firms in an economy increases when the transaction costs are reduced. The firm does not substitute the market coordination but, instead, the firm is part of the organism of productive specialization and division of labor in a decentralized system. The firm is not an island of *central* planning as Coase seems to suggest in 1937, it cannot be so because the firm is *part* of the market discovery process. Demsetz understands neoclassical economics as a tradition based on the effort to understand the coordination problem in a decentralized and productive specialized economic system. For such problem, the presumption of the free price system is acceptable and "serve this task well." This assumption is only an instrumental one used to increase the latent coordination problem because it maximizes the degree of decentralization. "Neoclassical theory's firms and price system serve its purposes well, but Coase's theory of the firm serves well his interests in institutional structure and methods. There is room for both, but not in coping with the same task" (p. 11).

The complementarity view between market and hierarchies (especially the firm) is also shared by Rothbard ([1962] 1970, pp. 547-50, 585), according to the "firm can accurately estimate the profit or loss it makes in a stage of its enterprise only by finding out the implicit price of its internal product, and it can do this only if an external market price for that product is established elsewhere." There is, as Bylund (2014, pp. 321-2) correctly noted, a crucial difference in Coase's view. Coase sees the firm only from the perspective of substituting and internalizing transactions that would be made external to the firm by the price mechanism only because the cost of coordinating the transaction inside the firm is cheaper than to coordinate from the market. Coase "assumes prices are given, yet not necessarily known and therefore costly." Coase in 1937 failed to see the extent of the nature of the economic calculation and knowledge problems. In this sense, the young Coase in 1937 is ambiguous with the market socialism literature proposals and problems, such as setting up the pricing with the marginal costs rules.

Coase while writing his ideas in "The Nature of the Firm" does not fully perceived the epistemic institutional problems within the economic calculation debate, especially concerning the

assumptions of knowledge. For Coase, with his focus on the industrial organization view of the problem, prices (i.e., knowledge) are given, The problem is with the cost of using such price (knowledge) mechanism. Implicit in Coase's view is that all the alternative coordination arrangements have the same capacity of producing the relevant knowledge to the coordination of the individual plans. This forcibly equates the alternative institutional differences of knowledge coordination because it is taking the relevant knowledge in the analysis as given. This point marks an important qualitative distinction with Hayek and Hutchison, both have an epistemic postulation of fallible knowledge.

In the late 1930s, Coase already intuitively sensed that the practical feasibility of market socialism proposals were somewhat fragile. First, Coase (1938) advanced the notion of a LSE tradition on opportunity cost in a series of articles to *The Accountant*, discussed in more detail in the next section. Second, in the 1940s Coase (1946) opposed the Hotelling-Lerner marginal cost pricing in declining average (and marginal) costs contexts on his account of the marginal cost debate. The first is important because the Lange-Lerner criterion of marginal cost pricing assumed that cost is actually given and objective measurable. This is only analytically true in the hypothetical state of stationary equilibrium but it missed the subjective disequilibrium driven processes of opportunity cost in economic decisions. In any account for the passage of time in the analysis, the marginal cost pricing rule did not give to the planner clear and sensible route guidance to organizing the production and the relative price system. As Hayek (1935, pp. 226-7) pointed out,

> "Does the instruction that they should aim at prices which will just cover their (marginal) cost really provide a clear criterion of action? It is in this connection that it almost seems as if perhaps excessive preoccupation with the conditions of a hypothetical state of stationary equilibrium has led modern economists in general, and especially those who propose this particular solution, to attribute to the notion of costs in general a much greater precision and definiteness than can be attached to any cost phenomenon in real life. Under conditions of widespread competition the term cost of production has indeed a very precise meaning. But as soon as we leave the realm of extensive competition and a stationary state and consider a world where most of the existing means of production are the product of particular processes that will probably never be repeated; where, in consequence of incessant change, the value of most of the more durable instruments of production has little

> or no connection with the costs which have been incurred in their production but depends only on the services which they are expected to render in the future, the question of what exactly are the costs of production of a given product is a question of extreme difficulty which cannot be answered definitely on the basis of any processes which take place inside the individual firm or industry."[3]

With the notion of opportunity costs, the notion of economic cost is changed from the objective monetary accounting of the marginal pricing to the subjective value estimations of the best action not taken, i.e., the alternative (and second best) path of choice sacrificed in the process of judgment and choice in an uncertainty environment (Thirlby, 1946a, 1946b, 1952, 1960; Wiseman, 1953, 1956). Since the actual alternative path of choice is never really taken because of the time element, the opportunity cost can never be really objectively measured by external observers. Cost valuation is only subjectively determined. Coase shared this view, saying that "[o]pportunity cost is certainly a subjective concept. You choose something and let go all other possibilities." Although the cost is subjective, it is somehow (subjectively) observable, "[o]therwise, it would not be so useful a concept." But an external observer, as a central planner, cannot objectively and "directly measure cost, either. The highest opportunity that you let go when you make a choice will never materialize. In that sense, it is not knowable" (Wang, 2014, p. 116).

In a somewhat puzzling way, as were in general his position on the economic calculation controversy, Hutchison (1973b, p. 639) credited the opportunity cost view as implying necessarily and tacitly the perfect knowledge (foresight) postulate. This is the exact same critique of Hayek about the Lange-Lerner marginal cost pricing, i.e., that Lange and Lerner treated the marginal cost as an objective and measurable magnitude. Something only compatible in the state of general equilibrium with all the perfect relevant and objective knowledge given to all individuals. Hutchison's article is interesting because his arguments against what he called the "anti-planners" are strikingly similar to Hayek's knowledge argument against the planners. "The doctrine of Opportunity Cost is often expressed in a way which seems tacitly to postulate perfect foresight." Thus, after quoting Hayek's (1935, p. 6) definition of opportunity cost - "[c]ost here, as any where

[3] Coase (1946, p. 170, f.n. 6) referred to the relevant passage by Hayek (1935, pp. 226-31) in his account on the marginal cost controversy. Hayek (p. 228) also refers to Fowler's book, *The Depreciation of Capital, Analytically Considered* (1934), as supporting the view of the impossibility of marginal pricing in public utilities. This is the position that Coase would revive in his article on the marginal cost controversy and his multi-part tariff proposal.

means nothing but advantages to be derived from the use of given resources in other directions" - Hutchison then asks that "since the resources are never used in the other directions how, failing perfect foresight, can one know precisely and for certain what they would have yielded?" The answer, for Hayek, I suspect that would be: "Precisely, they cannot."

After providing the reason why do firms and markets exist, Coase mentions the classification of one of the assumptions of equilibrium static theory by Nicholas Kaldor (1934) as being that all relevant prices are known to all individuals, contrasting this to be an unrealistic perspective. This has a more profound critique. Namely, that is an implicit assumption by neoclassical equilibrium theory of perfect relevant objective knowledge given to all agents. This theme can be understood as *the* main theme of all four 1937 articles mentioned. The general equilibrium theory, that market socialists used to state the theoretical formal similarity of the different institutional forms of organizing production and to defend the *practical* feasibility of an alternative system that would mimic the functions of the price mechanism that is embedded in a particular proper institutional framework, has as a necessary hypothesis an unrealistic fictional assumption, perfect objective knowledge.

The concurring alternative theories for the existence of firms is seen as unsatisfactory by Coase. One of these views, propagated by Abbott Payson Usher and expanded by Dobb, is that the firm is a necessary consequence of the increasing complexity of the division of labor where the need of an integrative force is given by the firm. Coase (1937, p. 398) rejects this view, he suggested that the need of an integrative force in an economic differentiate system is already given by the price mechanism, adding that "[i]t is perhaps the main achievement of economic science that it has shown that there is no reason to suppose that specialisation must lead to chaos." The true economic theoretical problem is not that there is an integrative force in specialization and division of labor, but what integrative force should prevail in each specific particular context, i.e., the integrating force of the firm lead by the entrepreneur coordinator or the impersonal and decentralized integrating force of the price system. The most interesting and accepted alternative explanation, however, is the classical one given by Frank Knight in *Risk, Uncertainty, and Profit* (1921).

Coase gives great detail to the discussion of Knight's views. Knight was a great influence on Coase's thinking and at the LSE in general in the 1930s. Especially, as we will see, in both Hayek and Hutchison important 1937 papers. According to Coase (1993, p. 239), mainly as a result of Robbins' teaching Knight "was regarded at London School of Economics as one of the greatest of

economists" with his book being "closely studied by all serious students of economics there." In some sense, it was Knight that grew the early embryonic ideas and anticipated directly some aspects of Hayek, Coase, and Hutchison contributions - and also indirectly Keynes' ideas on uncertainty and time. In his trip to the United States in 1931-2, Coase visited some universities including the University of Chicago and he talked to Viner and sat in Knight's early morning class.

In part because of the influence of Hayek and Robbins, Knight was extreme influent in LSE in the 1930s. One of the initiatives taken by the lead of Hayek and Robbins was to translate and reprint important economic theory tracts, especially in Continental economic theory literature, as a manner to introduce the Continental advances in the insulated British intellectual thought. Knight's book was not *prima facie* intended in this project of reprints of classic works on Continental economic theory, it was after all written in English. But the book had become so central in Robbins' course in general economic analysis that the students' demand *vis-à-vis* the supply price of the available previous editions turned out prohibitive in its cost. The original publisher had ceased the printing of the book. Thus, the book was the number sixteen in the Series of Reprinted of Scarce Tracts in Economic and Political Science edited by LSE, in 1933. Even though the great influence of Knight, however, it is important to point out that Coase (1988b, pp. 48-9) did not read Knight's book until May 1933, so "[i]t can, I think, be said with some confidence that Knight played no part in the development of my [Coase] ideas on the firm." Even if Knight did not cause the discovery of transaction costs concept by Coase, he deeply influenced the manner in which Coase structured his argument in the 1937 article and also his later theoretical interests and views regarding transaction costs. In 1937 and also in his view on the problem of social cost (see Buchanan, 1982, pp. xiii-xiv).[4]

[4] On the other hand, as Coase (1988b, p. 49) admitted, "[i]t might of course be argued that Knight's ideas were so much in the air at LSE that I would be exposed to them without reading him. And this is true. Everyone at LSE referred to *Risk, Uncertainty and Profit* whether they had read it or not. But what mattered to Robbins (and he was the main expositor of Knight's views at LSE) was the distinction between risk and uncertainty and the analytical scheme and arguments of Part 2 of Knight's book. I doubt very much whether the economists at LSE ever discussed Knight's views on those aspects of economic organization that interested me. Of course, afterwards I read Knight's work with care, and I have little doubt that in my later writings I have been greatly influenced by him, although in what ways it is not easy to say. But in 1932, when I formulated that ideas of "The Nature of the Firm," my analytical system, such as it was, came from Plant." In the introduction of a 1982 reprint of Knight's *Freedom and Reform* (1947), Buchanan (1982, pp. xiii-xiv) recalled of "a conversation with Professor Ronald H. Coase when he and I were colleagues at the University of Virginia, where Frank Knight had visited for an extended period. Coase and I were walking along Mr. Jefferson's Law, and we have been discussing famous economists. Ronald said something like the following to me. 'I can think of almost any famous economist, like _____, _____, or _____,' naming the obvious world-renowned figures in our discipline as evaluated from the perspective of the early 1960s, "and I can sort of imagine myself in their position of fame with a bit of luck, persistence and effort. But I simply cannot imagine myself to be like Frank Knight.

As Coase (1982a, p. 33) remembers, Robbins' course on General Principles of Economic Analysis (basically, on what would be contemporaneous price theory or microeconomics) was heavily influenced by Knight. Coase did not attend Robbins' lectures, "apart from one or two, to which I went mainly to observe the expository skills of the lecturer." However, he copied out the lecture notes of the course from Vera Smith (a Ph.D. student of Hayek and later Vera Lutz, after she married the German Princeton economist Friedrich A. Lutz). Therefore, Coase "was familiar with Robbins' treatment."[5] "It is noteworthy that the two books which Robbins recommended that we all read were [Philip] Wicksteed's *Common Sense of Political Economy* and Knight's *Risk, Uncertainty and Profit*, a very unusual choice which demonstrates both Robbins' independence of mind and his fine judgment. These two books provided an excellent training for the young economists at LSE and it was, I believe, our close study of them which gave us such a firm hold on cost theory, leaving aside whether what emerged should be considered, as Buchanan contends, as a view special to LSE."

Coase disagrees with Knight's characterization of the distinction of the firm organization as being the mode of payment on the entrepreneur capacity decision or judgment in a Knightian uncertainty environment. Nevertheless, Coase (1937, p. 392) agrees that "[i]t seems improbable that a firm would emerge without the existence of uncertainty." The upper limit to the size of the firm, especially in relation to the diminishing returns to management reasons, is anticipated by Knight when he says that the powerful incentive to the continuous and unlimited expansion of the firm must be in some way offset by some equally powerful force of decreased internal organizational efficiency. Coase quotes very long passages of Knight explaining the theoretical change in which the economy operates when the perfect knowledge of individuals is dropped out and uncertainty is introduced in the analysis. These would be exactly the same passages that will mark entirely Hutchison's argument on his long-life career (cf. Hutchison, 1937b, p. 638; 2009).[6]

I guess that amounts to saying that Knight is a genius." I have always remembered that conversation because Coase put so well what so many of us feel when we think of the professor from who we learned so much."

[5] Vera Smith's Ph.D. dissertation under Hayek's supervision, *The Rationale of Central Banking and the Free Banking Alternative* (1936), was the founder work in the modern free-banking school reviewing the historical experience with free-banking in the nineteenth century and the theoretical arguments for the idea in the economic literature. Friedrich Lutz was part of the circle led by Walter Eucken known as the ordoliberal Freiburg School and, drawing from Irving Fisher, he developed the expectation hypothesis in the term structure of interest rates, i.e., the modern yield curve.

[6] Another greater similarity with Hutchison (e.g., 1984, 2009) in general terms would be Coase (1972, 1975, 1976, 1977b) increasing devotion, admiration, and fascination with Alfred Marshall in historical (along with Adam Smith, as a historian of economic thought) and methodological (with Marshall's emphasis on the empirical investigation) lines. Coase initial fascination with Smith and Marshall began when he moved to the University of Virginia in 1959

According to Knight (1921, pp. 267-8), "[w]ith uncertainty entirely absent, every individual being in possession of perfect knowledge of the situation, there would be no occasion for anything of the nature of responsible management or control of productive activity." The world, in this case, would have no real economic knowledge coordination problem since the individual actions in the market would be mechanical and automaton. "The flow of raw materials and productive services to consumer would be entirely automatic." However, with the introduction of uncertainty defined on "the fact of ignorance and the necessity of acting upon opinion rather than [perfect] knowledge," i.e., with an epistemic postulation of fallible knowledge, "the actual execution of activity, becomes in a real sense a secondary part of life; the primary problem or function is deciding what to do and how to do it." In this scenario, the entrepreneur is in charge of the responsibility of forecasting consumers' demand, the task of deciding what to do, how to do it, and of making this decision in uncertainty, that is, in exercising judgment. The decision-making process and execution in the internal organization "is no longer a matter of indifference or a mechanical detail." Therefore, in a world where the dark forces of time and ignorance domains, a special class of agents that direct the production activities come to existence by the distinctive nature of making judgments about the future. "The result of this specialisation of function is the enterprise and wage system of industry," because the entrepreneur coordinator has to advance and guarantee wages to his workers of a production output revenue that not had been sold yet and depend on the forecasting of consumers' wants and desires.

For Coase (1937, p. 401), however, the judgment element of the entrepreneur in an uncertainty context does not characterize the distinctive nature of the firm. The reward aspect for the correct judgment in the form of entrepreneur profit is not restricted in the production directed sphere, "it is possible to get a reward from better knowledge or judgment not by actively taking part in production but by making contracts with people who are producing. A merchant buying for future delivery represents an example of this." Moreover, almost the totality of jobs in an advanced industrial economy are made by contracts, the contractor advances and guarantee a certain sum accorded in the arrangement normally before the employer performs the agreed acts. But this kind

to join the group formed by James M. Buchanan at The Thomas Jefferson Center for Studies in Political Economy. There Coase gave a history of economic thought course. Coase would leave Virginia in 1964 to take his position in Chicago. Hutchison's long-life methodological writings are better comprehended if we see his position as being the long British empirical-inductivist tradition embodied so well in Marshall's methodological views. Coase during long time expected to write the first biography of Marshall, thus his Marshall biographical articles in the 1970s.

of contract does not involve any direction by the producer entrepreneur. Finally, Coase notes that even in the automaton world without uncertainty and with perfect knowledge Knight considers that there would be coordinators that would merely perform a routine and automatic management function without any responsibility of any sort. Thus, Coase then asks: "by whom are they paid and why? It seems that nowhere does Professor Knight give a reason why the price mechanism should be superseded."

The questions raised by Knight are intrinsically connected to the problem of equilibrium and knowledge in Hayek's discussion - as well as in Hutchison's discussion. In the very first page of his 1937 article, Hayek (1937, pp. 33-4) reminded the reader that the many contemporary attempts in different fields of economic theory to push theoretical investigation beyond the limits of traditional equilibrium analysis has inexorably entered into the sphere of foresight. And this question, foresight, is "if not identical with mine, is at least part of it." Hayek mentions the field of the theory of risk - and, in consequence, uncertainty - as the natural field where the foresight question first attracted attention. Irving Fisher's monograph, *Appreciation and Interest* (1896), is probably the pioneer in the introduction of anticipations and expectational elements in the economic analysis when introducing his famous formula of expected inflation. But, of course, the greatest work in the question of risk, expectations, and foresight beyond the particular field of risk was of Knight's *Risk, Uncertainty, and Profit*, the title of the book is very significative. "The stimulus which was exercised in this connection by the work of Professor F. H. Knight may yet prove to have a profound influence far beyond its special field."[7]

Beyond the sub-field of the theory of risk, assumptions concerning foresight had been central in the resolution of what would be modern game theory problems, exemplified in the 1930s with the "puzzles of the theory of imperfect competition, the questions of duopoly and oligopoly" (ibid.) Indeed, one of the central critiques of the nature of expectations in neoclassical theory by Hutchison (1937b, p. 644) is that it excludes by principle situations of mutual dependence of decisions, classic in the oligopolistic game theoretic environments. Moreover, all the dynamic questions of money and industrial fluctuations are necessarily fulfilled with assumptions on expectations. Expectations play a central role and central concepts "like those of an equilibrium

[7] In recalling the intellectual and contextual influences of his "Economics and Knowledge," Hayek (1983, pp. 425-6) named his "essays on socialism, the use in my trade-cycle theory of the prices as guides to production, the current discussion of anticipation, particularly in the discussion with the Swedes on that subject, to some extent perhaps Knight's *Risk, Uncertainty and Profit*, which contains certain suggestions in that direction -- all that came together."

rate of interest, could be properly defined only in terms of assumptions concerning foresight. The situation seems here to be that before we can explain why people commit mistakes, we must first explain why they should ever be right" (Hayek, 1937, p. 34) Once the problem of expectations is announced, the problem with the exact assumptions in economic theory on which Coase started his paper is evident - and this is one of Hayek's central points. The profession was doing theory without some exact notion of its assumptions and hypothesis. According to Hayek (1937, p. 35), whether the discussion is confined to economic static equilibrium theory (the pure logic of choice) or beyond (empirical propositions about the world, i.e., equilibrating order tendencies or not) "we cannot escape the vexed problem of the exact position which assumption about foresight are to have in our reasoning."

What is the exact position about foresight in equilibrium theory? It is perfect knowledge. Defining societal equilibrium as compatibility between the different plans of individuals, perfect knowledge is defined as perfect foresight of the subjective perceptions of the other individual agents (given to the referring agent in the analysis as an objective knowledge) and the knowledge of the external reality. That is, in other words, when subjective data in all the different individual agents correspond to the objective facts. Correct foresight is the defining distinguishing characteristic of a state of equilibrium, knowledge "is identical with foresight only in the sense in which all knowledge is capacity to predict" (Hayek, 1937, p. 50). Thus, for Hayek (1937, p. 48), it is by no means of a coincidence that Kaldor (1934, p. 123) "felt it necessary to add 'perfect knowledge' as an additional and separate condition." That is, that all the relevant prices in all markets are known to all individuals. The emergence of fallible knowledge in equilibrium theory and the tendency to equilibrium as a knowledge-based coordination problem evidenced and showed the true nature of the problem in question in the economic calculation debate. This is also implicitly in the nature of the firm problem and, therefore, the constant problem in Coase's work in transactions cost economics. That is, the necessary institutional character of the coordination problem in all levels of analysis.

The knowledge problem is born in the coordination societal level equilibrium of different subjective expectations by the multiple agents and the external objective reality. In the center of this problem is whether a tendency towards equilibrium exists on empirical grounds or not, whether the institutional mechanisms of creation, communication, and storage of relevant knowledge operate in the coordination of subjective expectations. Thus, this tendency to

equilibrium, perhaps the foundational stone of the discipline of political economy, can only be understood in the sense relative to the capacity of learning the necessary knowledge "which people will acquire in the course of their economic activity." If the knowledge is regarded as an exogenous Langean data given to the maximizand, the equilibrium analysis "can really tell us nothing about the significance of such changes in knowledge, and would go far to account for the fact that pure analysis seems to have so extraordinarily little to say about institutions, such as the press, the purpose of which is to communicate knowledge. And it might even explain why the preoccupation with pure analysis should so frequently create a peculiar blindness to the role played in real life by such institutions as advertising" (Hayek, 1937, p. 53).

Coase (1974a, 1977) understood the importance of such institutional arrangements in a generic fashion and also in such a particular form that communicates knowledge as advertising, what he called the market for ideas. Competition in the market of ideas is not about given resource allocation, but "an exploration into the unknown. The human capacity to generate novel ideas appears infinite and ever growing, which means that competition is needed to select good ones and winnow out bad ones. But the conventional scarcity-conflict-rights-based approach is ill-positioned for this task" (Coase and Wang, 2011, p. 3; see Wang, 2014, pp. 116-7; Hayek, 1946, 1968).

Coase learned with Plant that economic theory teaches the power of the market in coordinating different and conflicting activities in a modern economy through the price system. It was a revelation. However, static equilibrium economic theory says little about the exact functioning of this system and how the relative price system operates in a broader institutional context in the real world. Costs of coordination, i.e., the costs of using the price mechanism, are zero. In addition, the theory did not allow a place to the existence of the firm as an alternative coordination mechanism beyond the market price mechanism domains. Thus it did not explain the various combinations of different methods of coordination of production by the price mechanism and by internal organization along with questions of vertical integration and short and long-term contracts. If the cost of coordination is zero, and given the relevant knowledge to the agents, the institutional means of coordination does not matter to the problem of the optimum allocative pattern. We are in the proposition of the formal similarity world of the socialist economic calculation debate. The marginal preconditions of maximization are the same whatever the coordination methods (central or decentralized planning) are used, given the hypothesis of equal institutional coordination

capacity of all the alternatives. But this is not compatible with the real world, the various coordination methods have different costs in different specific contexts, and thus the allocative pattern of resources in an economy matters in relation to the different uses of different coordination institutional processes (see Coase, 1995, p. 245).

Coase's response to the economic calculation debate is not in showing the benefits of planning in a big factory way like Soviet Russia, but in pointing out that both the symmetrical dichotomic division of totally central planning (i.e., total vertical organization big factory like) and total decentralized system (i.e., all transactions rule out by the price system) is false and ignored the different costs of internal organization and price system coordination. Firms exist because of the costs of using the market, the marketing costs of discovering what the relevant prices are and the inevitable incompleteness of contracts. Markets exist because of the costs of the internal organization, e.g., bureaucracy costs and the diminishing management returns to entrepreneurial function. The extent of each coordination device in actual society depends on the relative costs of the alternatives. The equimarginal principle says that the firm will internalize one more transaction in the market until the point that the marginal cost of organizing the transaction in the market is equal to the marginal cost of organizing the transaction by internal organization or by other firms.

Because of this institutional sterility, economic theory was trapped in a fictitious *a priori* normative analysis that missed the real decision about what is the best institutional means in the particular historical situation to approach the welfare problem. This was the critique of Coase in relation to the Pigouvian tradition in welfare economics, it missed the institutional nature of the problem because it was assumed that there are zero marketing costs. Coase only demonstrated that in this Pigouvian welfare world, with zero transaction cost, all the distributional changes via transaction by the agents would occur and the resources would be moved to the highest valued location independent of the legal structure. Externality problem would not really exist, in the same way that the problem of coordination did not really exist if agents are given the perfect objective and relevant knowledge, as Knight and Hayek pointed out. Implicitly, the Pigouvian welfare theory also assumed the relevant knowledge was possessed by the planner interventor to correct in the exact amount the divergence of private and social costs.

III. COASE, LERNER, AND "THE PROBLEM OF SOCIAL COST"

When Coase was appointed assistant professor at LSE in 1935, he became in charge of two courses, theory of monopoly and economics of public utilities. Coase found out that little empirical research had actually been done in the historical real way in which public utilities such as postal service, water supply, gas, electricity, and broadcasting was conducted and offered in Britain. This was a research program that would take Coase's attention for many years. One product of this was his book on *British Broadcasting: A Study on Monopoly* (1950) where Coase did a historical account on how the broadcasting became a public monopoly in Britain and how the empirical historical evidence was different from the traditional expected economic approach. Coase questioned the reasons that justified the public monopoly of broadcasting. In 1950, with matrimonial problems and a more interdisciplinary interest, Hayek left LSE for the Committee of Social Thought at the University of Chicago, founded in 1941 by John U. Nef, Frank Knight, and Robert Hutchins. With Hayek's Tooke Chair in vacancy, the chair was offered to Coase. But Coase denied the offer and migrated to the United States in 1951 to start a project on the political economy of broadcasting based on the experience of Britain, the United States, and Canada. The entire initial project was never completed, but a product was "The Federal Communications Commission" (1959) which lead to the formation of "The Problem of Social Cost" (1960) and the modern topic of law and economics.

In the context of the Federal Communications Commission (FCC) regulatory role in the introduction of the color television system in the United States, Leo Herzel (1951) in a comment note in the *University of Chicago Law Review* was the first to suggest the use of the price mechanism to substitute the government internal regulatory, administrative, and allocative organization. And, thus, to determine the different consumption allocative pattern of the radio frequency spectrum. Herzel (1951, pp. 811-2) proposed a logic application of the Lange-Lerner method of trial and error to find out the relevant equilibrium prices as to mimic the market system practice. The main exposition of this "solution" was by Abba P. Lerner in *The Economics of Control* (1944). Lerner was once a former student under Hayek's supervision and a close friend in Coase's circle at LSE. According to Herzel (1951, pp. 811-2),

> "A much more controversial alternative would be to abandon regulation by government fiat altogether and to substitute the market, bringing the market within the standard of 'public interest, convenience or necessity.' There is nothing inherently strange about this

> idea. That the phrase was first used in public utility regulation concerned with the peculiar problem of decreasing cost industries need not mean that it must be inseparably tied to choice by government fiat. The FCC could lease channels for a stated period to the highest bidder without making any other judgment of the economic or engineering adequacy of the standards to be used by the applicant. The FCC would still determine the width of channels, but on the basis of one criterion - the maximization of revenue from the leasing of this scarce natural resource. This determination would be a trial and error process, (like other solutions of economic problems through the market) but there would always be the restraining force on the Commission of maximizing its income. If changes were introduced too frequently, the resulting confusion might reduce the income below the maximum; if changes were made too infrequently for the rate of technological change and other shifts in relevant variables, this also would reduce income. A large amount of unleased channel space would mean that the price had been set too high; if there were more demands for channel space than channels available, it would mean the price had been set too low. The market solution would follow the logic of the price mechanism in an economy based on free consumer choice."

Herzel refers the reader to Knight's little textbook, *The Economic Organization* (1933, pp. 6-13, 31-5), for an exposition of the logic of private enterprise economy based on the price system and the same logic applied by whatever system of allocation of scarce resources, as in a central planning system, by Lerner (1944). What is the implicit coordination logic that Herzel refers to? It is the formal similarity proposition of marginal maximization preconditions to an optimum allocative pattern in whatever institutional coordination system, that is, when the cost of the alternative mechanisms of coordination is zero. The same logic of the price mechanism is developed in an economy that is not "necessarily based on the private ownership of property, e.g., frequency channels." If this logic is validated in all cases, both in that private property market-based economy or centralized planning, why not apply it to the case of public goods as the radio frequency spectrum? This was the essence of Lerner's *The Economics of Control* (1944, pp. vii-viii), one of "conscious recognition of the problems of social organization and the exercise of conscious control over the economic systems."

This is what Herzel did. Indeed, Herzel (ibid., f.n. 56) notes that "[a] similar scheme has been used as the basis for recent theoretical developments in economics which use the price mechanism for the solution of the problem of how to allocate resources rationally in a socialist economy. Frequency channels are a socialized sector of the economy. [...] The suggested plan would give the same results as those achieved in an economy based on Lerner's scheme to the extent that broadcasters-licensees did not behave as monopolistic buyers." The difference in Herzel's scheme with the one by Lerner is that the broadcasters under his proposal would operate and act as in their own economic interest and not by following an abstract general rule like the one proposed by Lange-Lerner marginal cost pricing.

Coase (1993, p. 248) recognized this influence, saying that "[w]hile he was an undergraduate, Herzel had become very interested in the debate over whether a rational, efficient system for allocating resources would be possible under socialism. As a result, he read Abba Lerner's *The Economics of Control* soon after it was published in 1944. This debate, particularly Lerner's detailed proposal for market socialism in *The Economics of Control*, was the inspiration behind his views." Therefore, the main influence for Herzel on his proposal was, evidently, by Lerner. On Lerner, Coase (2014, p. 74) writes:

> "Abba Lerner was of course one of the group of students at the London School of Economics from whom I learned my economics and in the preface to the book [*The Economics of Control*] he acknowledges the influence, among others, of Arnold Plant. However, Abba Lerner was a socialist who thought that a socialist system could be run in such a way as to reproduce the optimum results as described in economic theory, in the main, by imitating the market, but not always. I remember that he went to Mexico to persuade [Leon] Trotsky that all would be well in a communist state if, among other things, prices were set equal to marginal costs."

Coase (2014, pp. 73-4) had read Herzel's paper but, at first, he was not convinced by the argument since the problem of public utilities was about "defining the property rights and making sure that these rights were respected," an issue that Herzel and the tradition in which he reports took for granted. For Coase, the problem was of institutionally define enforceable property rights in the radio frequency spectrum and compare the relative transaction costs of each coordination solution.

This institutional structure in which the production and exchange take place Lerner and Herzel took for granted, as a given. Coase was only convinced by Herzel's argument one year later, in 1952, when Herzel (1952) wrote a rejoinder note to Dallas Smythe (1952) who was the contemporary chief economist of the FCC. For Coase, Smythe's arguments were so weak that he ended up accepting by exclusion Herzel's proposal. This acceptance would be explicitly stated when Coase came to write his FCC paper in 1958-9. In another place, Coase (1993, p. 249) stated that he "was well acquainted with his [Lerner] views, and I knew their strength. But on reading Herzel's article I did not immediately jump to the conclusion that a market with pricing would be superior to regulation by the FCC. It was necessary to take into account the existence of transaction costs."

If the property rights were well defined and rights to use the property was negotiable in the market, there is logical validity of the argument that the use of the radio frequency spectrum was subject to the law of formal equilibrium condition analogous to the socialist economic calculation debate in relation to the diverse coordination methods, being this coordination exercised by central government regulation or the price mechanism. Thus, Coase investigated the empirical practical relative costs of using government regulation and the price mechanism in the best allocation to the radio frequency. After this investigation, Coase concluded that weighing the relative costs of internal government regulation and the price system, the later was to be the best way to coordinate the radio frequency spectrum. For Coase, even when considering transaction costs and the problem of establishing a system of property rights which could be trading between parts, Herzel's proposal of using the price mechanism to allocate the use of radio frequency spectrum seemed to be right and he defended this vision in his FCC paper. The main reason for such is that Coase's investigations on the FCC suggested that the relative cost of coordination by the central internal organization of FCC was high enough to justify the use of the price mechanism. It was "abundantly clear" to Coase (1993, p. 249) "that the Federal Communications Commission conducted its affairs in an extremely imperfect way." Therefore, Coase used the idea in his FCC paper in 1958-9 while in the Center for Advanced Study of the Behavioral Sciences at Stanford.

The pure logic of choice on coordination in this case is the same as Coase's 1937 paper. If transaction costs are zero the nature of the institutional coordination process does not matter, being this in relation to the firm or in relation to the public utilities as the radio frequency. Although this is analytically true at the state of equilibrium given the relevant knowledge, the world is not

described by zero transaction costs. In addition, the case of the radio has a particular problem common to public utilities. They suffer from externalities, that is, divergences between private costs and social costs. The signal of one radio station can interfere with other radio and thus worse the signal reception of other stations. This led Coase to critically examine the traditional Pigouvian welfare economics approach. Of course, if transaction costs are zero the externality as a real problem did not exist because if property rights are well defined then the initial property rights endowments did not matter for the optimum final allocative pattern. The parts in conflict will negotiate monetary compensations until the private benefits and costs are equal and the externality problem disappears.

As the initial endowment of factors between the parts does not matter for the final optimum allocation, the legal decision on who is enforced to recompense the other does not affect the way resources are used and allocated. Law and institutions are neutral, futile, and sterile in affecting the economic outcomes. This is the essence of the first part of "The Problem of Social Cost." In a sense, this is the mere application to the welfare economics in general, and to the externality problem in particular, of the general institutional antiseptic proposition of formal equilibrium similarity result. It is not surprising that when Coase was writing his FCC paper and Lerner visited the Center at Stanford, Lerner fully agreed on this point. Coase (2014, p. 75) told Lerner about his "argument that the way in which resources were used was independent of the legal decision on ownership of rights. He [Lerner] got the point in a minute and agreed with it."

Coase attributes this easy agreement with Lerner due to the common concept of what James M. Buchanan called the LSE tradition on cost, i.e. cost as the subjective opportunity cost in the act of choice (Buchanan, 1969; Buchanan and Thirlby, 1973). This tradition has its roots in the Austrian tradition with its special emphasis on the subjective nature of cost, in opposition to a long labor-measured objective tradition of the English classical economists. Wieser, for example, advanced this alternative-cost approach and the theory of imputation in his *Natural Value* ([1889] 1893), dividing the notions of accounting costs (costs of production) and economic costs (opportunity costs). Indeed, Wieser himself coined the proper term "opportunity cost." This doctrine was also called in the early decades of the twentieth century as Wieser's Law, a name given by Maffeo Pantaleoni (the Marshall of Italy). Coase ([1938] 1973, 1990) would continue this so-called London tradition in his series of articles in *The Accountant* about the proper notion of opportunity cost as the defining distinction of every cost notion, including in accounting. This tradition entered

in the English speaking world with David L. Green (1894), Wicksteed, Herbert J. Davenport (1908), Knight (1921, 1924), and Hubert D. Henderson. Wicksteed was one of the main influences in Robbins' micro-course, as we have seen, and his *Common Sense of Political Economy* (1910) would be reprinted with some selected papers in 1933 with edition and introduction by Robbins.

Opportunity cost view is also linked with the general equilibrium and linear programming approach since the Lagrangian multiplier of the consumer and the firm dual problem is the opportunity cost of the factor in the analysis translated into objective analytical terms, i.e., it is his shadow price or shadow social opportunity cost. Indeed, in discussing Francis Y. Edgeworth's and Pigou's argument regard to diminishing return industries (criticized by Knight and Young, as we will see), Robbins (1934b, p. 11) "doubt very much whether they would have been thus ensnared if, instead approaching the problem from the point of view of the intersecting curves of [Marshallian partial] particular-equilibrium analysis, they had started from the marginal-productivity theorems - the example *par excellence* of the general-equilibrium approach."

However, the general equilibrium approach loses the subjective nature notion of opportunity cost outside the equilibrium state. In the transformation of the subjective alternative cost into an objective measurable magnitude, the characteristic difference in the nature of cost is lost. This is one reason that explained the epistemic error of the market socialists in proposing the Lange-Lerner marginal cost pricing. This is only a theoretical proposition in a particular general equilibrium *state* context that has no counterpart to the market process reality. Market socialists transposed directly the general equilibrium state properties into reality, without noting the necessary epistemic institutional differences of alternative coordination equilibrating mechanisms. This was the illegitimate transposition of the individual equilibrium properties to the societal equilibrium that Hayek made in his 1937 article.

The maximization procedure is not epistemic equivalent in each equilibrium construction. Neoclassical theory treated social equilibrium as the horizontal sum of all individual computational equilibria, thus the central planner maximization problem is said to be equal to the social decentralized sum of individual maximizations. This is the formal similarity proposition. As Buchanan (1973, pp. 4-5) made clear, evoking Hayek's individual and societal equilibrium distinction, "[t]he theory of social interaction, of mutual adjustment among the plans of separate human beings, is different in kind from the theory of planning, the maximization of some objective function by a conceptualized omniscient being. [...] Shadow prices are not market prices, and the

opportunity costs that inform market decisions are not those that inform the choices of even the false omniscient planner." This became clearer for Coase with the passage of time. Opportunity costs and subjective individuals preference evaluations are in the market process competition translated into an objective social fact to the other agents through the price system. This consumers' maximization result is widely known in economic theory but the institutional driven process is taken as given to the theoretical construct, as it is to market socialism. The point is taken by Coase, by which he refers to the "great point" of the "nice article on market competition" by Hayek (1968). According to Coase, shadow prices are not market prices, "[p]rice won't have any meaning unless it results from actual market competition. [...] Competition is a process, not an equilibrium outcome. The outcome of competition is always open, not something that can be derived from or predicted by any theory. [...] What you get from the models depends on what you put in. You can choose assumptions [e.g., perfect knowledge] such that you get whatever result you want. Modeling can be a great intellectual game, but its relevance cannot be taken for granted" (Wang, 2014, p. 117).

With the notion of opportunity costs and well-defined property rights, whatever is the legally enforced part to pay monetary compensation to the other part leads to the optimum allocation since the opportunity social costs of whoever is the holder of the legal rights could be the subject of trading with the other part. Coase (2014, p. 75) notes that this opportunity cost view and, in his opinion, its consequences, "also illustrates the importance of being at a school at which you learn useful ideas." I agree with this quote by Coase. Nevertheless, in my view, the justification is historiographically fragile. The opportunity cost notion is embedded in the price theoretic view that most Chicago-trained economists dominated so well. It is difficult to claim that price theorists like Aaron Director, George Stigler, and Milton Friedman ignored completely the notion of opportunity costs, although Coase has a point when pointing out the vice of the Marshallian-Pigouvian tradition (which the second generation of Chicago economists affiliate themselves) in the application of opportunity costs to the rationale of property rights. The real important background context shared by Coase and Lerner, which results most of the Chicago economists suffered to understand, was the controversy in the socialist economic calculation debate. That is, the equivalence of all the alternative coordination mechanisms in a zero transaction cost world and thus the inexistence of externality problems in this world. Even though both Stigler (1945) and Friedman (1947) had reviewed Lerner's *The Economics of Control* (1944). The Stiglerian so-called

Coase Theorem is just a welfare corollary of the formal similarity proposition in the economic calculation debate.

Coase sent his FCC paper to the recently founded *Journal of Law and Economics* by Director at the University of Chicago Law School. Director disagreed with the passage where Coase re-stated Herzel's argument on the radio frequency spectrum and Coase's illustrative analysis with the case of *Sturges v. Bridgman*. Director wanted Coase to delete it. Coase (1993, p. 249) held his ground and maintained the passage in the article "arguing that, even if my argument was an error, it was a very interesting error." Some months later of the FCC paper publication, in 1960, Stigler invited Coase to give a talk at the Industrial Organization Workshop at the University of Chicago. Coase accepted the invitation on the condition that the passage of his paper dealing with the allocative result in a zero transaction costs world would be discussed. One of the most famous events in the history of economic thought then was prepared and took place at Director's house. After the discussion Coase was asked to write it up his positions for the *Journal of Law and Economics* and "The Problem of Social Cost" (1960) was born.

Coase (1993, p. 250) adapted the title of "The Problem of Social Cost" from an early Knight's article on Pigouvian welfare, "Fallacies in the Interpretation of Social Cost" (1924). The main point for Coase was that the way economists were evaluating the welfare problem in terms of divergences of private and social costs ignored the real problem of comparative institutional analysis in alternative coordination costs mechanisms. The failure in Pigou's analysis was that he could not see that the divergence between private and social costs could only arise because of the failure to institute secure and definite property rights in a zero transaction cost world. In a zero transactions cost world, if the property rights were well defined and subject to market transactions, i.e., subject to a market for the real social opportunity cost of these rights, this would lead to the Stiglerian Coase theorem. For Coase, his argument "could be seen as a natural extension of Knight's insight that the institution of property rights would ensure that the excessive investment which Pigou thought private enterprise would make in industries subject to decreasing return would not in fact happen." Knight's vision is to some degree understandable when we remember that Knight was one of the first in the socialist economic calculation debate on the side of the general equilibrium standard position in defense of the scientific neutrality of neoclassical marginal economics in regard of a collectivist system. According to Knight (1936, p. 255), "the place of marginal economics in a collectivist economy is not essentially different from its place in

an economy of 'competitive individualism' - or whatever designation may be used for any actual or hypothetical system contrasting with collectivism. This means [...] that the problems of collectivism are not problems of economic theory, but political problems, and that the economic theorist, as such, has little or nothing to say about them."

The Coase theorem is only an analytical case in which economic theory assumes that transaction costs are zero, all the resources will be transferred by mutual transactions to the social highest-valued places independent of the initial endowments and the legal distributional infrastructure. To the date, externalities could be resolved irrespective of the methods of institutional coordination, in a single big-firm that ruled out all the transactions and thus internalizing the social cost into the private sphere or with the traditional Pigouvian taxation responses. But if the externality problem did not exist in respective to the standard economic theory assumptions, the proper notion of Pigouvian taxation is unfounded.

There is *no* real problem of externalities in a zero transaction cost world. But this world does not exist. This is not the relevant positive theoretical point that Coase is making. Externalities problems are a result of property rights incompleteness, this has an analogous with Coase's discussion of the inevitable incompleteness of contracts in the market because of transaction costs (e.g., labor contracts). In this case, the solution is to internalize these transactions in vertical integration by the firm. The point is that all coordination mechanisms are costly. In an empirical practical relevant case of positive transaction costs, the institutional legal order is decisive to the relative costs between the alternative coordination methods and thus one of the main determining factors of the economic performance through time. In this case, even the traditional Pigouvian welfare response to externalities cannot be decided in *a priori* way, but only based on the empirical work of comparing the relative costs of coordination and the institutional local analysis.

One example studied by Coase (1974) is the case of the lighthouse in Great Britain, a classic textbook natural public good that was once provided by the market because of the institutional devices in the legislation that permitted the appropriation and internalization of the service social benefits. Lighthouses were granted with exclusive franchises and state-conferred authority to legally collect payments from all the ships that used the offered services. The classical case of the non-rival public good was bypassed by designed legal institutions that permitted the private sector to operate. Coase demonstrates that the standard example problems of externality in economic theory when the transaction costs are zero did not, by definition, demand any kind of government

corrective action given their own assumptions. In other words, "all that this did was to show the emptiness of the Pigouvian analysis. Once the assumption of zero transaction costs is abandoned and the fact that carrying out market transactions is a costly process is incorporated in the theory, it follows that alternative ways of coordinating the employment of resources, even though costly and in various ways imperfect, could not be dismissed out of hand as inferior to reliance on the market. What would be best depended on the relative costs of these alternative ways of coordinating the employment of resources, and about this we knew very little" (Coase, 1993, pp. 252-3; cf. 1960, pp. 18-9).

When coordination is costly, the different institutional arrangements matter for the final output allocation because they determine the relative cost patterns of the alternative coordination mechanisms and therefore to the resulting resource allocation in an economy. The law and the legal institutions are important because they determined the relative values of transactions costs of the competing coordination devices. Thus, it determined the different private incentives to this institutional structure of production and exchange in the use of market versus internal organization, short and long-term contracts, vertical integration processes, and divergences between private and social costs. The point that Hayek was making in the economic calculation debate is this institutional character in the analysis. Neoclassical equilibrium theory takes as given the institutional framework that permits any coordination between individual plans in the first place. The relevant discussion in controversy was in the comparative historical institutional analysis between the *de facto* institutions in a market economy based on decentralized knowledge and of a total central organization that commands the entire economy and coordinate all the knowledge necessary to efficient resource allocation in a central planning way. Assuming that a market socialist "competitive solution" scheme would reproduce the market-based institutional structure results is missing the main point.

A good example of how economic theory took as given the most important institutions in a market economy, as Steven Medema (1996, p. 574) remembers, is that even in the zero transactions cost world which theory assumes the Coase theorem result can only emerge with a complete secure delimitation, definition, and consent of property rights enforcement within a transaction market for these rights. Even in that world property legal institutions are an indispensable condition for any kind of coordination. The same is true in the case of the traditional formal similarity argument, as well as in the dichotomic case of what Coase puts the price mechanism and the internal

organization of the firm. The relative price system structure can only exist embedded in a vast and organic institutional structure that guarantees property rights consent, monetary economic calculation, and profit and loss accounting. Hayek (1945) accounts for the immensely important role of the price mechanism as a synthesizer of subjective knowledge into objective knowledge and as a guide transmission of this knowledge to others individuals in the economy is just a partial, but one of the main, institutional account of the various mechanisms of creation, transmission, and storage of knowledge in a modern extended, impersonal, complex, and emergent order (for a comparison with the absence of such market institutions in the Soviet-type system, see Boettke, 1998; cf. Wang, 2014, pp. 102, 106).

In the case of the internal organization of the firm, the legal institutions are also part of the legal structure of internal production. These institutions define incomplete contracts, the entrepreneur coordinator clear specifications and enforcement of internal resources management rights of the firm within certain limits. How the defining characteristic of the firm, the authority relationship of the coordinator to the employees and inputs, can be formed without the appropriate legal institutions? This relationship arises by the inexorable incomplete contracting agreements. It economizes transaction costs in the reedition and legal enforcement of such inevitable incomplete contracts. As Medema (1996, p. 575) puts it, "the organizational success of the firm is at least in part derivative of the law that allows authoritative transaction through which cost economies can be generated." Thus, the various alternative legal institutional arrangements can be designed or structured to diminish transaction costs and facilitate the market process coordination of plans. This is exactly the idea behind the inaugural address to the Mont Pèlerin Society by Hayek, "'Free' Enterprise and Competitive Order" (1947) (see Van Horn, 2013, pp. 82-6). The distinction between markets and hierarchical organization is *not* analogous to planning and not planning, it is the different institutional structure in which planning in individual and social level occurs. The difference is in what kind of planning. In particular, what kind of institutional level planning. Thus, "it makes little sense to discuss the process of exchange without especifying the institutional setting within which exchange takes place, since this affects the incentives to produce and the costs of transacting" (Coase, 1992, p. 718).

IV. HAYEK AND THE FOUNDATIONS OF LAW AND ECONOMICS

An interesting story on the creation of the Law and Economics Program at the University of Chicago Law School, and therefore on the foundations of the law and economics field in which Coase perhaps was the most important expression, had direct and crucial participation of Hayek. The participation was in bringing Aaron Director to the Law School. In the late 1940s, Hayek and other economists were worried about the future prospects of liberal values in the post-Second World War world. One manner to integrate the intellectual ideas on this tradition from all parts of the globe was to create an international organization that could serve as a discussion forum and interlocution platform for these ideas. The result was the creation, in 1947, of the Mont Pèlerin Society. In 1944, Hayek had published his war effort against the totalitarian regimes and centralized economies, *The Road to Serfdom* (1944). Director was fundamentally important to the book recommendation for the University of Chicago Press and for the decision to publish the book in the United States after three failed attempts to get a publisher. Curiously, Frank Knight was against the book publishing by the Press claiming that it had only a negative analysis of some popular fallacies and that he "doubt whether it would have a very wide market in this country, or would change the position of many readers" (Hayek, [1944] 2007, p. 250).

Director also exercised an important and decisive role in asking John Chamberlain, the book review editor of the *New York Time*s, to do a foreword to *The Road to Serfdom*. In addition, Director (1945) also wrote a very positive book review for the *American Economic Review*, in some way to counterbalance the critique of Eric Roll's review. Director had spent the Fall term in 1937 visiting LSE. Initially, the travel was intended for the research of his dissertation topic, the history of the Bank of England. Director met Hayek and Robbins and participated in their joint seminar. Director gained a good impression of both men, staying in London until 1939 when he was hired to work in several U.S. government positions in Washington. Director would stay in Washington until 1946 when he was appointed to the University of Chicago Law School. Director had great intellectual respect for Hayek. Van Horn (2013) argues that Director should be viewed as an (unacknowledged) disciple of Hayek in the post-war period, especially in his leadership in the law and economics research program.

The first economist to join the faculty of the Law School was Henry Simons, who has not had a good internal reputation in the economics department. But Simons had the strong support of Knight. Simons was appointed to an assistant professor in the economics department in 1927 and reappointed in 1934 with Knight's support and Paul Douglas opposition. With the reappointment

in the economics department came the half-time appointment in the Law School, where Simons taught, naturally, price theory. Simons was fundamental in bringing Director to the Law School. In April 1945, during his tour in promotion of *The Road to Serfdom*, Hayek would come to know Harold Luhnow, president of the William Volker Fund. Luhnow asked Hayek to write an American version book project of *The Road to Serfdom*, with the Volker Fund financing.[8] Hayek declined the proposal suggesting an American-based study project for the legal institutional foundations of market competition. They agreed on Hayek's proposal and the Volker Fund would offer the necessary three-years of funding. Before suggesting Chicago, Hayek's first option was Friedrich Lutz at Princeton. However, Hayek realized that Chicago was the ideal place because of the demand for human material in the project. Hayek arranged for Chicago Law School to be the base of the intended project, known as "Free Market Study." Later, it would be known as the "Hayek's Project" (*v.* Coase, 1998b).

In June 1945, Simons formally wrote and proposed the Luhnow-Hayek project as an Institute of Political Economy. The aim of the Institute would be mainly to arrange and provide support for visiting liberal professors. Simons shared with Hayek the same concerns about the future of liberal values and ideas, thus the Institute should be understood as an attempt to keep these ideas alive. Coase, quoting Simons' words in the memoranda, notes that the tone that Simons' used in the document on the proposed Institute "often have a note of desperation. The institute 'should not be mainly concerned with formal economic theory nor should it engage substantially in empirical research. It should focus on central, practical problems of American economic policy and governmental structure. It should afford a center to which economic liberals everywhere may look for intellectual leadership or support. It should seek to influence affairs mainly through influencing professional opinion and by preserving at least one place where some political economists of the future may be thoroughly and competently trained along traditional-liberal lines'" (Henry C. Simons, Memorandum I on a proposed Institute of Political Economy 2, p. 12 quoted in Coase, 1993, pp. 244-5). Chicago, in Simons' view, was to be the place where the Institute should be installed (Kitch, 1983, p. 181).

[8] The local and historical contextual character of Hayek's book was one of the justifications in which Knight pointed out to the negative recommendation for publishing the book in the U.S. by the University of Chicago Press. For Knight, Hayek "writes from a distinctly English point of view, and frequently uses the expression 'this country' with that reference. While there is some treatment of American conditions, and citation of American writings, this is secondary in scope and emphasis" (Hayek, [1944] 2007, p. 249). This contextual and reaction element in *The Road to Serfdom* is, perhaps, one of the central neglections on reading the argument.

Simons entered in contact with Hayek, sending a copy of his proposal on the creation of the Institute suggesting that Director should be the first head of the organization. Hayek supported the suggestion. At the time, Hayek probably shared Robbins' benevolent view of Director since his visiting period in LSE, along with the gratitude for Director's help in finding an American publisher for *The Road to Serfdom*. Hayek would also arrange with Luhnow along with Robert Hutchins, chancellor of the University of Chicago, and Wilber Katz, then the dean of Chicago Law School, to take the project ahead negotiating the terms in which Director would be appointed the head of the study. "In the end, it was agreed to appoint Director for five years as a research associate with the rank of professor to conduct what was called in the memorandum sent to the Volker Fund, 'a study of a suitable legal and institutional framework of an effective competitive system'" (Coase, 1993, p. 246). With Simons' death in 1946, the arrangement was modified to give Director some teaching load in his already professor rank status. Thus, Director was appointed in that year to the Law School. Coase would inherit the Law and Economics Program from Director, after his retirement. Hayek was pivotal to the foundation of the law and economics movement, operationally and intellectually.

V. EPILOGUE: TRANSACTION COST ECONOMICS AS AN INSTITUTIONAL REACTION TO THE ECONOMIC CALCULATION DEBATE

The rise of the study of the institutional structure of production and exchange is the central message of Coase's work. The existence of transaction costs implies necessarily a comparative institutional analysis of the different means of coordination in a particular and historical case. "The Nature of the Firm" is the inaugural piece of new institutional economics, it is easy to see the importance of transaction costs and institutional settings for economic performance through time. In this point, Coase's analysis converges with Demsetz's productive specialization emphasis. The economic welfare of nations depends on the productivity of labor in an economy of production and exchange. Since Adam Smith's times, it is known that the level of productivity of labor in the modern economic system is a function of the division of labor and productive specialization and, hence, voluntary cooperation in the form of transactions and exchange. Productive specialization is only possible if there is a counterpart in the exchanges, thus the marketing costs determine the upper bound in which the division of labor can operate in the economy. Moreover, "a large part of

what we think of as economic activity is designed to accomplish what high transaction costs would otherwise prevent or to reduce transaction costs so that individuals can freely negotiate and we can take advantage of that diffused knowledge of which Hayek has told us" (Coase, 1992, p. 716). But what determines the costs of exchanges? The transaction costs and the relative costs of different coordination mechanisms are institutionally determined, coordination solutions in one specific time and place context are not subject to generic theoretical solutions.

Coase's special interest is in the realm of the institutional structure of production. In this context, the fragile Coasean definition of coordination substitute mechanisms by the firm and the market is understandable and valid analytical fiction. Neoclassical theory, as exemplified by Robbins' (1932, p. 70) statement, treated the internal organization process as a black-box because of the real interest on the Smithian coordination problem of decentralized exchanges procedure by the individuals. Even in this task, the neoclassical theory came to fail by acting as an institutional antiseptic theory. Ironically, the interest in the price system as a coordination device lead to the demise of the proper institutions in which the price system operates. "Even more surprising, given their interest in the pricing system, is the neglect of the market or more specifically the institutional arrangements which govern the process of exchange. As these institutional arrangements determine to a large extent what is produced, what we have is a very incomplete theory" (Coase, 1992, p. 714). The great expression of this irony is, doubtlessly, the socialist economic calculation debate. Coase's 1937 article can only be understood as a reaction to this debate. My argument is not that the debate *caused* Coase to come with the transaction costs notion but that the debate was the contextual intellectual environment in his investigations were dealing with and, thus, molded the argument and its implications. Why, as Plant taught, the firm and internal organization exist if all the coordination is done by the price mechanism?

This question is naturally connected with the economic calculation debate, Vladimir Lenin said that the Soviet Union planned economy would operate like a single one coordinated Big Factory. However, as Coase (p. 715) puts it, "many economists in the West maintained that this was an impossibility. And yet there were factories in the West, and some of them were extremely large. How did one reconcile the views expressed by economists on the role of the pricing system and the impossibility of successful central economic planning with the existence of management and of these apparently planned societies, firms, operating within our own economy?" The answer was the transaction cost existence of using each coordination device, the optimum efficient degree of

internal organization planning would be discovered by the market competition. As discussed above, the character of planning in the firm is not equivalent to the controversial point in dispute in the debate but, nevertheless, it molded the Coasean argument.

This contextual character of the transaction cost argument would play again a role in the welfare corollary theorem of the formal similarity proposition in "The Problem of Social Cost," the inaugural piece of law and economics. With zero transaction costs and given equal institutional alternative coordination capacity, the formal similarity proposition appeared. With zero transaction costs and given tradable property rights endowments, the allocation pattern will always be conducted to the highly social valued optimum independent of the legally defined initial allocation of property rights, the Stiglerian Coase Theorem appears and no real externality problem exists in this world. Of course, this is not the real world, the Coase Theorem is a stepping stone into the welfare comparative institutional analysis. When positive transaction costs are considered, the different legal arrangements have a major impact on resource allocation. Once more the alternative institutions are brought into the game. Coase's theory, along with Hayek, is a reaction to the institutional sterilization of neoclassical theory as exposed by the excessive focus on the equilibrium state by general equilibrium theorists proponents of market socialism, being that in the general economic coordination context (economic calculation debate) or in the Pigouvian tradition in welfare economics.

As mentioned, for Coase (1988b, p. 51) the reaction toward his "The Nature of the Firm" by his colleagues at LSE was of indifference. Although Plant and Arthur Sargent congratulated Coase on the day the issue of *Economica* was published, both neither ever referred or mentioned the article again. Robbins and Hayek also never mentioned the article, although Coase "relations with both of them were quite cordial." But this personal account did not fully capture the intellectual respect that Hayek had by his work. After Hayek was awarded the Nobel Prize, one of his duties as a Nobel Laureate recipient to the Swedish Academy was to suggest other possible laureates for nomination consideration. This task was not performed by Hayek every year, naturally. However, on three occasions in which Hayek was consulted (1978, 1982, 1985) Hayek nominated Coase as who most deserved the prize (Caldwell, 2016, p. 12). This evaluation of the scholarly contributions by Coase can be traced soon after Hayek received the prize, in 1975. David Handerson (2018) "remember telling Friedrich Hayek, in June 1975 [...], that I thought Alchian deserved the Nobel Prize, and asking him what he thought. Hayek had his characteristic wince as he replied: 'Two

people who deserve the Nobel Prize, but won't get it because they haven't written enough, are Armen Alchian and Ronald Coase.'"

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James M. Buchanan, Equilibrium, and the Theory of Markets

ABSTRACT. James M. Buchanan's reaction to the new welfare economics was essentially the same reaction of the so-called Austrian tradition in the economic calculation debate, both focused on different notions of equilibrium. Previous commentators in the secondary literature have concentrated on the subjectivist connection emphasized by Buchanan - mainly in his opportunity cost work - and the Austrian tradition, notably Ludwig von Mises and Friedrich A. Hayek. Indeed, Buchanan is very explicit in stating that much of his disagreements to what economists do could be outlined in differences regarding the nature of economic cost. Nevertheless, there is little detailed discussion on the nature of such subjectivist view held by Buchanan, especially on the foundational role of equilibrium in its individual and social spheres. Karen Vaughn (1980) is an exception that explores the link in Buchanan and beyond between subjective opportunity cost and the equilibrium construct. However, she did not discuss the differences in equilibrium analysis, and its consequences to subjective opportunity cost, in terms of individual and social equilibrium. In this essay, it is argued that the distinction between individual (objective) equilibrium and social (subjective) equilibrium is the central point that based Buchanan's argument against economics as an equilibrium resource allocation problem and that favors economics as the theory of (market) exchanges. This distinction can be clearly traced back to Friedrich Wieser, Mises, and Hayek. It is also discussed the connection between the notion of individual and social order equilibrium and the role of the subjective opportunity cost on what Buchanan called the London cost tradition - especially in the context of the marginal cost rules. Particular emphasis is given to the Hayek connection in Buchanan's view on equilibrium and the theory of markets.

Key-words. James M. Buchanan, Friedrich A. Hayek, equilibrium, subjectivism, exchange, catallactics.

JEL. B20, B31, B41.

I. PROLOGUE: WHAT IS ECONOMICS?

Economics is what economists do, according to the classic dictum that Kenneth E. Boulding (1941, p. 3) attributed to Jacob Viner. If economics is what economists do, then a second natural question arises. What should economists do? What is the proper scientific role of economics? This is the inquiry that James M. Buchanan proposed in his famous presidential address to the Southern Economic Association in 1963. In fact, this methodological inquiry implies two implicit questions of different dimensions. The first dimension is what historically became common to refer as a positive dimension, that is, what are economists doing? As Lionel Robbins (1981, p. 1) noted, Viner's definition "only shifts the question one stage further: what is it that they [economists] do? What is the object of their investigations?" Ronald Coase (1978, p. 202) agreed, saying that Viner's dictum is "essentially sound but only if it were accompanied, which it never is, by a description of the activities in which economists actually engage." After answering just what economists are really doing, the second normative dimension emerges somewhat straightforward. In Buchanan's (1964, p. 213) words, "[w]hat 'should' they be doing?"

As is well known, Buchanan (ibid., p. 214) defined the proper role of economics as the study of a particular form of human interaction, exchange, and the various institutional arrangements that sustain and derive from "the propensity to truck, barter, and exchange one thing for another" as advanced by Adam Smith. "Man's behavior in the market relationship, reflecting the propensity to truck and to barter, and the manifold variations in structure that this relationship can take; these are the proper subjects for the economist's study." It is this behavioral propensity principle that gives rise to the division of labor and all the analytical structure embodied in Smith's canonical treatment of the nature and causes of the wealth of nations. The mutual gains of voluntary trade and specialization are only realized when the *de facto* exchanges take place. The nature of the coordination problem faced by an impersonal modern industrial society with decentralized and anonymous voluntary agreements and productive specialization reports ultimately to the division of labor and knowledge in society. Therefore, it also reports ultimately to the institutional infrastructure that enables such decentralization, i.e., that makes possible the economic calculation and coordination via exchanges to occur.

Buchanan's goal is indeed to restate the Smithian canonic tradition as the legitimate definition of political economy. Thus it is not surprising that he started his address with an epigraph of Lord

Acton in a letter to Mary Gladstone, daughter of the famous British prime minister William E. Gladstone, saying that "it is not the popular movement, but the traveling of the minds of men who sit in the seat of Adam Smith that is really serious and worthy of all attention" (Paul, 1904, p. 212). Since its foundation, the Smithian canon is historically embedded, intricate, and interlaced with what we can name as modern economic theory. The adjective modern here is interpreted as the foundation of a cohesive theoretical body of discipline called political economy - thus incorporating its classical English period. A symbolic example is, of course, John Stuart Mill's *Principles of Political Economy* (1848). The *Principles* was the most influential and dominant book in the profession in the second half of the nineteenth century. As soon as in the preface of the book, Mill clarifies his aim as to write a modern up-to-date version of *The Wealth of Nations*, adapted to the development of his age. Mill is the Adam Smith of the nineteenth century, as Karl Marx supposedly said.

Coase (1992, p. 713) argued there is a continuous line in the history of economic thought transcending the classical and neoclassical period. This line is the predominance of the Smithian canon formalization seeing that "[d]uring the two centuries since the publication of *The Wealth of Nations*, the main activity of economists, it seems to me, has been to fill the gaps in Adam Smith's system, to correct his errors and to make his analysis vastly more exact." In the same spirit, Harold Demsetz (2011) defined the task of neoclassical economics as the formalization of the price mechanism function coordination in an extreme decentralization system of decisions and production in the context of Smithian division of labor (assuming the institutional framework as a datum). Given the propensity to exchange and its co-manifestation in the division of labor, even in a zero transaction cost world the firm organization would exist (*contra* Coase, therefore). Specialization with the (more productive) division of labor is the requirement to firms and internal organization come to existence via gains from mutual voluntary exchange and trade. The coordination problem is created in the mutual dependence between agents, say, households on firms and firms on households. Mutual dependence can only exist in a non-autistic and non-autarchic world, a division of labor world.

In Demsetz's (2011, p. 11) opinion, "the task faced by neoclassical economics was to understand coordination in a decentralized economic system. [...] The implicit presumption that the price system is free to all who would use it increases the latent coordination problem because it maximizes the degree of decentralization." This task was mainly performed by utility-maximizing

agents and profit-maximizing producers in a general equilibrium model with simultaneous equations - assuming preferences and technology as data into the maximization problem. However, this static analysis incorporated only the Smithian element of static division of labor by taking as given the institutional structure in which the exchange takes place. The views expressed by Coase and Demsetz says much to respond to the first positive dimension question that Buchanan stated. They reflected a preoccupation with efficient resource allocation as a maximization computation problem.

In sum, what economists do is refine and formalize the various necessary marginal pre-conditions to the optimum resource allocation in an imaginary decentralized economy according to the equimarginal principle and to the exogenous data on preferences, technologies, and knowledge. Ultimately, all necessary marginal conditions are conditions on the equality between subjective and objective marginal substitution rates. These marginal conditions can all be summed in one meta-criterion stating that between any two economic goods (be that products or factors) "the subjective and objective marginal rates of substitution must be equal for all households and all production units respectively" (Blaug, [1962] 1985, p. 593). This meta-criterion is a necessary but not sufficient condition for the attainment of maximum welfare. The problem is treated as a maximization computation problem of the most efficient means that correspond to a given order of ends. The solution of this mechanic objectivist problem is already implicit in the data from which are assumed to be known *ex ante*.

The view of the nature of the economic problem as a maximization problem has, for Buchanan, as a proximate cause the illegitimate application of individual equilibrium properties to social equilibrium contexts. This is perhaps best exemplified by the field of welfare economics. Welfare theorists treated the society as a homogeneous whole or a central-planner as resolving collective allocation problems via the maximization of a social welfare function (defined according to different explicit normative criteria). Such a procedure is analogous in nature to the individual autarchic resource allocation maximization problem. Buchanan's view also has a connection to problems of aggregation in welfare contexts, the so-called Cournot problem. The horizontal sum of individual utilities in an aggregate representative individual, for example, is only valid when all individuals have the same homothetic utility function, i.e., the same marginal substitution rates for all income levels and distributions. All individuals must have Engel linear curves, thus the marginal rates and prices are independent of the income distribution. Any income redistribution

does not affect relative prices and the final equilibrium allocation. In this manner, all the problems of distribution and social heterogeneity are irrelevant to the analysis.

The Cournot problem was assumed away in much of welfare economics discussions. This was so, perhaps, because these theorists were following the steps of Frank Ramsey (1928) in his optimal savings model. Ramsey first conjectured the savings problem as resolved by a social single planner in which his utility function represented the aggregate social preferences without dealing with the exact way in which this paleo-social welfare function would be constructed. In the 1950s, the first and second welfare theorems stated by general equilibrium theory and proved by Kenneth Arrow and Gérard Debreu demonstrated the final allocation equilibrium isomorphism between social planner problems and decentralized perfectly competitive agents.

According to Buchanan, this equilibrium transposition between a Robinson Crusoe economy and a multi-individual market economy driven by the propensity to exchange missed the proper role of economic science, especially regarding the nature of the coordination problem and its institutional mechanisms. Individual choice problem is, Buchanan (1964, p. 218) agrees, a physical-computational one because the individual only reacts and responds in a passive fashion "to a set of externally-determined exogenous variables." The logic of choice problem is purely mechanical. Nevertheless, to treat the market catallactic process as one of many computational devices that solves the *same* social aggregate maximization problem is to overlook the institutional context that enables the coordination of different conflicting plans and the realization of mutual gains of trade and cooperative exchange. Buchanan values highly the study of resource allocation problems, but as a separate and distinct discipline called applied mathematics. Buchanan's suggestion is to put the exchange view and the theory of markets at the center stage of economics, a "sophisticated catallactics" as practiced by Archbishop Richard Whately, H. D. Macleod, Arthur Lathan Perry, and Alfred Ammon (see Kirzner, 1960).

A similar epistemic argument on the nature of equilibrium and its asymmetric processes in individual and social contexts was made by Friedrich von Wieser, Ludwig von Mises, and especially clearly stated by Friedrich A. Hayek. This distinction was only made totally clear and explicit in the context of the economic calculation debate in the 1930s. Thus, it is curious that Buchanan traced historically the rise and consolidation of the theory of resource allocation in Robbins' famous economic problem delineation and scope definition of economic theory, i.e., the allocation of scarce means to different and competitive ends (in fact this is not the precise definition

of Robbins, as it will be discussed below). It is interesting because Robbins was, along with Hayek, against the general equilibrium static view of (i) the mathematical solution for the formal similarity between alternative institutional means of coordination; (ii) the practical trial and error solution; and (iii) the competitive solution.

It is indeed somewhat more curious that Buchanan placed Robbins as his main adversary because the use of general equilibrium theory as the supposed proof of correspondence between decentralized and centralized drive equilibrium was made before and parallel with Robbins' methodological account. The definitive statement of clarity of the adequate role of knowledge and equilibrium in individual and social spheres was only completely and explicitly stated in Hayek's 1937 article on "Economics and Knowledge." In fact, in his second professional published article, Buchanan (1949, p. 496) already introduces implicitly this notion regarding the pure theory of government finance. Namely, the organismic theory which treats all individuals in a single cohesive organic unity (analogous to the individual equilibrium) and the state as represented by "the sum of its individual members acting in a collective capacity" (analogous to social order exchanges). Buchanan called the first approach as organismic (best represented by Hugh Dalton) and the latter as individualist (represented by the Italian school of public finance such as, e.g., Antonio de Viti de Marco).

Buchanan's reaction to new welfare economics was essentially a similar reaction that the so-called Austrian tradition had in the economic calculation debate, both focused on different notions of equilibrium. Previous commentators in the secondary literature have focused on the subjectivist connection emphasized by Buchanan - mainly in his opportunity cost work - and the Austrian tradition, notably Mises and Hayek (e.g., Vaughn, 1980, 1981, 2014a, b; Boettke, 1987; Yeager, 1987; DiLorenzo, 1990). Thomas J. DiLorenzo (1990, p. 180), for example, noted that "[o]f particular interest to Austrian economists is the fact that subjective cost theory lies at the heart of many of Buchanan's contributions to economic theory." DiLorenzo also mentions other shared insights "such as methodological individualism and an emphasis on market (and non-market) processes, an opposed to equilibrium conditions or end states." Indeed, Buchanan is very explicit in stating that much of his disagreements to what economists do could be outlined in differences regarding the nature of economic cost. Nevertheless, there is little detailed discussion on the nature of such subjectivist view by Buchanan, especially on the foundation role of equilibrium in its individual and social spheres.

Karen Vaughn (1980) is an exception that explores the connection in Buchanan and beyond between subjective opportunity cost and the equilibrium construct. However, she did not discuss the differences in equilibrium analysis and its consequences to subjective opportunity cost in terms of individual and social equilibrium. In this essay, it is argued that the distinction between individual (objective) equilibrium and social (subjective) equilibrium is the central point that based Buchanan's argument against economics as an equilibrium resource allocation problem and that favors economics as the theory of (market) exchanges (sections II and III below). This distinction can be clearly traced back to Wieser, Mises, and Hayek (section IV). It is also discussed the connection between the notion of individual and social order equilibrium and the role of the subjective view of opportunity cost on what Buchanan called the London cost tradition. In this point, especially in relation to the marginal cost rules proposed by the market socialists (section V). Particular emphasis is given to the Hayek connection in Buchanan's view on equilibrium and the theory of markets. In Buchanan's ([1979] 2015, p. 248) opinion, "his [Hayek's] fundamental papers on the use of knowledge in markets will surely rank among the major contributions in the whole history of economic analysis, and of social-political-economic philosophy."

II. THEORY OF EQUILIBRIUM RESOURCE ALLOCATION AND THEORY OF MARKETS

According to Buchanan (1964, p. 214), Robbins' "all-too-persuasive delineation of our subject has served to retard, rather than to advance, scientific progress." First, the Robbinsian economic problem is a problem of allocation, of the final disposition of resources between ends. The problem only emerges where there is a scarcity of alternative means in relation to different ends, i.e., when there is the necessity to choose between competing means. Second, Buchanan criticizes Robbins' attempt to be wholly neutral in regard to the desired ends and his generic account to the *homo agens* that chooses between the alternative means. Exactly who is the choosing agent for which the economic problem is defined? Is an individual only or can be a community, a society? The sound of silence about the exact character of the agent with its open-ended nature left Robbins' methodological statements open to the excessive focus on the theory of resource allocation. Moreover, the anonymity of the choosing agent allowed the analogous application of the economic problem to social aggregates. Thus, in Buchanan's (ibid.) view, "[o]nly since *The Nature and Significance of Economic Science* [1932] have economists so exclusively devoted their energies

to the problems raised by scarcity, broadly considered, and to the necessity for the making of allocative decisions."

This statement by Buchanan is interesting because Robbins is quite explicitly trying to define the unity of economic science on positive grounds. Robbins tried to conceptualize the nature of economic science as it *was* practiced by his contemporaries in the early decades of the twentieth century. He pursued this goal within the context of the pluralistic neoclassical economics at the time. In this task, Robbins was influenced by the somewhat (English) rediscovery of the general equilibrium approach of Lausanne in the form, for example, of Paretian indifference curves along with the influence of the Austrian tradition (in the form of ordinal utility and opportunity cost emphasis), especially in its English version of Philip H. Wicksteed (1910). The two main influences of Robbins' *Significance* in its first edition were Wicksteed and Mises. Robbins (1932, p. ix) acknowledged his "especial indebtedness" with both. The significance of economic science which Robbins deals with in chapter VI can be read as with a more normative character. In the beginning of chapter IV on the nature of economic generalizations, Robbins (1932, p. 72) is straightforward to say that "[i]t is the object of this essay arrive at conclusions which are based on the inspection of Economic Science as it actually exists. Its aim is not to discover how Economics should be pursued [...] but rather what significance to be attached to the results which it has already achieved." Indeed, Robbins (p. 85) criticizes those who judge economics by the analysis of "external façade" and by "*ex post facto* apologia" of some economist instead of judging by the actual *de facto* practice of economics and its internal logic. Therefore, Buchanan's picture is at least in temporal grounds incompatible with Robbins' own view of his essay since he was trying to describe the actual practice of economists.

The loose delimitation of the choosing economic agent with the emphasis on final states of allocation (i.e., final states of equilibrium) thus permitted some confusion on the exact nature of the problem in investigation by economic science. Buchanan (1964, p. 215) mentions two examples of loose language use that equates the equilibrium nature construct in individual and societal levels. First, the use by Frank Knight ([1933] 1951, pp. 6-13, 31-5), "my most respected of all professors," of the "social organization" concept that must perform the same five social functions in any economic system. Second, the definition of economics by Milton Friedman as "the study of how a particular society solves its economic problem." Even Robbins himself spoke in these terms, saying that the economist "is interested in the way people individuals and societies

economize - that is dispose of the things which are scarce & how changes in the scarcity of these things (whether coming from the demand side or the supply side) affect their activities" (Howson, 2004, p. 426).

These statements *prima facie* contend that the real choosing entity in which the economic problem is exposed and confronted is the society as a whole. It is the ends of this aggregate entity that really counts in the equimarginal principle calculations for the optimum equilibrium allocation. Implicit in this view is the problem of aggregation of individual preferences in a single coherent and cohesive order of ends, besides all the postulates about knowledge involved. Buchanan (1964, p. 215) argues that this language confusion of the means-ends framework without some supplementary step between the individual level and the social equilibrium ended up assuming "that there is meaningful content in economics for 'social welfare;' it prejudges the central issue that has been debated in theoretical welfare economics."

Indeed, Buchanan's point is summarized in the proper use of equilibrium constructs and the bridge between individual and social equilibrium. The Robbinsian definition of the economic subject makes no qualitative difference in crossing the bridge between individual and social equilibrium. The latter can be defined as just the simple horizontal sum of individual utilities as the case of the utilitarian cardinal discretion. Individual units can be aggregated according to a variety of normative welfare criteria embodied in welfare utility functions. Nevertheless, it was the same Robbins the one that, just after arguing for such a definition of economics, was a very strong urge to tell the readers in chapter IV in *Significance* about the impossibility of interpersonal (cardinal) comparisons of subjective utility. Even so, an unintended consequence of the Robbinsian definition was to promote exactly this qualitative kind of normative approach in welfare economics by the confusion of individual and social spheres. Apparently, Robbins partially caused the confusion that he hoped to prevent. For Buchanan (1964, p. 216), the result was that "[e]conomists, paying heed to Robbins, now know when they cross the bridge; they explicitly state their own value judgments in the form of 'social welfare functions.' Once having done this, they feel free to maximize to their own heart's content. And do so within the bounds of methodological property, à la Robbins."

If the economic problem is one of equimarginal equilibrium allocations *given* the competitive order of ends provided by some exogenous social welfare function and *given* alternative scarce means, the solution set is more or less obvious. An allocation problem will result in an allocation

solution by the maximization of alternative scarce means given the ends. It is a computation problem. In this context, it is interesting to explore the distinction between the economic and technological problems first exposed by Hans Mayer and later developed by Robbins in his methodological work. Mayer drew the line between the economic and technological problems in the fact that the former depends on the multiple and competitive ends.

In the first chapter of *Significance*, Robbins stated that the multiplicity of ends *per se* did not create economic phenomena. In a nirvana world, there would be no economic (i.e., opportunity or alternative) cost to satisfy the multiple and competitive ends. If all the multiplicity of ends can be completely satisfied without the necessity to choose between alternative ends, there is no economic problem because there is no economic opportunity cost in the act of choice. In fact, there is no choice by definition. Opportunity cost is the dual of the act of choice and the necessity of choosing between scarce resources to satisfy conflicting ends defines the economic problem. Neither alternative scarce means by itself create the economic phenomena. If the means of satisfaction are scarce but have no alternative use and thus cannot be exchanged for something else or postpone intertemporally, the means are scarce but have no opportunity cost. Therefore, it cannot be economized, i.e., be subject to the act of choice. It is not an economic phenomenon. Accordingly, the precise definition of economics for Robbins (1932, p. 15) is "the science which studies human behavior as a relationship between [a certain order of multiple] ends and scarce means which have alternative uses." For Robbins, the scientific unit of economic science lies on the opportunity or alternative cost inherent in the act of choice, i.e., in the act of economizing. This theme will be discussed in more detail in section IV.

Buchanan in his address illustrates the textbook general implicit use of Mayer's distinction between economic and technological problems and its limitations. It is commonly said that the technological problem has by definition a single best or optimum solution since it has only one end to be maximized. But this picture is not really *any* different from what we would call the economic problem with multiple and conflicted ends. In this configuration, the difference is only one of aggregation gradients. More specifically, a difference of the aggregation degree in which the argument function is to be maximized. In this sense, both the consumer in the supermarket and the construction engineer face essentially the same technological problem. Both lie in the realm of the theory of choice, the theory of resource allocation. If neither is an economic problem, the subject matter of economics is faced with an identity crisis.

For Buchanan, the Smithian propensity to exchange, barter, and trade define the proper subject of economics. Economics is the science that studies the whole of exchange relationships. From exchange relationships, it is possible to derive what Buchanan called the theory of markets (voluntary exchanges relationships) and the theory of politics (coercive or potentially coercive exchanges that involve collective action problems). So economics deals not only with voluntary exchanges between humans but also with the many different kinds of exchanges in different, non-market institutional arrangements. Buchanan prefers to name the broad theory of exchanges (i.e., economics) as catallactics or symbiotics because both stressed the nature of the mutually beneficial association of different and heterogeneous organisms in the exchange process.

Exchange processes can only occur in a non-isolated world, in a social environment. Crusoe's economic problem is a technological problem of choice computation. Exchange, barter, and trade can only take place when Friday is introduced in the analysis. Within the many kinds of interaction or competition in a social environment, the interesting case for the Smithian canon is what Boulding (1963) called exchange systems. The exchange system is a middle ground between two opposite worlds of social order, the threat and integrative systems. The threat system of social order is by definition a zero-sum competitive game, interactions between agents are of pure conflict nature. We can think in some sort of Marxian exploitation theory or zero-sum non-cooperative games. The winner takes all the prize. On the other hand, the integrative system is about the perfect harmony between interests and individual actions. All individuals engage in harmonious identical goals and aiming results - be it by intentional design or unintentional consequences. The major example in the history of economic thought is the natural harmony doctrine associated with the Physiocrats, in which the social coordination of economic activities is assumed *in vacuo*, that is, without the appropriate institutional structure. One can also think of some interpretations of Bernard Mandeville's *The Fable of Bees, or Private Vices and Publick Benefits* ([1714] 1988).

Another way to think about social interaction and its processes is to focus on the competition between individuals. Competition is an intrinsic and inescapable consequence of scarcity. Scarcity, as Robbins noted, is an asymmetric condition between limited means to infinite ends. Scarcity forces individuals to choose some finite ends to be attended by the scarce means, discarding in the process as opportunity cost all the other possibilities. Individuals compete for limited and scarce means to satisfy infinite ends. A *sine qua non* condition for competition is a social environment, a

society of more than one person. Only when Friday steps on the island that scarcity implies necessarily competition between Crusoe and Friday. An environment with scarce resources and only one person does not imply competition, there is no one to compete with. The most primary form of competition is, of course, violence. Violence or coercion is the realm of competition that Boulding called threat systems of pure conflict. An alternative form of competition, and the most interesting for our purposes, is offers of exchange (bids offers in the market). This is the exchange system. Competition is the natural state of the world in society, there is no way to reduce competition because there is no way to eliminate scarcity. Every society has to deal with some discriminatory form of allocation of scarce resources. The real question is what kind of institutionalized competition produces states of nature judged as more desirable or not (see Alchian and Allen, [1964] 1972, chapter 2).

It is the mutual advantage character of the economic (and political) activity between different individuals in specific institutional arrangements that Buchanan (1964, p. 218) pointed as "the one important truth in our discipline." Not the maximization norm. In the oxymoron Crusoe general equilibrium model, all the social interactive content of social world is regarded as identical with the individual computation choice problem. One way to do this bridge passage smoothly is to assume the inability of each individual to influence the process of exchange through price, taking the price (and knowledge) as exogenously given to the individual (i.e., assuming perfect competition). Thus, the social problem becomes automatically identical to an (individual choice) computation problem. This was exactly the essence of the counter-argument given by the market-socialists such as Fred Taylor, Henry Dickinson, Oskar Lange, Evan M. Durbin, and Abba P. Lerner to the Mises-Robbins-Hayek's economic calculation critique in the 1930s. In Buchanan's (ibid.) view, the basic flaw of this approach "lies in its conversion of individual choice behavior from a social-institutional context to a physical computation one." The general equilibrium theory is a social-institutional antiseptic theory.

An indicative example of this alleged illegitimate conversion of individual and social equilibrium is the use of the concept of equilibrium system by Paul A. Samuelson in his *Foundations of Economic Analysis* (1947, pp. 8-9). According to Samuelson, the concept of an equilibrium system is equally applicable in the case of a single variable (Marshallian partial equilibrium) as well as in general equilibrium with multiple (possibly thousands) variables. In each case, assumptions regarding other variables must be made, i.e., *ceteris paribus* assumptions (see Buchanan's (1958)

critique of some uses of *ceteris paribus* clauses in non-economic meaningful cases). So any equilibrium system analysis can only be defined in terms of some initial conditions. The only difference between a partial and general equilibrium system

> "lies in the fact that in the general equilibrium analysis of, let us say, [Léon] Walras, the content of the historical discipline of theoretical economics is practically exhausted. The things we are taking as data for that system happen to be matters which economists have traditionally chosen not to consider as within their providence. Among these data may be mentioned tastes, technology, the governmental and institutional framework, and many others. It is clear, however, that logically there is nothing fundamental about the traditional boundaries of economic science. In fact, a system may be as broad or as narrow as we please, depending upon the purpose at hand; and the data one system may be the variables upon of a wider system depending upon expediency."

For Samuelson, equilibrium analysis can cross the bridge between the individual to social equilibrium "as we please, depending upon the purpose at hand." In the perfectly competitive general equilibrium model, competition is assumed or constructed as a state of affairs. The output results of the model gives us a unique equilibrium optimum that can be linked to a point in the Paretian welfare surface by a welfare function. In equilibrium, all the gains of bilateral trade are ceased. Exchange ceases to be relevant, so the market and its institutions. If exchange ceases, therefore competition also is extinguished since bids offer of exchange is the single form of competition in the model. This is the rivalry point in the economic calculation debate that Don Lavoie (1985) stressed. The same point is made by Buchanan (1964, p. 218, italics in original), who argues that the model of perfect competition misses the analytical central heart of political economy. "A market *becomes* competitive, and competitive rules *come* to be established as institutions emerge to place limits on individual behavior patterns. It is this *becoming* process, brought about by the continuous pressure of human behavior in exchange, that is the central part of our discipline, if we have one, not the dry-rot of postulated perfection."

III. WHAT SOME ECONOMISTS DO

Just one year after the publishing of Buchanan's presidential address, Israel M. Kirzner responded to some of the address criticisms and pleas in a note on "What Economists Do" (1965). It may be adequate to add just one more qualifying word, saying "What Some Economists Do." Kirzner's (p. 257) goal is threefold. First, to show that the then currently fashionable focus on the equilibrium resource allocation is not derived from the concept allocation by itself, at least not "that allocation that makes up the formal structure of the *individual* act of choice." Second, Kirzner wants to make the case that most of Buchanan's objections and criticisms have already been raised by a tradition that at the same time emphasizes "the role of individual planning, allocation, and choice." Third, to show that this tradition englobes and encompass the catallactic view of Buchanan, view such that is just a subset of the tradition mentioned since there is "fundamental insights which the more limited catallactic view is unable to exploit."

According to Kirzner, the historical point that Buchanan made, localizing in Robbins' definition of the economic problem as a resource allocation one, is correct but missed the nuances and deepness of Robbins' view. Robbins' attempt to systematize his contemporary practice of economics did not in any moment implies that the professional practitioners, as he understood, saw the task of economic science as that of actually *solving* the economic problem in any level of aggregation, be that in individual equilibrium analysis or for society. The discipline studies the multiple activities of humans engaged in solving their *own* economic problems. The actually efficient resource solutions to the allocation problems are not the main interest. What (some) economists do is to explain the processes of interaction between agents that attempt to solve their *own* economic problems, that is, that multiple individuals try to maximize (economize) their scarce means with alternative uses in relation to the multiple ends. In other words, "its task is to explain the phenomena (including interpersonal exchange processes) which result from the circumstance that men are, in fact, engaged in seeking efficient solutions to their allocative problem" (p. 258).

For Kirzner, Buchanan's adversary is not, or should not be, Robbins as such. Robbins' interpretation of his own emphasis on the allocation aspect of the economic problem is very different from interpretations that others made of it. Buchanan's struggle should be restricted to those that in the name of the profession, "in the name of economics," only are concerned and focused on the actual practical solution attempt of efficient resource allocation both in the individual choice and social equilibrium contexts. Of course, Kizner is implicitly referring to the general equilibrium literature in the 1930s that evolved to the creation of the post-Robbinsian

welfare economics in the 1940s. It can be considered the culmination of this literature the publication of Lerner's *The Economics of Control: Principles of Welfare Economics* (1944).

A short passage example may be illustrative. In the preface of his book, Lerner (1944, pp. vii-viii) says that "[t]he title *Economics of Control* was proposed in 1932, with the idea that the principles of the price mechanism would also be applicable to nonsocialist but autocratic collectivist societies. The name is perhaps even more appropriate for the present form of the book, now that the stress is taken from collectivism and applied to the idea of conscious recognition of the problems of social organization and the exercise of conscious control over the economic systems." That is, in different fashions, Lerner proposed actually *solving* the resource allocation economic problem. "Liberalism and socialism can be reconciled in welfare economics," as Lerner (p. xi) put it in the summary of chapter one.

The Robbinsian proper understanding of economics also emphasizes the Smithian propensity to truck, barter, and exchange since this behavior can be derived under the economizing principle. Seeking behavior of humans to economize their scarce means with opportunity uses in relation to an order of multiple ends implies the exploitation of exchange opportunities in order to avoid waste of resources. The relevant aspect of human action is made in a world of scarcity. The multiplicity of ends and scarce means subject to alternative uses to achieve these ends imply a necessary condition upon the individual to plan, to choose, to act, and to compute his own problem. From this fact that individuals plans, chooses, and acts, a body of propositions is derived aiming to explain the phenomena that result and emerge from the multiple individual actions. This body of thought is the discipline of economics.

Robbins (1938, p. 345) treated the notion of choice imposed by scarcity as more general than a restrict definition based on exchange. This question is for him a dead issue in methodology since "[w]heter we define the actual subject-matter of study in terms which cover all institutional settings (the 'scarcity' definition) or limit it to those settings with which we are most preoccupied (the 'exchange' definition), is not a matter about which sensible people will waste many precious moments." The exchange definition is only a specific application of the notion of scarcity in a particular social and institutional organization that deals with the fundamental economic problem. The same can be done among many possible alternatives. Of course, the exchange economy is the most interesting case for economic analysis since the implications and repercussions of individual decision are extremely complex. "For this reason economic analysis has most utility in the

exchange economy" (Robbins, 1932, p. 18). In the sense of unintentional individual repercussions, thiese are less meaningful or even unnecessary in other institutional contexts such as in the isolated economy of Crusoe. "It is debarred from any but the simplest generalisations by the very *raison d'être* of a communist society." Nevertheless, "where independent initiative in social relationships is permitted to the individual, there economic analysis comes into its own" (pp. 18-9).

In reaction to the exchange emphasis by Amonn, Robbins (1932, p. 19) says that "it is one thing to contend that economic analysis has *most interest and utility* in an exchange economy. It is another to contend that its subject-matter is *limited* to such phenomena." He offered two reasons for this view. First, even the behavior outside such institutional social organization via exchanges is also conditioned by the scarcity of limited and alternative means to multiple ends. As we will see, this is just a restatement of Wieser's formal similarity proposition regarding the natural value further elaborated by Mises in his economic calculation challenge. "The generalisations of the Theory of Value are as applicable to the behaviour of isolated man or the executive authority of a communist society, as to the behaviour of man in an exchange economy — even if they are not so illuminating in such contexts. The exchange relationship is a technical incident, a technical incident indeed which gives rise to nearly all the interesting complications, but still, for all that, subsidiary to the main fact of scarcity."

Robbins is merely restating the Austrian position. The second reason is that, for Robbins, the proper understanding of the exchange economy necessarily demands that the exchange phenomena is made of individuals trying to economize their scarce and alternative means and thus engaging in the exchange behavior. The exchange economy emerges through the economizing behavior of multiple individuals that have direct and indirect (i.e., unintended) repercussions in the system. Thus, "it is clear that the phenomena of the exchange economy itself can only be explained by *going behind* such relationships and invoking the operation of those laws of choice which are best seen when contemplating the behaviour of the isolated individual" (Robbins, 1932, p. 19). The theory of individual choice is more general than a theory of exchange since the theory of exchange has to be based on a sub-variation of the theory of individual choice. Any exchange phenomena have to be defined in the economizing behavior of the parts that seek to realize mutual exchange gains. Exchange behavior is a result and direct consequence of the economizing choice behavior, the contrary is not valid. The theory of exchange is a particular institutional setting application of the theory of economizing choice.

Economics is a science of choice imposed by scarcity, whatever situation in which this applies there must be economic phenomena. Thus there are no limits on the subject-matter to economics. *Au contraire*, for Buchanan the *logic* of choice does not imply a strict *science* of choice, i.e., economics as *defined* by the logic of choice. It seems reasonable to argue that the same can be said in Hayek's case, and that would be the sense of Hayek's own view of his departure from Mises (e.g., see Caldwell, 2009, pp. 223-4). Indeed, Robbins (1981, pp. 1-2) in his 1980 Richard T. Ely Lecture to the American Economic Association mentions the "much more interesting" proposal "put forward by my old friend and colleague, Fritz Hayek, to revive Archbishop Whateley's proposal to rename our subject as the science of *Catallactics*, or the *Science of Exchanges*." Robbins says that he "should certainly agree" that even where there is no market social organization the aspect of decisions and economic activities of scarce and alternative means and time can be viewed as the "exchange of one state of affairs for another." Something similar to Mises' notion of human purposeful rational action. However, Robbins believes that this exchange view does not make "sufficiently clear the conditions which lead to exchanges." Something that his definition in terms of economizing behavior does, "scarcity being conceived as the relationship between objectives, either personal or collective, and the means of satisfying them." Robbins does not mention Buchanan.

In Robbins' judgment, the propositions derived from the scarcity problem suits the function of explaining the emergence of market exchanges in the social sphere of interaction. In this sense, "[t]he theorems of Robbinsian economics do, in other words, explain how from the individual actions of market participants there emerge social phenomena; and how these social phenomena are completely different in significance from the separate ('computational') economic problems of the individuals" (Kirzner, 1965, pp. 258-9). Kirzner points out that the so-called Austrian tradition - especially Mises and Hayek (along with Robbins) - have consistently objected to the perfect competitive general equilibrium model where it is assumed that each individual participant has absolute none market power and takes the price exogenously as given in his own computational resource maximization problem. In this model, there is no such thing as a true interaction relationship between the reference individual that takes the price exogenously and other individuals. Thus, in aggregating and summing horizontally all the individual technological computation we have inevitably a social general technological maximization problem. We can

demonstrate that the central planner social maximization problem is the same in terms of final equilibrium resource allocation as the decentralized sum of individual problems.

In this context, Kirzner argues that the catallactic approach that Buchanan wants to urge as the subject of economics sacrifices the emphasis in the individual choice that the Austrian tradition has stressed as also fundamental in explaining social orders. Therefore, Buchanan's view of the scope of economics would be just a subset of the Austrian tradition because this tradition has an emphasis on the individual choice embedded in the social catallactic context of institutions and markets. On his turn, Buchanan wants to focus on the social sphere of interaction mediated by exchange, be that exchange totally voluntary (theory of markets) or with some degree of coercion (theory of politics) - while confining the computational individual choice problem to some other branch of applied mathematics outside the proper domain of economics. The individual choice problem would still be studied and appreciated by economists, but only as a separate and exact branch of applied mathematics. Not as part of the social emergent order via exchanges, the proper space of catallactics.

According to Kirzner (1965, p. 260), this broad character of Mises' and Robbins' views, that emphasize the social consequences of individual choice, also has a great advantage because "*it relates economic theory to* [...] *its appropriate epistemological underpinnings*." Kizner refers to the direct connection of purposeful, allocative individual choice to the notion that economics is seen as fundamentally different from physical natural sciences. "Economics is seen as a subjective, a priori, discipline with the individual *plan* - purposeful and allocative - the focal point of analysis." If economics is a subject epistemologically different from the physical sciences, thus the economic problem is one that deals with an epistemologically different problem than the physical technological computation problem. Indeed, Hayek (1942, p. 276) defined the epistemic difference between the social and physical sciences exactly in the subjective character of the scientific object and material of the former. The peculiar object and method of social studies are concerned "with man's actions and their aim is to explain the unintended or undesigned results of the actions of many men." Thus, "[i]t is only by the systematic and patient following up of the implications of many people holding certain views that we can understand, and often even only learn to see, the unintended and often uncomprehended results of the separate and yet interrelated actions of men in society" (p. 284).

Buchanan agrees with virtually all these statements and still links his favored exchange vision with the same appropriate epistemological underpinnings and foundations mentioned by Kirzner. Buchanan synthesized his methodological visions in eighth propositions in the postscript essay that concluded the collection of his methodological articles, *Why Should Economists Do?* (1979, pp. 280-2). To briefly discuss just a few, Buchanan states that economics is a science but a very peculiar science, a science that bears little or no similarity to the physical sciences. Its prediction and control cannot be compared to the physical natural sciences as these are commonly understood. "The strictures of both Frank Knight and F. A. Hayek against scientism require continued repetition."

Economics is about choice, but real choice only has a meaning under uncertainty in the sense that "[c]hoice is necessarily made among imagined 'possibles,' and choice-making under certainty becomes internally contradictory. The equilibrium constructions are useful only if their limitations are appreciated." Economics is about arbitrage, with the behavioral paradigm of the Smithian propensity to truck and barter, "the maximization paradigm is the fatal methodological flaw of modern economics." Finally, the most important function of economics is its didactic role, its social function lies "in offering an understanding of the principle of emergent order from decentralized process, of spontaneous coordination" (ibid.).

According to Kirzner, Buchanan's objections to Robbins' emphasis on individual plans are not valid since it is precisely the stress on the individual plan and economizing behavior that the Austrian tradition authors lie on to criticize the *same* misleading use of individual and social equilibrium spheres in general equilibrium theory and welfare economics. In fact, as Marciano (2009, p. 136) noted, in a previous version of his presidential address Buchanan wrote: "I take Lord Robbins as *my* adversary." Not as "an adversary" as in the print version, meaning that Buchanan himself was the only one who really opposes Robbins' view of economics defined by the logic of choice, including in the Robbinsian paradigm the Austrians such as Mises, Hayek, and Kirzner. For Buchanan, "their [Austrians] definition of economics retains the emphasis of economics on choice behavior without the appropriate limits." This would later be deleted for the final version of his address (Buchanan Archives, Buchanan House).

The opposing view expressed in the first version of Buchanan's address between him and the Austrians, especially Hayek, is misleading since the delimitation difference that Buchanan is stressing is located in the subjective notion of individual and social equilibrium. What Kirzner

ignores is that Buchanan is not attacking only and just the precisely philosophical understanding of the economic discipline by Robbins, but mainly what has been done in the name of such methodological views. In fact, Buchanan is very clear about the fact that Robbins tried to keep the profession to the individual side of the bridge claiming the scientific positive impossibility of interpersonal utility comparisons. For policy and ordinary business of life purposes, Robbins (1932, chapter IV; 1938, 1981) had a more soft position. He divided the field into economics and political economy, where the last was the appropriate art space where policy-oriented interpersonal utility comparisons could be made as a first-degree approximation.

In addition, even if we are explicitly prepared to make such interpersonal utility comparisons as a policy device in the judgment that such aimed policy will maximize utility, economics as a scientific discipline says nothing about if we should indeed pursue such policy. Economics is a total value-free discipline in the sense that it is neutral about ends aimed in the economizing behavior. There is nothing in the pure economic justification that supports such action of maximizing utility. It is regarding this fact that Buchanan criticizes what was made of the maximization principle by welfare economics. Economists started to explicitly introduce their own values in the welfare utility functions and maximize in their own heart following the Robbinsian methodological definition of economics.

In the somewhat Weberian aim to be totally neutral in relation to the ends in his definition, Robbins keept economics open-ended to multiple varieties of ends to be maximized as well as to whose these ends are alternatives. This left the door open to the extension of the individual economic choice problem to some aggregate social group (e.g., the whole society). Moreover, it also permitted the bridge crossing by introducing explicitly the normative content of the economist in the social maximization problem in the format of different ways of aggregating individual utilities, i.e., by different welfare functions. The initial neutrality of ends aimed by Robbins quickly turned in different explicit normative ends that represented the theorist social normative values, the value judgments entered again in economics by the back door.

IV. A(USTRIAN) TRADITION ON INDIVIDUAL AND SOCIAL EQUILIBRIUM

Be that as it may, Kirzner tried to defend Robbins' (and Austrians in general, especially Mises') emphasis in the individual computational choice as a required scientific step to the social level

unintended repercussions. In this tentative, however, Kizner ignored not only the fact that Buchanan was mainly criticizing the unintended consequences of Robbins' definition but also that the main criticism in Buchanan's presidential address was the illegitimate transposition of individual equilibrium properties to social equilibrium contexts. A theme that is a distinguishing feature in the Austrian tradition and that can be traced in Wieser, Mises, and Hayek. In fact, it is the gradually growing consciousness and explicitness of the nature of the equilibrium analysis in individual and social levels that gave rise to the modern Austrian market-process approach. A turning point is, as is well known, the complete and explicit epistemic distinction between individual and social equilibrium constructs by Hayek in his critique of the use of equilibrium theory in, first, the trial and error variant of the mathematical solution suggested by Fred Taylor (1929) and Henry Dickinson (1933) and, second, in the competitive solution suggested by Lange (1936) in the context of the economic calculation debate.

In both his major works, *Natural Value* ([1889] 1893) and *Social Economics* ([1914] 1933), Wieser's expositive and theoretical strategy contrast what he called the theory of the simple economy and theory of the social economy. It is in regard even to the theory of the simple economy, a theoretical hypothetical abstract Crusoe economy in which the economy is composed of a single subject guided by a single mind, that Wieser wants to demonstrate that the principles of marginal subjective value theory are still valid and inescapable. The Crusoe construct was widely used as an expositive device of the English classical political economy principles of the labor value theory. Moreover, the abstract single mind economy was naturally linked with a socialist or central planned community. Wieser ([1914] 1933, p. 19) explicitly stated this notion when he says that "we do not have in mind the scant economy of an isolated householder. Rather we envisage an economy that has the breadth of a national economy with all its wealth, technical knowledge and problems of economic calculus. But this broad economy is guided by a single mind." This is understandable because Marxians claimed that all the economic logic and relationships that characterize capitalism as private ownership of the means of production would disappear in a socialist economy (e.g., the phenomena of interest as well as all the price relations would disappear in a socialist commonwealth). Indeed, it is *contra* this Marxian notion that Mises' challenge is all about.

Contrary to Marxians, Wieser ([1889] 1893, p. 61) demonstrated that even in a Crusoe simple economy, what he called the simple process of natural economy, the laws of value in which the

choice and prices emerge did not cease. “Even in a community or state whose economic affairs were ordered on communistic principles goods would not cease to have value. [...] The elementary laws of valuation, as we have explained them, would be entirely and unlimitedly effective for the whole community. That value which arises from the social relation between amount of goods and utility or values it would exist in the communist state, we shall henceforth call ‘Natural Value.’” These marginal utility value laws are the natural values that give the title of his book. The marginal utility principle did not lose its validity in a socialist society and the nature of the value is independent of the institutional organization of the production. In this sense, the laws of the subjective value theory have to be considered in any alternative productive arrangement.

The subjective theory of value was not a bourgeois theory that only applies to capitalism. As Armen Alchian and William Allen ([1964] 1972, p. 7) put it decades later, “[v]alid economic theory exists and is applicable to *all* economic systems and countries. There is *not* a special economic theory for capitalism and another for communism, although significant differences exist in the institutions and legal frameworks to which the theory is applied.” This fact does not prove or disprove anything against central planning. In other words, Wieser is stating the formal similarity argument between any productive system in regard to the nature of value and, therefore, with the marginal conditions to the optimum resource allocation. This last point was first wholly developed by Vilfredo Pareto in his *Cours D’Économie Politique* ([1896-7] 1964).

The universality of choice theory is only a corollary of the universality of value in a world of scarcity, a theme that Robbins would develop in his definition of economics. However, the simple process of the natural economy is only a first step in the analytical process of decreasing abstraction that serves the function of emphasizing the nature of choice and values implied in the choosing act. In this stage, it is assumed by definition the complete consistency of plans since there are only *one* plan and other simplifications to the equilibrium analysis of a frictionless world. Nevertheless, this stage is an essential prerequisite to the understanding of the social economic phenomena. The Crusoe economy is recognized as just a useful abstract construction to the purpose of the social economy understanding where different plans need to be coordinated. It is clear in Wieser the epistemic distinction between individual equilibrium analysis (theory of simple economy) and social equilibrium (theory of social economy). Indeed, this distinction is similar to Buchanan’s categories of the theory of equilibrium resource allocation and theory of exchange (markets and politics).

Drawing from Wieser, Mises ([1920] 1935, [1922] 1936) particularly stressed the different nature of economic calculation in a Crusoe single mind economy and in a modern complex social economy. The qualitative difference can be put in distinctive terms of simple and complex producer evaluations. Producer evaluations are the continued adequacy process of the higher order goods as a means to the production of lower order goods. These evaluations are connected with the third function of economic calculation, i.e., that it allows the producer evaluations to be synthesized into a minimal (monetary) common denominator. Producer evaluations are check by the profit and loss accounting in which the input sum in the productive process is subtracted with its exchange value from the output exchange value. This economic calculation process cannot be made in physical or *in natura* commodity terms since subjective use values of such products cannot be measured and compared. It is only with the social institution of money that we have the interpersonal comparisons of exchange values in a single cardinal measure. Mises, like Wieser, is directly arguing against the Marxian predicton that in a socialist community monetary exchanges (as the interest rate, etc.) would disappear. But without private property, money prices, and profit and loss accounting, how is one suppose to calculate producer evaluations?

In a complex social economy, with multi-capital stages of production, producers evaluations of higher order goods are imputed from the evaluations of lower order goods. *Mutatis mutandis*, value is imputed from consumers' demand to lower order goods. Mises' economic calculation challenge reports to how in the absence of private property of means of production (i.e., in the absence of a capital or higher goods market that can express exchange values of higher order goods), money prices, and profit and loss accounting there could be an economic calculation of producer evaluations. Note that the economic calculation problem that Mises is posing is intrinsic to a social economy with multi-capital stages of production. There is no sense to discuss the economic calculation problem in a single mind natural economy since all the imputation process is by definition *already done* in the mind of Crusoe. So far the productive process is in its rudimentary stages, just one mind can survey the whole process in the sense that all the value imputation from consumer's demand to consumption goods, and from consumer goods to capital goods (in two stages of productive arrangement), can be extended and calculated in subjective use values *in natura* by the individual. "Monetary calculation only has meaning within the sphere of economic organization," i.e., within the sphere of social economy with the division of labor and knowledge that arise the exchange and plans coordination processes (Mises, [1920] 1935, p. 102).

Both in the economic calculation debate German-speaking phase (with a Marxian audience) in the 1920s and the English-speaking phase in the 1930s (with a neoclassical audience), these different properties of an individual centralized economy and a social decentralized economy were somewhat missed. It was specifically in the English-speaking phase that the use of the neoclassical general equilibrium apparatus was made to claim not only formal similarity of the marginal conditions to the optimum resource allocation in whatever institutional productive organization but also to argue the theoretical and practical resolution feasibility of the Walrasian simultaneous equations. First in the trial and error version of the mathematical solution with Taylor and Dickinson and second in the competitive solution by Lange and Lerner. In this context, Hayek reacted in criticizing the use of the equilibrium construct as a centralized individual equilibrium notion and proposed a social equilibrium definition that inserted in the equilibrium properties the epistemic elements of Wieser's theory of social economy and Mises' economic calculation argument.

In the same manner as his teacher Wieser and his ten years mentor Mises, Hayek (1937) divided the equilibrium analysis into two different kinds. Individual equilibrium analysis consists of a set of tautologies, "propositions that are necessarily true because they are merely transformations of the assumptions from which we start" (p. 34). The conditions for individual equilibrium demands only action plans in which the means are coherent and internally consistent with others means in order to satisfy a determinate set of ends. The set of means taken must be internally consistent (i.e., non-contradictory) with the ends pursued. This is so because the individual equilibrium is defined by the subjective perceptions of the individual. In this subjective minimal rationality, as long as the agent acts according to his beliefs and subjective perceptions of the world the economizing behavior of means in relation to ends is satisfied. If the beliefs in which the agent guides his action turned to be false, his action plans cannot be completed and the equilibrium is undone. So until the operational checking of the action plans in course, i.e., the subjective beliefs checking with the real world, the individual equilibrium is defined *a priori* as a pure logic of choice. As a tautology derived from our assumptions of expectations, anticipations, and foresight.

Note that the tautological individual equilibrium is *a priori* constructed and is valid only in terms of our assumptions concerning the individual foresight (his subjective beliefs). Even the tautological world of the pure logic of choice is not *a priori* valid without such assumptions, usually of perfect foresight. This is perfectly compatible and similar to Wieser's theoretical role

of the simple natural economy. The questions about the proper account of these knowledge assumptions become evident and explicit when we try to apply this system of tautologies to social equilibrium contexts of several interdependent individuals. As in the first case, inter-individual equilibrium is also understood as a cohesive relationship between means and ends in the action plans of each component of society. However, when we have a social economy different agents have different subjective expectations and beliefs of the world and each subjective expectation of an individual is an objective input of reality (subjectively interpreted) to other individuals. For the social equilibrium to materialize, there must be a coordination between the various n-persons subjective expectations and coordination of these expectations cohesive set with the external world in order to satisfy the different means to the achievement of the different ends set (i.e., to carry the action plans successfully).

Indeed, Hayek (1937, p. 35) explicitly admitted the mentioned Austrian influences concerning the epistemic differences between the tautological individual equilibrium and the social sphere of interaction by various individuals in a intellectual division of labor society. “I have long felt that the concept of equilibrium itself and the methods which we employ in pure analysis, have a clear meaning only when confined to the analysis of the action of a single person, and that we are really passing into a different sphere and silently introducing a new element of altogether different character when we apply it to the explanation of the interactions of a number of different individuals.”

Both Wieser and Mises stressed that the individual Crusoe natural economy is just a fictional construct that is a useful step into the examination of the real processes of calculation and coordination in a complex division of labor society. Wieser’s theory of simple economy *assumed* the consistency of plans in order to emphasize the foundational elements of scarcity and choice in a perfectly frictionless equilibrium environment. In the same vein, where the processes and complexities of the economic calculation problem of imputation are *assumed* away in Mises’ analysis of a non-division of labor and single or two-stage capital production economy, a single only mind can do the calculation in terms of its own subjective use value. There is no reason to use a monetary common denominator of exchange value for producer evaluations. But this non-division of labor world is not the object of political economy since the discipline was founded in the recognition of these complexities.

Nevertheless, what is still more interesting for is the striking similarities and connections between Buchanan's argument for what should economists do and Hayek's position on the nature of equilibrium analysis in his reformulation. Hayek (1937, pp. 34-5) made clear that he used the term "equilibrium analysis" in the narrow sense loosely historically associated with the use by the Lausanne general equilibrium mathematical school - on what Hans Mayer named the function approach, in opposition the causal-genetic approach, and which Buchanan called the theory of physical or computational resource allocation. This narrow sense is confined in the walls of the tautological individual equilibrium analysis and says nothing about causal propositions in the real world. Very much of the confusion and intractability in the economic calculation debate came from differences in the meaning and understanding of the nature of equilibrium analysis. It is clear that *pari passu* with the English-phase of economic calculation controversy there was a whole tendency, intrinsic and inherent in the mathematical function approach to equilibrium, to turn "economics into a branch of pure logic, a set of self-evident propositions which, like mathematics or geometry, are subject to no other test but internal consistency."

This does not mean that Hayek did not see any value in the equilibrium analysis as a branch of pure logic of choice. In the same manner, Buchanan sees much theoretical value to the computational resource allocation maximization problems. The problem is that the tendency of equilibrium analysis to make economic theory more formal in its *a priori* sense is confused with the proper scope and place of these tautological propositions. In this context, Hayek believed that the own process that turned economic theory into merely a branch of logic as it is the mathematics or geometry carries with itself the seeds of its own resolution. This is so because in the distilling, decanting, and purifying tentative of economics in those propositions which are necessarily *a priori* true, we would end up not only isolating the pure logic of choice part of individual equilibrium but also the other distinctive elements of social equilibrium contexts as empirical propositions of creation, transmission, and retention of knowledge that concerns the processes of calculation and coordination of various individuals in society. According to Hayek (1937, p. 35),

> "In distilling from our reasoning about the facts of economic life those parts which are truly *a priori*, we not only isolate one element of our reasoning as a sort of Pure Logic of Choice in all its purity, but we also isolate, and emphasise the importance of, another element which has been too much neglected. My criticism of the recent tendencies to make

> economic theory more and more formal is not that they have gone too far, but that they have not yet been carried far enough to complete the isolation of this branch of logic and to restore to its rightful place the investigation of causal processes, using formal economic theory as a tool in the same way as mathematics."

Hayek's "criticism of the recent tendencies to make economic theory more formal" to complete isolate and separate the two worlds of individual tautological formal equilibrium and the social sphere of interactions is exactly the central normative message of Buchanan's presidential address. Buchanan's plea is not to eliminate the formal equilibrium analysis but to recognize that it is part of a different analytical branch than the real domain of economics, as a branch of applied mathematics. However, Hayek's belief that the sufficient distilling of the pure logic of choice would also lead to the recognition of its proper place turned out to be deeply wrong. In the 1950s, the mentioned tendencies probably reached its peak with the general equilibrium research program of John Hicks, Samuelson, Arrow, Frank Hahn, and Debreu.

The distilling process did not reveal its other face, the "another element which has been too much neglected," and almost the entire profession focused only on computation maximization problems - what Mark Blaug, drawing from Ward (1972, pp. 40-1), called "The Formalist Revolution of the 1950s" (2003). "The Formalist Revolution made the existence and determinacy of equilibrium to be all and end all of economic analysis" (Blaug, 2003, p. 146). It was precisely because Hayek's belief proved wrong that Buchanan needed to restate this theme and propose an explicit division between the domains of the theory of resource allocation (applied mathematics) and theory of exchange and the institutions within the exchange take place (economics).

V. A LONDON TRADITION ON COST? COST, CHOICE, AND EQUILIBRIUM

As discussed in section II, the unifying principle of economic theory as practiced in the 1930s is, in Robbins' mind, the acting phenomena that emerge by scarce means subject to alternative uses in relation to competitive and different ends. It was suggested that, in his tentative positive definition of the economic phenomena, Robbins was really putting the unifying principle of neoclassical economic theory in the opportunity cost inherent in the act of choice. Economic individual decision only emerges when there are scarce means capable of alternative uses in

multiple competitive ends. Neither multiple and competitive ends *per se*, neither scarce means *per se*, neither both scarce means and multiple ends are sufficient to the economizing behavior.

Economics only deals with scarce means that can be allocated in different uses for different and alternative ends, i.e., economics is the science of choice. A choice such that necessarily implies an opportunity cost of choosing. The opportunity cost doctrine is the dual of the subjective marginal utility theory. "The process of valuation is a process of choice, and costs are the negative aspect of this process" (Robbins, 1934, p. 2). Indeed, the opportunity or alternative cost doctrine, the so-called Wieser's Law, is seen by Robbins (p. 3) "as a unifying principle in the structure of modern analysis." What alternative costs are and how it is measured? The alternative cost is the second best path of action, with its expected net benefits, that is sacrificed in the act of choosing. The measuring of this cost was the subject of some discussion by the neoclassical economists in the early twentieth century, in how the precise displaced alternative is to be considered. Wieser conceived the alternative cost in subjective marginal value terms. Wicksteed (1910, p. 382) followed this notion stating that "the cost of production of one thing is the marginal value of another thing." On the other hand, Knight (1928) and Gottfried Haberler suggested that the alternative cost should be measured in technical quantities terms, in alternate-product value determined not by the subjective choosing agent evaluation but by the market (that is, the market price). This is true, but only at the state of equilibrium where all the individual subjective marginal values are equalized and transformed in objective relative prices.

Buchanan returned to equilibrium questions in his work on opportunity cost theory in *Cost and Choice: An Inquiry in Economic Theory* ([1969] 1999) and his edited volume with George F. Thirlby on the *L.S.E. Essays on Cost* ([1973] 1981). In both works, Buchanan traced a London tradition on opportunity cost that historically started with Wicksteed and goes on by Robbins (1934), Hayek (1937), Coase (1937, [1938] 1973, 1946, 1960), Thirlby (1946a, 1946b, 1952, 1960), and Jack Wiseman (1953, 1956). Buchanan ([1969] 1999, p. 23) regards Hayek, along with Robbins, as central in "providing the source of much of the LSE tradition on cost theory, a tradition that seems to have emerged gradually over these two decades," i.e., from 1931 to 1950. The two main books of Robbin's introductory course General Principles of Economic Analysis were Wicksteed's *Common Sense of Political Economy* (1910) and Knight's *Risk, Uncertainty and Profit* (1921). As Coase (1982, p. 33) remembers, "[t]hese two books provided an excellent training for the young economists at LSE and it was, I believe, our close study of them which gave

us such a firm hold on cost theory, leaving aside whether what emerged should be considered, as Buchanan contends, as a view special to LSE" (see also Telles, 2019a).

Robbins' protagonism in advancing the London tradition on opportunity cost is one paradoxical feature regarding Buchanan's rationalization on the prominence of individual objective choice problem. This point is admitted by Buchanan ([1973] 1981, p. 3), which accuses the *touché* saying that it is somewhat paradoxical that the same Robbins "should also have been at least partially responsible for the drift of modern economic theory towards the mathematics of applied maximization, variously elaborated, and away from the analysis of exchange." Indeed, as suggested above, this paradoxical feature may be not so paradoxical when we understand Robbins' broad philosophical understanding of cost, choice, and market process. Even if Hayek in "Economics and Knowledge" scarcely mentioned the word "cost," Buchanan argues that he provides indirectly the *strongest* argument for the true economic theoretical foundation of cost by delimiting the equilibrium as an optimum resource allocation only to the individual level. The main contribution of Hayek, in Buchanan's ([1969] 1999, p. 22) perspective, "was primarily that of providing the underlying methodological basis for the more explicit works on cost by others." This basis was the methodological epistemic difference of individual equilibrium analysis and social order coordination, "this methodological step is essential to any genuine understanding of cost."

What is this genuine understanding? It is that the cost is essentially a subjective expected evaluation of the alternative path of action sacrificed by the chooser in the act of choice. Cost is entirely subject to the acting person, it must be taken exclusively by the chooser. As such, cost is subjective. It only exists in the subjective *ex ante* evaluation of the chooser or decision-maker. Because cost is based on expectations, it is necessarily a forward-looking valuation, an *ex ante* expected valuation. Because it is an *ex ante* phenomenon, the cost is never realized since the path of action sacrificed is really never taken. Cost, because it is a subjective mental expected evaluation, cannot be measured by a person other than the chooser. Thus, it cannot be objectively measured. Only the chooser can measure *his* subjective cost. Finally, cost is dated and recorded exactly at the time and moment of choice.

In this sense, the neoclassical subjective marginal utility theory is *not* a sufficient condition to a subjective theory of cost. For such, it depends on the implicit or explicit difference of equilibrium constructs in individual and social settings. The notion of price-value determined by the subjective

marginal utility can still be retained if we only focus on the state of general equilibrium, where all the marginal utilities are proportionally equal to the relative prices of the goods in consumption theory and all marginal factor products are proportionally equal to the relative prices in production theory. Costs are then objectively determined because the individuals' subjective evaluations are incorporated as objective data in the format of relative prices ratios, even though costs alone do not determine value as in the classical labor value theory. Buchanan ([1969] 1999, p. 24) stated this distinction as "between the economics of subjective value and the subjectivist economics espoused by Hayek and Mises." He argues that this subtle distinction "was quite naturally obscured as long as the task of economic theory was largely limited to the explanation of market interaction."

According to Buchanan (p. 25), with the advent and rise of welfare economics (and the consequences of the economic calculation controversy), the subtle distinction between the neoclassical subjective value theory and the subjectivist economics became explicitly evident. What was implicitly and obscurely shared within the profession now demonstrated a profound difference of understanding within the neoclassical tradition, "such previously admissible methodological fizziness no longer passes muster." With the use of general equilibrium theory as a standard normative ideal of optimum resource allocation that must be achieved regardless of the institutional means of coordination, these optimum positive mathematical conditions were employed as formal *normative* rules for inference with the actual market process. Such rules were mainly on marginal cost pricing, i.e., Lange-Lerner pricing. Moreover, these marginal conditions rules based on individual tautological equilibrium idealization were employed to defend the practical feasibility of both the trial and error variation of the mathematical solution of the Walrasian simultaneous equations and the so-called competitive solution, in which each manager of capital goods enterprises was commanded to compete with each other as to equal marginal social costs with relative prices as to simulate a capital goods market.

It is clear that, for such proposal of marginal cost pricing as a normative rule for resource allocation to make any sense as policy prescription norm, the cost needs to be objectively conceived in the sense that it can be measured by an interpersonal cardinal common denominator for decision-making. This is only possible if the economy is at the final equilibrium state of rest. Simplicity properties in the individual equilibrium model were assumed and transferred to reality with the turn of the practical feasibility of these models. We have, thus, the neoclassical marginal utility theory of value generating an objective cost notion because of the assumption of objective

knowledge given to all agents. Hence transforming the social coordination problem into an individual computational maximization problem again. Buchanan (p. 25) notes that "[o]nly Hayek and Mises seemed to be completely aware of this problem and of its major importance," and that subjectivist economics is essentially about the "explicit denial of the objectivity of the data that informs economic choice."

Subjectivism enters in both equilibrium constructs. Remember that we can only talk about an individual tautological equilibrium because of the minimum subjective rationality. The individual is in equilibrium if in his plan prevail the mutual consistency of means as subjectively *perceived* by that agent in relation to ends. Only because of this we can define *a priori* the individual equilibrium until the plan actions check with external reality. With the equilibrium of multiple individuals, we maintain the minimum subjective rationality to each individual. As each individual subjectively perceived reality in a different way, one individual's subjective expectations are treated as an external necessary datum to the rest of the society as an input of objective reality. Hence the social equilibrium "is described not in terms of objectively determined 'conditions' or relationships among specific magnitude, e.g., prices and costs, but in terms of the realization of mutually reinforcing and consistent expectations" (p. 25).

There is a *non sequitur* in the passage of the individual equilibrium to social equilibrium in the sense that the element that logically made possible to have a clear meaning for Crusoe equilibrium, i.e., the subjectivism of the referential agent, is dismissed in the passage for multiple individuals. It is this emphasis on the epistemic differences in equilibrium analysis that Buchanan has in mind when he proposes to complete the distillation of each notion in two separate branches of inquiry, with economics been confined to the realm of exchanges process and its institutions that coordinate the social activities of different individuals with different subjectively perceived knowledge. In Buchanan's ([1969] 1999, p. 25) view,

> "[t]he difference between these two approaches, the objectivist and the subjectivist, is profound, but it continues to be slurred over in the neoclassical concentration on the idealized market interaction process in which all individuals behave economically. In an unchanging economic environment populated by purely economic men, the two approaches become identical in a superficial sense. In a universe where all behavior is not

> purely economic, where genuine choice takes place, the important differences emerge with clarity."

Why this failure and confusion remained in economic theory? Buchanan's answer is a methodological one. These authors remained too much attached and concentrated on stationary equilibrium, therefore the subjectivist critique was obscured and confused in the early 1930s. At the beginning of the decade, both Hayek and Robbins were mainly reacting to the German historicism and American institutionalist attacks. Both men thought - like Menger, Wieser, and Mises before them - that the marginalist economic theory was the antidote for many popular fallacies including the belief of central command economic planning (thus the reaction to Marxians, historicists, and original American institutionalists). This is the very message of the inaugural lecture by Hayek at LSE, "The Trend of Economic Thinking" (1933) and it is also present in Robbins' *Significance* (1932). What was the trend of economic thinking that Hayek discusses in his address? It was the gap of intellectual general economic opinion and the economic profession neoclassical consensus.

At the same time, market socialists started to use the same neoclassical theoretical instruments to prove the practical feasibility of such trend of economic thinking. Hayek and Robbins could not be more historically wrong. This is noted on Hayek's somewhat confused reaction to the trial and error version of the mathematical solution in *Collectivist Economic Planning* (1935). Buchanan ([1969] 1999, p. 26) argues that it was this undue attention paid to the definition of equilibrium, the epistemic differences between individual and social equilibrium, that "may have retarded acceptance of the more general subjectivist notions." This is a difficult historical interpretation by Buchanan since, as discussed, the epistemic differences and understanding of the nature of equilibrium can be traced clearly in Mises and Wieser. Buchanan *prima facie* did not see this historiographical feature.

In fact, Buchanan even classifies Wieser as part of the neoclassical subjective value theory and not properly of subjectivist economics. For Buchanan (p. 24), the subjectivist economics of Mises and Hayek "differ sharply with earlier Austrians, although they do not seem fully to sense the distinction. In many respects, they seem much closer to Wicksteed than to Wieser." If the main element for the notion of subjectivist opportunity cost of Mises and Hayek was laid on the particular notion of the subjectivist mutual expectation social equilibrium, Buchanan's

interpretation is fragilized because this distinction can be traced back to Wieser. Indeed, it was Wieser that explicitly set this formulation in the Austrian tradition, Mises ([1920] 1935, p. 101) referred to Wieser in his 1920 article. Therefore, Hayek's reaction that he always felt that only in relation to an individual the equilibrium analysis has a clear significance and meaning is completely natural.

Buchanan (p. 25) goes on saying that the "[n]eutral readers of the impassioned debates on socialist calculation might have been led to think that the central issue was really one that involved the possibly erroneous derivation of policy criteria from stationary equilibrium settings. [...] [T]his concentration on equilibrium, of which Hayek, Robbins, and to a lesser extent Mises, all are guilty, left the way open for Lerner to drop all references to general equilibrium in his derivation of the policy rules that explicitly require the introduction of objectively measurable costs." Again, this interpretation is somewhat difficult to sustain. The concentration on final rest equilibrium states did not come from Mises, Hayek, and Robbins. On the contrary, they shared an implicit (and even explicit) understanding of the nature of the economic calculation and coordination as a process.

It came from a dubious interpretation of the nature of the formal similarity argument. The dubious interpretation of Pareto and Barone (that was developed by Taylor, Dickinson, Lange, Lerner, et al.) was that both had solved (i.e., proved the feasibility of) the problem of economic calculation in public ownership of the means of production proposed by Mises. This is a *non sequitur* from the early formal similarity propositions, by Wieser, Pareto, and Barone (see Hayek, 1940, p. 125; 1945, p. 529). As Wieser ([1889] 1893, p. 63) put it, "[n]atural value is a neutral phenomenon, the examination of which, whatever may come of it, can prove nothing for and nothing against socialism."

VI. EPILOGUE: ECONOMICS IS WHAT ECONOMISTS DO AND ECONOMISTS DO WHAT THEY DISCOVERED IN THE PAST, BUT ECONOMICS SHOULD NOT BE (ONLY) THAT

In his 1933 spring quarter notes of Viner's Econ 303 course at the University of Chicago, Friedman reveals an interesting view of Viner on the nature of economic science in his annotated commentaries. According to Friedman's notes on Viner's commentary, Viner first exposed the then-recent definition of economics made by Robbins one year earlier, i.e., economics is the relationship between multiple ends with scarce means with alternative uses. But Viner argued that

a way to better think this problem is changing this narrow Robbinsian definition in adding one more sentence, “studying economizing means to obtain ends where they have a market phase.” Viner goes on in a Mayerian fashion to distinguished technology and economics, but he asked: “how about the law of diminishing returns”? Its is a purely technological law, but it is historically in the scope of economic science. Why? It is “in economic discipline because economists discovered it.” If economic science studies the law of diminishing returns, a law that is purely technological in determination, because it was economists that discovered it, therefore Viner’s dictum is straightforward. Economics is what economists do because historically some kind of questions came to be found by economists. Finally, Viner came to say that in his opinion economics is a social study, meaning that it is a “study of mass social phenomena.” Therefore, Viner does not think that economics “would apply to individual men (Rob Crusoe)” but “Robbins does.”

This picture of Viner has various interesting aspects. First, Viner called attention to the sociological aspects of the profession in which economists dealt. Economists do not deal with some narrow *stricto sensu* definition of its borders. The prominence of the law of diminishing returns in the English classical period in its Ricardian orthodoxy is very much a result of the demanding and contextual problems at the time. This led to the “discovery” of the law and its systematic application to the various Ricardian propositions that dominated the economic literature and debate in that period. Second, even this emphasis of Viner is more critical than it is commonly noted in his passive acceptance of the definition of economics. In the second paragraph of his presidential address, Buchanan (1964, p. 213) warned the reader that in proposing to examine critically what economists do and what should they do he was explicitly rejecting the famous passive dictum by Viner that economics is what economists do and that Knight inverted saying that “economists are those who do economics.” Viner’s “function definition of our discipline begs the very question that I want to raise,” Buchanan argued. But Viner seems to have a different approach than the totally passive view.

This leads us to the third aspect of Viner’s picture of economics. Indeed, the central points that Buchanan raised in his address are surprising anticipated and advanced by Viner. Even the elected adversary is the same, Robbins’ definition and scope of economics. In particular, Viner anticipated two arguments that Buchanan used in his address precisely to justify the option to the delimitation of economics as the science of exchanges and the institutions within the exchange takes place,

especially in the form of market exchanges. As discussed above, the problem with Robbins' positive attempt to define economics as he saw at the time was that he concentrated excessively on the individual computation choice problem even if he, at least implicitly, had a philosophical understanding that connected the individual purposeful economizing behavior to the social repercussions and unintended consequences of these purposeful actions.

Perhaps this common understanding was so crucial and internalized in the profession (in particular in Robbins' circle and in his influences) that it had no necessity to be explicitly said, but it is difficult to think that the aimed definition of what signifies social science were to be neglected like this. The only plausible explanation is that Robbins was so much worried trying to counter the historicist and American institutionalist influences that he thought that it was a primary goal to have a pure, neutral valued theoretical definition that incorporated the core of the teachings of diminishing marginal utility theory in the theory of consumer demand and the law of diminishing returns, i.e., non-perfect substitution of factors of production, in the theory of producer supply. Robbins aimed to show that every main aspect of the purely formal equilibrium analysis of neoclassical theory could be derived from some indisputable facts of daily experience relating to the way in which the scarcity of means, which is the central subject matter of his definition, actually demonstrates and shows itself in the world. Thus, the main postulate of consumption theory is that the consumers can and indeed do arrange their preferences in a certain order. Individuals have preferences that are complete and transitive. In addition, the main postulate of producer theory is that there is more than one factor of production, i.e., the different factors are not perfect substitutes.

Be that as it may, the problem with Robbins' definition is that it is too narrow on the individual equilibrium analysis. This failure could be bypassed in adding to Robbins' definition the missing social scope of interaction, especially in emphasizing what kind of social exchange process is in the analysis. Therefore, Viner suggested adding the sentence "studying economizing means to obtain ends where they have a market phase." The market phase is fundamental since it is the introduction of the social domain in economic theory. A domain of gains of trade and productive specialization via market exchanges and the institutional infrastructure that supports the exchanges - something neglected in the Robbinsian original formulation.

Even with this modification in the Robbinsian definition, Viner still did not seem satisfied. The reason is that, even in adding the sentence emphasizing the economizing computational behavior

in the market-place, this still did not capture what economics is all about. According to Viner, economics properly defined is *all* about social processes, about the study of mass social phenomena. Economics has no scope for purely computational resource allocation problems, which can be legitimate and useful - but in another branch of study, a branch of applied mathematics as Buchanan said or as an isolated and pure branch of pure mathematics like geometry, what Hayek called pure logic of choice. Economics as properly understood, Viner argues, did not apply to individual analysis, to Crusoe's computational maximization problem - as Robbins thinks that applies.

Viner's position is that economics is what economists do and economists do in part what they have discovered in the past, but the proper scientific scope of economics is the study of mass social phenomena and this is not applicable to the individual equilibrium analysis. Buchanan started his 1963 presidential address to the Southern Economic Association on what should economists do rejecting Viner's passive dictum interpretation of the current situation of the economic profession. Indeed, Viner probably would also reject his famous aphorism since he saw a legitimate delimitation of economics, not only accepting the profession *praxis* whatever may be it. In the end, Buchanan came to a very close position of the nature and scope of economics as defined by Viner. Indeed, both men came to a *quasi*-identical methodological position of what should economists do.

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Equilibrium, (Social) Choice, and Welfare: James M. Buchanan on Subjectivism and its Implications

ABSTRACT. James M. Buchanan's research program is an attempt to advance in further steps the consistent application of subjectivism in economic theory. In Buchanan's view, the importance of subjectivism is a methodological question that became more demanding when economists tried to derive normative implications from general positive propositions made by subjective value theory. Propositions that only explains the ultimate static realized equilibrium values without the dynamic equilibrating process. Buchanan's subjectivism can be systematically situated and methodologically perceived as follows. First, it is argued that the fundamental notions of subjectivism are already present in his early articles on the pure theory of government finance, social choice theory, and welfare economics. It is this subjectivism embedded in some ways in methodological individualism that marked the difference between the realm of individual choice and action and the social sphere of interaction and collective decision, be that in government finance or in social choice theory. The subjectivism applied to the social equilibrium construct in the context of public finance and social choice based Buchanan's critique of social welfare functions as a problem of maximization favoring instead an individualistic view of exchanges in the political realm. The difference in individual choice in voting and in the market is stressed. Next, it is explored Buchanan's reaction to objectivism as stated in the physical maximization approach that equates the individual computation problem with the social coordination problem faced by multiple individuals with different subjective perceptions of reality. This is exactly the approach taken by the welfare economics that aggregates individual preferences into a single welfare function with explicit normative content. Welfare economists inherited this vice of origin by the general equilibrium theorists in the economic calculation debate in the 1930s. Finally, it is discussed the importance for Buchanan of subjectivism embedded in the opportunity cost notion for these debates.

Key-words. James M. Buchanan, subjectivism, equilibrium, welfare economics, public finance, opportunity cost.

JEL. B20, B31, B40.

I. INTRODUCTION: ECONOMICS AND SUBJECTIVISM

Friedrich A. Hayek (1942, p. 281) once famously wrote that "it is probably no exaggeration to say that every important advance in economic theory during the last hundred years was a further step in the consistent application of subjectivism." The turning main event in the temporal spectrum that Hayek implicitly referred to, of course, is the marginal utility revolution led by the *triumvirate* William Stanley Jevons, Carl Menger, and Léon Walras in 1871-4. The revolution content was the introduction and consistent general application of subjective diminishing marginal utility theory in the place of the English classical objective labor-cost value theory. With the assumption that the individual can subjectively judge different states of affairs as more, equivalent, or less desirable and that such states can be arranged in a certain order (i.e., complete and transitive preferences), it is possible to derive from diminishing marginal utility the notion of substitutability between different wants (goods or states of affairs). Moreover, it implied the demand curve notion of one good in relation to another good, the idea of equilibrium distribution of goods between alternative ends according to their marginal utilities, and thus of an equilibrium exchange between individuals with different subjectively evaluations of goods (i.e., different marginal rates of substitution). Finally, from the equilibrium of exchange, we end up deriving the formation of prices.

The complete and transitive preferences assumption can be stated and expressed in different ways such as simple want systems (e.g., as in Menger) to the indifference curves systems approach advanced by Vilfredo Pareto and revived by John Hicks and Roy G. D. Allen. Be that as it may, from the subjective theory of value we can derive almost every aspect of the pure consumer demand theory. By analogous procedure regarding the diminishing marginal returns of production factors, we can do the same for the pure production supply theory. However, Hayek did not mention the marginal revolution event in specific and the neoclassical price theory in particular. Hayek argued that every and *all* important advance in economic theory in the hundred years period between the mid-nineteenth century to the mid-twentieth century was a further step in the consistent application of subjectivism. Surely, the subjective value theory was the fundamental foundational step without which the other ramifications of subjectivist analysis could not be developed. You cannot consistently investigate the implications of subjectivism with an objectivist founder-stone as in the English classical political economy - namely, the labor-cost theory of value.

On the other hand, subjective value theory is a necessary but not sufficient condition to further appreciation in the consistent application of subjectivism.

The necessary but not sufficient condition of marginal utility theory to subjectivist economics is well stated in James M. Buchanan's ([1969] 1999, p. 23) distinction of a subjective theory of value and subjectivist economics. Buchanan's focus is on the qualitative difference of the economic nature of cost (and especially, as we will see, of equilibrium analysis) in the economics of subjective value and in subjectivist economics of the "latter-day Austrians, notably [Ludwig von] Mises and Hayek." Even with the analytical price theory internalization of value determined by marginal utility, and marginal utility itself subjectively determined, it is perfectly possible to retain an essentially objective cost theory. Buchanan mentions Jevons' famous statement that marginal utility depends on (elasticity of) supply, that is regulated by the cost of production. Hence, prices and values (determined by marginal utility) are ultimately dependent on the cost of production which is objectively given by long-run supply conditions. Marginal utility valuations of buyers and sellers are also incorporated in the price determination, but only in a transformed observable objective data external to the individual judgment. In this case, "costs are objectively determinable, although the theory does not say that costs alone determine value. As contrasted with classical theory, one-way causality is missing, but not the objectivity of the explanation" (p. 24).

The *general* theory of exchange values says that price is determined by the marginal utility at the marginal point of market exchange, as an infinitesimal demand variation in relation to conditions of the total supply. This condition is analogous when supply is fixed in the short-run because the demand variations are infinitesimal at the margin and supplies cannot be brought into or out the market, i.e., the elasticity of the supply curve is infinite at the margin of market exchange. Thus Jevons' statement that the marginal utility (i.e., demand conditions) depends in the long run on the supply at the margin of market exchange. In long-run contexts where supplies are variable, price determination is an open question that depends on the interaction between demand and supply. In classical value theory based on cost of production and measured by units of homogenized unskilled labor, value is objective because relative exchange values can be externally measured and determined by the relative comparative costs necessary to production. In marginal utility theory, exchange values are determined by relative marginal utilities that are subjectively determined. This is clearly a loss of objectivism in the exchange value determination.

The subjective theory of value implied also a loss of empirical content in the sense that the general value theory can comport all the sub-cases of price determination depending on the elasticity of all supplies on the market. Even with all the information about marginal utilities, the relative price formation is undeterminable unless relative supply conditions are incorporated in the analysis. Assuming a competitive supply market, in the long-run the relative supply conditions are brought in at the cost of production. The general theory of value alone is empirically infertile and sterile since it says nothing about some sort of *ex ante* prediction theory of normal exchange value. The theory only has *ex post* explanatory realized power. It provides a general explanation of *de facto* realized values but has no predictive capacity without supplementary hypotheses. *Ao contrare* of objective labor-cost value theory, utility is a subjective phenomenon that cannot be externally measured. In this sense, marginal utility theory "is a logical theory, not a scientific hypothesis capable of refutation" (Buchanan, [1969] 1999, p. 10). In order to introduce predictive empirical power to the theory, supplementary hypotheses in relation to the supply and costs of production were required.

The one-way cost causality of classical economics was ruled out, but the objectivity of production costs again entered by the back door influencing exchange value through the elasticity of supply that reflected objective given costs. Subjective value theory can, therefore, generate an objectivist view of cost. In general, early neoclassical marginalists accepted the factors of production cost as measured by money costs since money has no measurement problems as a common value denominator - contrary to homogenized labor time. Relative marginal utilities in equilibrium are equal to the relative prices so monetary costs could be used as the common denominator to represent the supply forces into the price determination. The supply of resources also has to be valued according to the marginal productivity theory. As any good is valued according to the relative marginal utility, resources in the production process has to be valued and paid according to their respective marginal product (or contribution) to the final good. Cost of production then is represented by the sum of the marginal increments of the factors of production. Inputs have to be valued and paid according to the respective marginal productivity that each unit increases the value of the final product.

The internalization of costs of production in monetary paid form according to the respective marginal product of resource unit leads quite straightforward to the notion of opportunity cost since the same monetary amount could be used in alternative ends. In equilibrium, the input return

according to marginal productivity is the price that must be paid in order to reallocate the resource from alternative uses that pays an alternative return. Buchanan ([1969] 1999, p. 11) associates this view especially to the earlier Austrian generations, Menger, Eugen von Böhm-Bawerk, and Friedrich von Wieser. "To the Austrians, and notably to Wieser, rational behavior on the part of resource owner ensured the equalization of return in all employments." The dynamic process rationale of opportunity cost reasoning is similar to the early Adam Smith's deer-beaver model. Wieser was the first to investigate in a systematical form the reasoning of alternative or opportunity cost notion.

Opportunity cost is very explicit in the case of production theory because the natural value or price of whatever resource unit must in equilibrium represents the maximum value of any productive alternative use, what is evident when we treat cost in monetary terms. Such cost is the minimum price that the agent must be disposed to advance in order to attract productive resources from other alternative employment. Since costs of production are measured in money terms, cost reflects necessarily the alternative value of output production. The connection with general equilibrium theory became clear since the rationale began with an equilibrium exchange values for all factors of production. Opportunity cost notion also gives rise to the problem of the imputation of value between different orders of goods and between consumers' demand and the structure of production. Nevertheless these developments on opportunity cost by Wieser, in Buchanan's view this reasoning maintains the essential objectivity nature of cost.

The economics of subjective value is subjective only in the sense that values of goods are set by their relative marginal utilities on one hand. However, these marginal utilities values are set according to the supply at the margin, which is determined by the monetary cost of production in organized markets *at* the state of equilibrium. Thus, the values can be objectively measured because the monetary cost is objectively measurable and given. Prices, and therefore monetary costs, are objective phenomena. In subjectivist economics, this objective cost explanation of prices or any objectivist explanation of human behavior has no room. According to Buchanan (p. 24), "[i]n this respect, they [Mises and Hayek] differ sharply with earlier Austrians, although they do not seem fully to sense the distinction. In many respects, they seem much closer to [Philip] Wicksteed than to Wieser."

For Buchanan, the emphasis on the cost notion to draw the line between the economics of subjective value theory and subjectivist economics is a particularly important applied *instance* of

the *general* subjectivist approach and its implications. Opportunity cost doctrine is intrinsically linked to individualism and subjectivism of the individual who takes the choice and interprets its cost, the most valuable *ex ante* expected alternative path of action that is given away in the act of choice. Cost is the dual or the other side of the coin of choice. However, the subjective opportunity cost doctrine is in the first place a *consequence* derived from subjectivism applied to the equilibrium analysis. It is the difference in the objective and subjective interpretations of the nature of equilibrium analysis that draws the line between the economics of subjective value and the subjectivism economics as espoused by Hayek and Mises.

If this interpretation is correct, Buchanan's notion that there is a rupture between the earlier-Austrians like Wieser and later-Austrians is fragilized since the subjectivist social equilibrium parallel notion can be found in Wieser. Buchanan's research program is an attempt to advance in further steps the consistent application of subjectivism in economic theory. An attempt to develop subjectivist economics, as he named it. Thomas DiLorenzo (1990) and Leland Yeager (1987) pointed out correctly the subjectivist roots of Buchanan's approach to economic theory, but in both cases the discussion of the pivotal role of subjectivism in the equilibrium construct is not present or it is discussed in minimal detail. Karen Vaughn (1980, 2014a, 2014b) explored some parallel relations between Buchanan's subjectivism and equilibrium analysis, especially regarding public policy evaluation. However, she did not focus on the consistent application of subjectivism in the equilibrium construct as the central connection relating Buchanan's contributions to economics and social philosophy (see also Telles, 2019b). The fundamental subjectivist distinction based on the nature of equilibrium can be historiographically reconstructed in Buchanan's first publications on the pure theory of government finance, social choice, and welfare economics to his famous 1963 presidential address to the Southern Economic Association and beyond. Buchanan's public finance approach is a vivid application of subjectivism (e.g., see Buchanan and Brennan, 1980).

Indeed, soon after his address on "What Should Economists Do?" (1964), Buchanan engaged in the restatement of a "London tradition" on subjective opportunity cost. In 1965 Buchanan struggled with this theme and in 1967 an early draft of *Cost and Choice* ([1969] 1999) circulated at the University of Virginia. In 1969 he developed the ideas of his presidential address in "Is Economics the Science of Choice?" ([1969a] 1979) and "Professor Alchian on Economic Method" ([1969b] 1979). A few years later, in 1973, Buchanan edited with George F. Thirlby the collection of articles *L.S.E. Essays on Cost* ([1973] 1981). In 1976 Buchanan once more returned to this

theme in his account on the "General Implications of Subjectivism in Economics" ([1976] 1979). In Buchanan's view, the importance of subjectivism is a methodological question that became more demanding when economists tried to derived normative implications from general positive propositions made by subjective value theory. Propositions that only explains the ultimate *ex post* static realized equilibrium values without the dynamic equilibrating process.

Buchanan's subjectivism can be systematically situated and methodologically perceived as follows. First, it is argued that the fundamental notions of subjectivism are already present in his early articles on the pure theory of government finance, social choice theory, and welfare economics. It is this subjectivism embedded in some ways in methodological individualism that marked the difference between the realm of individual choice and action and the social sphere of interaction and collective decision, be that in government finance or in social choice theory. Subjectivism applied to the social equilibrium construct in the context of public finance and social choice based Buchanan's critique of social welfare functions as a problem of maximization favoring instead an individualistic view of exchanges in the political realm. The difference in individual choice in voting and in the market is stressed.

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II. SUBJECTIVISM IN THE PURE THEORY OF GOVERNMENT FINANCE, SOCIAL CHOICE, AND WELFARE ECONOMICS

As early as his second published journal article, Buchanan (1949) already demonstrated a clear picture of the difference between two alternative frameworks for the pure theory of government finance. These two alternative approaches in public finance are a particular instance of a general difference in equilibrium analysis grounded in subjectivism. This general difference is a deep

constant in Buchanan's thinking. One theoretical setting emphasizes the government as a unitary and cohesive organism that solves a maximization utility problem. The other framework focus on the multiple and contradictory individual forces that compose the collective action personified in the state and government finance. These different approaches are based on two different political foundations that imply opposing theories of the state. For the organismic view, the state is a unified body of action, a single organic entity that synthesizes complementary forces. The state is just one mind and one body of action. The second view, called individualistic, accentuates the state as a collective instance formed by the sum of its individual components acting in some form of collective capacity. The individualistic view of state stress the fundamentally contradictory and opposing individual forces that try to form collective majorities for state-level decision making. Buchanan is cautious in saying that neither of these two constructions is entirely appropriate to all problems in public finance.

What has to be noted, Buchanan argued, is that these two analytical structures had not been sufficiently and clearly separated or distilled in the pure theory of government finance. Some variation of organismic theory had been mainly applied to the public expenditure side, as referring to the maximization of each marginal budget dollar in different and alternative uses. On the other hand, the individualistic theory had been mainly confined in the revenue side of government finance, in the particular distribution of the tax load. Thus, the fiscal maximization problem had been the main drive to define the resource allocation of public expenditures in different and alternative uses, the pure theory of budgeting. And the individualistic theory has proceeded with the study of the allocation of the total tax burden and the relative composition of tax load imposed upon different individuals or groups in society. For Buchanan (1949, p. 496), even though each approach does not have a pure expression form, the work of Hugh Dalton ([1922] 1936) "is representative of a complete organismic theory, with certain qualifications." The Italian school of public finance is the best representation of the individualistic approach, as stated, e.g., by Antonio de Viti de Marco's *First Principles of Public Finance* ([1928] 1936).

In organismic theory, the single and cohesive state body is *the* decision maker of fiscal resources in relation to the expenditure variables and the tax variables. The state entity deals with an essentially technological maximization problem, the allocation of scarce resources to a given end to be maximized. What exactly is this end? It is some kind of conceptually quantifiable magnitude that plays the role of common denominator in which it is possible to judge between different states

of affairs according to the alternative goals of the collective decision. It is required a social analogous of the utility function in the individual choice problem, which can be called general welfare or social utility. In this case, the maximization of social utility proceeds as taking as exogenously given the non-fiscal variables subject to the resources constraint. The endogenous variables to be decided are the expenditure and the tax variables. The equimarginal principle says that a necessary condition to the optimum allocation of expenditure and tax is produced when the social utility loss in tax increase by one dollar exactly compensate the social utility gain of one dollar increase in expenditure. The final allocation is mutually interdependent, only for given fixed values of expenditure or tax variables that the optimum is independently determined.

The individualistic theory is distinguished first and foremost by methodological individualism, meaning that "[t]he individual replaces the state as the basic structural unit. The state has its origin in, and depends for its continuance upon, the desire of individuals to fulfill a certain portion of their wants collectively. The state has no ends other than those of its individual members and is not a separate decision-making unit. State decisions are, in the final analysis, the collective decision of individuals" (Buchanan, 1949, p. 498). The analytical focus on individual relations implies that the state emerges as an exchange relationship between the citizens and the collective decision embodied in a particular type of organization that can be understood as a monopolistic firm.

The revenues of the state are the payments made by individuals in exchange for services, especially goods that involve the free rider problem, i.e., public goods. Seeing the state as a firm, it has a perfectly monopolistic position of coercion and violence embodied in tax and public goods services in determined territory. This is the classic Weberian definition of the state, after all. However, as a collective enterprise, the state does not seek to maximize profits because his only goal is to bypass the problems of collective action in public goods services. Its attempt is only to cover total costs intertemporally. Thus, public services are offered at cost. The state supply curve is an average-cost curve, not the familiar firm's marginal cost curve. But this average-cost supply curve that allows solvency of the state applies only to some sort of homogenous aggregate public services. Particular services, especially technical public goods, can be offered at marginal-cost prices or for free (e.g., when the marginal cost is zero).

In this case, the nature of the public services provided by the state is determined by the collective willingness of individuals to pay, i.e., by the collective demand for public services in exchange for

taxes payments (government revenue). Services will be purchased as long as the aggregate benefits for the sum of individuals are expected to exceed the aggregate costs. If this is not the case, the collective demand for services will be zero since it would not have a majority to form a collective decision for exchange. Likewise, in equilibrium, the total benefits of all the public services contracted must be equal to the total cost in terms of individuals' sacrificed alternative opportunity cost. In an ideal system, the fiscal dimension of exchange by all individuals in collective decision and the state is in a *quid pro quo* fashion. In this framework, each individual has initial endowments or economic resources that is reduced by the amount of taxes (s)he has to pay for public services collective demand. In the same manner, his or her economic resources are increased by the economic benefits that (s)he receives from public services. Therefore, there is a combined allocation of the tax burden on individuals and the distribution of public goods from the government. The final allocation is a net result from taxes and services provided for each individual.

The orthodox strict and limited emphasis on the analysis of tax burden neglect the problem of imputation of specific net benefits to individuals. Buchanan (1949, p. 499) attributes this practical omission in part to the "legitimate rejection of the benefit principle as universal norm for the distribution of the tax burden." Two reasons for this rejection are given. First, the technical difficulty in precisely "imputing shares of the aggregate common benefit from public services to specific individuals." Second, the ideal *quid pro quo* exchange is not valid in the modern state. Even if accepting the second reason, Buchanan argues that the first reason is just a technical problem and not a theoretical one. Orthodox theory can only be justified if the benefits services that each individual has by the supply of public services are equal. In other words, if each individual share of aggregate benefit for the service exchange is equal. This is the only case which orthodox organismic theory would be valid since in comparing the net fiscal individual benefits the lump-sum public benefit would not affect the relative individual values.

Buchanan (p. 501) concludes that "[t]he difficult problem of individual-benefit imputation must be squarely faced. It is impossible to speak of the 'burden of taxation' without considering, at the same time, the benefits from expenditure made out of such taxation." In this way, the final economic resource position of each individual after his exchange relationship with the state, expressing tax burden and public services or transfers benefits, can be classified according to the fiscal residuum of net benefits. If we judge as true the *quid pro quo* exchange ideal, this fiscal

residuum will always be zero. Only by comparisons of the individuals' fiscal residuums, we can have a total picture of the effects of the fiscal system.

Evaluating the fiscal residuum, it is possible to generate three major fiscal systems groups. First, aggravative systems tend to increase inequality of the distribution of resources after the tax and benefits. This is possible when low-income individuals have negative fiscal residuums (taxes payments overcome public benefits) and high-income individuals have positive fiscal residuums. Second, *status quo* systems tend to return to each individual approximately their marginal contribution to the collective exchange decision, i.e., the net effect of tax and benefits is zero for each individual. We are in the *quid pro quo* ideal. Finally, equalitarian or redistributive systems exists when the fiscal structure reduce inequality of the distribution of resources after tax and benefits. For example, when low-income individuals have positive fiscal residuums and high-income individuals have negative fiscal residuums.

In any case, there should be an aggregate *quid pro quo* exchange relationship between the collective of all individuals and the government since the state seeks to cover its average costs. In the aggregate, government must respect its intertemporal objective that is to cover its average costs. In aggravative and redistributive systems, the sum of positive residuums (net benefits received) must be equal to the sum of negative residuums (net taxes paid). Note that in this analysis regressive *tax* systems can be true along with a redistributive *fiscal* system, and *vice versa*. The organismic theory includes by definition a specification of a magnitude to be maximized and thus a single fiscal optimum system to be adopted. In this sense, the organismic theory has a supposed clear normative content derived from the optimum conditions of an applied maximization problem. But it is less clear how to translate this theoretical static optimum conditions to concrete and realistic action in practical policy. In Buchanan's (1949, p. 505) opinion, "[i]t becomes extremely arduous, if not impossible, to fill in the theoretical framework with empirical content."

In the individualistic framework, on the contrary, the ends to be pursued are collective and politically decided by temporary majority coalitions. The fisc does not maximize anything. The role of the fiscal analyst is merely to indicate the alternative distributions of the tax burden and public expenditure benefits according to each majority ends. The fiscal system is an expression of a collective decision, a particular and temporary desire to be accomplished. The difference between the organismic and individualistic approach in the pure theory of public finance can be read as a particular instance of a more general dichotomic view, one objectivist and one subjectivist. The

same reading can be verified in Buchanan's reaction to social choice theory and welfare economics, both especially associated with Kenneth Arrow's *Social Choice and Individual Values* (1951). Indeed, Arrow's analysis is mainly concerned with the objective organismic-analogous maximization view of a social welfare function. The maximization paradigm necessary demands an objective function to be maximized, thus objectivism is indissociable from a quantifiable magnitude maximization.

Buchanan's (1954a, p. 114) critique is focused on "the broader philosophical implications" of Arrow's essay, especially his purpose and formal analytical tools. The approach used by Arrow "reveals a weakness in the formal analysis itself and demonstrates that some of the more significant implications drawn from the analysis are inappropriate." Buchanan raises two main points against Arrow. First, the so-called Arrow's impossibility theorem when applied to voting process "represent established and desirable features of the decision-making process embodied in constitutional democracy." This is so because the constitutional democracy was designed in a constitutional institutional level to prevent the tyranny of the majority, that is, the possibility of a strict dominant scale of social preference to be imposed.

Constitutional democracy was philosophically designed to diverge of anything like transitive social preferences to be maximized because this means a tyranny of the majority over the minority. Arrow's impossibility theory is a necessary established and desirable feature of democracy. If the conditions of social transitive preferences as to reflect rational collective decision-making were satisfied, necessarily imperative institutional changes would be required. Second, Arrow's equalization of the aggregate decision-making process by voting and the market is denied. According to Buchanan, the voting form in a democracy is fundamentally different from the market when the comparison is in regard to decision-making *processes* rather than as equilibrium states based for deriving social welfare functions to be maximized.

Individual choice in voting and the market are totally different in the perspective of the collective decision process. However, voting and the market are indissociable and indifferent in kind by the objectivist view that wants to construct social welfare functions as an entity to be maximized. As a decision-making process and formation of majorities for real collective action, the market does not belong to this collective category of analysis although it is a consistent indirect choice producer. The market as such is not a collective *device* of choice, but a *consequence* and a product of different individuals consistent choices. Another way to put this is that there is a fundamental

difference between the nature of individual choice computation equilibrium (social welfare function approach) and the social equilibrium coordination between various individuals with different subjective expectations (real collective decision-making process as voting and market). In fact, the confusion that led Arrow et al. to equate market and political voting process in terms of social welfare functions can be pointed out to a particular use of equilibrium in objectivistic terms.

As in the organismic approach, Arrow's problem is one of constructing a social transitive ordering relation that reflects a rational choice-making in the aggregative social level, in the same manner as in the individual equilibrium level. For this, the ordering relation by individuals must require at least a weak preference relation for all the social alternative states. Social preferences must be complete and transitive to social welfare be meaningful in terms of an objective function to be maximized. Arrow's (1951, p. 23) definition of the social welfare function is important in this sense because the function links for each set of *individual* orderings input an output state of corresponding *social* ordering via a "process" or rule function. Thus, Buchanan (1954a, pp. 114-5, italics in original) notes that this language confusion seems *prima facie* to be the source of confusion "between the definition of the social welfare function and the actual *processes* of choice: voting and the market."[9] That is, a language confusion between real collective decision-making processes and individual choice as embodied in the welfare function. Arrow's language equates social decision processes in social equilibrium contexts and rule welfare functions analogous to individual computation problems of choice. This is an error in Buchanan's view because the "decision-making *process* may produce consistent choice, even though the *rule* which *states* the social ordering from the individual values may not exist" - as in the market decision-making process.

Social consistent decision-making process can be produced without anything like a social welfare function. In fact, in a democratic society, this is how the real *de facto* social choice processes are produced. Arrow proved by his impossibility theorem that it is not possible to derive a rational scale ordering of preferences by individual values in the form of a social welfare function that is not imposed or dictatorial, whatever method of decision it is considered. Be that a method of majority decision as a welfare function or market method as a welfare function. From this, Arrow concludes that these two methods do not provide any kind of rational social choice. Buchanan

[9] All the subsequent italics are in the respective original text.

agrees with the first point but disagrees with the second implication. The passage to this general conclusion by Arrow is only possible by considering every kind of social rational decision-making as intermediated by a welfare function, what Buchanan strongly disagree. The social welfare function cannot be understood as a collective decision process of choice because it is not about social genuine choice. Rather, it is a transposition of the individual choice maximization problem, i.e., a single organismic decision-maker.

According to Buchanan (1954a, pp. 115-6), what Arrow failed to see is that "*his conditions, properly interpreted, apply only to the derivation of the* [welfare] *function and do not apply directly to the choice process*." This distinction between the theorem applicability to the welfare function derivation and its inapplicability to the choice process is not so important in the case of voting. But it is fundamental when considering the market. The construction of an "Arrow social welfare function is not a necessary condition for consistent decision-making." The connection to the equilibrium analysis becomes more explicit when we examine the use by Arrow of the concept of social rationality. Rational choice is a very clear attribute when confined in an individual sphere. However, rational social choice seems an oxymoron. Rationality as an attribute of a collective of individuals implies in some degree that such collective is treated as a cohesive group as if it was an individual. It "implies the imputation to that group of an organic existence apart from that of its individual components."

This is exactly the meaning the Buchanan gave to the organismic approach in public finance. Buchanan repeats his evaluations on the different philosophical bases discussed in his pure theory of government finance, contrasting individualism and some variant of the organismic philosophy. In the first, the individual is treated as the center of analysis and is the only entity that has values and ends. In the second, the organic entity is assumed to be an independent entity possessing its own values and ends. Again, both have its usefulness depending on the problem on hand but it is important here, as there, to clearly distinguish both approaches. Buchanan argues that voting and the market as decision-making procedures have evolved umbilically with the philosophy of individualism in the sense that there is no social entity organism which is the center of the decision. Only individuals choose. Even in the pre-Lionel Robbins state of welfare economics, these two processes - voting and market - only indirectly were connected to the individual values inputs entering into any kind of welfare function.

In this case, the most used practice was the measurability and interpersonal comparability of utility which provided a common denominator of a conceptual social magnitude. Thus, the utilitarian social welfare function was based on the horizontal sum of its individuals' utilities. In this context, without the interpersonal comparison of cardinal utility, Arrow's work properly understood destroyed the attempt to construct an ordinal conceptual social welfare function because the function cannot produce any "measuring stick as was provided by the measurability of utility" (ibid.). Defining social rational choice in terms of results produced by a social welfare function, i.e., as the maximized utility value in a utilitarian flavor, a market decision mechanism is rational in the social sphere only if all individuals components are rational and each individual utility function is independent of the others.[10] In the same manner, in a voting decision mechanism, the voting is socially rational only if the individual votes are proportional to the individual utility.

In Buchanan's (1954a, pp. 117-8) view, what cardinal and interpersonal utility comparisons made was to create a social consistent welfare function based in the horizontal sum of individuals' utilities. But "it did nothing to insure that market of voting choices were socially rational. Here the distinction between a rational choice process and an acceptable social welfare function becomes evident." The correct approach to the social welfare function is first to clearly state the philosophical differences between the social and individual values, and then to recognize that such functions are completely different from individual computational choice decision-making. Therefore, "[i]t seems meaningless to attempt to test such [individual] choice process for social rationality." It is necessary to distinguish the proper role of individual equilibrium and the bridge to social equilibrium processes. Buchanan is restating his position of a clear distinction between the organismic and individualistic approaches.

In breaking the notion that acceptable social welfare functions, and thus of social rationality, must be connected with the collective decision-making process, it is still possible to test theses social choices as stated by the function for consistency. But only in the ordinary rationality sense, i.e., if choices are connected (complete) and transitive. Arrow's analysis suggests that such collective consistency is something desirable since he links it to the maximization of total utility by the

[10] Technically, because of the Cournot aggregation problem the horizontal sum of individual utility functions demand that all agents have the same homothetic utility function, i.e., the same marginal rate of substitution for all levels of income. This implies that all problems of income distribution are excluded since all individuals' Engel curves are linear. Another way to put this condition is to say that individuals may have homothetic but different utility functions providing that income distribution is fixed and independent of prices.

welfare function. However, the possibility of inconsistency and intransitivity of collective choice as applied to the voting process, i.e., the irrationality of the political majority voting, is a necessary condition and productive feature of political democracy. Majority voting decision is the simplest way of solving the collective action problem and permitting some degree of action against collective inertia. The intransitive property of this collective decision is the guarantee that the minorities beaten in one voting can be in the winning coalition in future elections.

It is precisely the formal inconsistency of voting that prevents a single majority coalition to monopolize the collective decision in the damage of the minority. In the case of tyranny of the majority over the minority, the majority rule of voting is illegitimate and ceases to be a mechanism of reaching provisional social agreements and choice-making. We enter in a prisoner's dilemma finite game where cooperation in the democratic process is ruled out. For a political majority rule to be functional, the nature of majority coalitions must be uncertain and mutable, i.e., the voting process must be intransitive or formal inconsistent. For Buchanan (1954a, p. 119), a genuine social choice is a relative majority coalition that attains consensus in the democratic regime by discussion. Democracy is government by discussion, à la Frank Knight. "[M]ajority rule is acceptable in a free society precisely because it allows a sort of jockeying back and forth among alternatives, upon none of which relative unanimity can be obtained." The majority is not a fixed group in society, but an ever-changing composition that depends on each decision and time. Individual values and ends in the voting-process changes all the time. "This is democratic choice process, whatever may be the consequences for welfare economics and social welfare functions."

In focusing on the social welfare function as *the* general category of rational collective social choice, Arrow interpreted the voting and market mechanism as two alternative means to an essentially same decision-making computation. Namely, the construction of a social welfare ordering function from individual values and ends. The two mechanisms failed in this attempt. In the case of majority voting, it is a straightforward discard from the social welfare function the rational imputation of individual values. When interpreted properly in the realm of a collective unity organism, it is still possible to test Arrow conditions for formal consistency in choices. As somewhat expected, the ordinary majority rule of democracy does not necessarily produce consistent transitive rational choices. On the contrary, it is a fundamental virtue and quality of the democratic process of decision by majority voting that it is formally inconsistent and intransitive. It is only by this fact that, in an infinite democratic voting prisoner's dilemma game, cooperation

is possible and the winner majority coalition in one collective choice does not exercise its generalized tyranny over the minority.

Nevertheless, with the market mechanism we have a new additional step when it is tested for formal consistency of collective choice in relation to a hypothetical result from a social welfare function. The problem is one of knowledge. To derive a social welfare function for the market it is necessary that all possible social states of nature, states that are *ex ante* described and given in the voting process, "be ordered *outside* or *external to* the decision-making process itself. What is necessary, in effect, is that the one erecting such a function be able to translate the individual values (which are presumably revealed to him) into social building blocks. If these values consist only of individual orderings of social states (which is all that is required for either political voting or market choice), this step cannot be taken" (Buchanan, 1954a, pp. 121-2).

The construction of a social welfare function transposes the properties of individual choice equilibrium to the social environment. In an individual choice, the problem is one of maximization of some utility magnitude defined by individual preferences, values, and ends. It is assumed that the individual can order all the states of nature in a weak preference relation, i.e., that all states of nature can be ordered in better, worse, or indifferent in relation to the other states. Individual orderings or preferences are complete (connected, as in Arrow's language) and transitive. According to these ordinal preferences, synthesized in a homothetic utility function, the individual maximizes utility subject to his budget constraint. The individual computational choice problem is solved in terms of its own individual data, the solution is implicit in the data. It is a physical-computational objective choice. This is a perfectly reasonable hypothesis since the individual is reasonably capable of ordering his preferences according to different states of nature. Individual rationality hypothesis lies in his or her capacity to generate transitive preferences. Moreover, humans indeed do *try* to economize their scarce and alternative means. Indeed, it can be argued that this is the basis of all human action.

To make the same steps in the societal level is a very different subject. It is not clear exactly to *whom* exogenous to the decision-making process in the market is given the capability to order all the social states of nature in a weak preference relation according to the various individual orderings of such social states. Welfare economics generally assumed omniscience (i.e., given objective knowledge) of the observer or the central planner (cf. Hayek, 1945). Only by this means that the welfare economists can distinguish between lower or greater social welfare without

references to individuals' actual choice because the external economic observer actually knows *ex ante* what the individual would choose since he has all the necessary data to make the computation solution set from the individual maximization problem. Buchanan (1959, p. 126) argued that "[t]his omniscience assumption seems wholly unacceptable." Utility can only be measurable, in ordinal or cardinal terms, concerning the individual in the actual decision-making act. "It is a *subjectively* quantifiable magnitude," Buchanan noted.

As such, the external observer is essentially ignorant about the actual ordering of preferences and alternatives until the actual revelation in the individual genuine choice. As Buchanan ([1969] 1979, p. 40) put it, "[c]hoice, by its own nature, cannot be determined and remain choice." If we modify the assumption of omniscience for the ontological assumption of ignorance (of individual ranking of alternatives), the notion of social values constructed from individual preferences cannot be made. Stable social welfare functions cannot be constructed and the social efficiency notion for collective action cannot be defined. The efficiency standard is only valid when measured by a common denominator, a value scale in which the alternatives can be measured and ranked. This criterion is useful and meaningful in the individual level since (s)he subjectively judges the states of nature. However, to the external observer or central planner introduce some efficiency criteria without the objective given knowledge of individual preferences, he must do so "only through *his own estimate of his subjects' value scales*. Hence the maximization criterion which the economist may employ is wholly in terms of his own estimate of the value scales of individuals other than himself" (Buchanan, 1959, p. 126)

An efficient change can only be perceived when a specific proposal has individual preferences for and against it in fact revealed by collective agreement or not. Thus, for Buchanan, the only appropriate conception in political economy (i.e. welfare economics) is the presumptive efficiency of some proposal based on the economist judgment of individual preferences. The proposal effective test is the consensus among the members of the decision-making collective, not some objective measurable increase in some social welfare function. These proposals are ethically neutral since they indicate only the economic analyst subjective estimation of the individual preferences, contrary to the ethical evaluations imposed on different welfare functions (e.g., utilitarian, Rawlsian, etc). In this sense, the task of political economy is to show to the multiple parts in the political decision-making process that exist mutual gains from trade (that is, from collective agreements) in the particular proposal advanced by the political economist. Buchanan's

position can be understood as the substantive application of subjectivism to the political economist dealing with the collective decision-making process. Subjectivism is present in the fact that is only through the lens of subjective estimation of the economist that individual preferences can be evaluated. The economist does not have the objective data, the data is not given in an objective form but it is subjective inferred and interpreted. This point is fundamentally linked with the individual and social equilibrium analysis division and the analogous in the organismic and individualistic approaches in public finance, as discussed below.

The individual is the only entity who can compare two different social alternative states and actually make a choice according to these orderings in a market mechanism. In this sense, with the hypothesis on individual preferences, "the market mechanism does provide a means of *making consistent choices* as long as individuals values remain unchanged" (Buchanan, 1954a, p. 122). The market is a mechanism in which various individuals acting according to their own values and ends produce an unintended social order capable to move between different social states without any means of collective action. Market order originates in different and multiple individuals actions, but the consistency of this process is not based on a conscious social choice itself. Order is the result of human action but not of human design, as in Adam Ferguson's famous phrase (Hayek, [1946] 1948, p. 8).

It is this social consistency of choice of the market mechanism that is totally different from the voting process in the choice consistency testing of Arrow conclusions. Both mechanisms are similar in the problem of deriving a social welfare function from individual values. The same is true concerning social or collective rationality in terms of the results of social ordering function. But they are not equal in the decision-making process testing for consistency of choice. When voting and the market are treated as the same in an organismic perspective both are just two alternative means for social ordering construction and the operation of collective rationality as indicated by such relations. However, voting and the market are radically different in an individualistic approach. The market can produce an impersonal and supra-individual mechanism that allows social consistent choice decision without any real individual actor have collectively decided to. What market really provides is a means to the individual making his consistent choices. Thus, Buchanan (1954a, p. 122) argues that "the market does not call upon individuals to make a decision collectively at all. This being the case, market choice is just as consistent as, and no more consistent than, the individual choice of which it is composed."

In addition, the properties of *individual* choice in voting and the market are very distinct. The common analogy between these two ideal types of choice is the one-dollar-one-vote, which equalize the political decision-making process and the market as faced by the individual choice. In comparing the individual choice in the price system and a pure democracy, according to Buchanan (1954b), the distinction can be qualified in six areas. Namely, (i) the degree of certainty of the process, (ii) the degree of social participation in social decision-making, (iii) the degree of responsibility of choice, (iv) the nature of alternatives presented in the act of choice, (v) the degree of coercion, and (vi) the power relations among individuals.

In the market choice, the individual is the acting entity and reference of analysis as well as the entity for which the choice is made. In the voting process of pure democracy, the individual is the choosing entity but is not the entity for which the choice is made, this is the whole collective of individuals. Thus we have the first difference. In the market, there is absolute certainty of the immediate predictions and results of the act of choice. Choosing and the consequences of choices in the market are in one-to-one correspondence. This is not valid for voting. Voting is disconnected with the consequences of choices, the voter can never predict which alternative present in the pool will be chosen. Voters face a Knightian uncertainty in the decision-making process. Voters do not necessarily act based on his or her highest preference scale since his or her choice is made under uncertainty.

Second, the degree of participation in social-decision making in the market is low. The choice possibilities set is exogenously given to the individual and (s)he acts not taking into account the secondary unintended consequences of her or his choice. “The individual tends to act *as if* all the social variables are determined outside his own behavior” (Buchanan, 1954b, p. 336). This property of anonymity of social determination can be argued to be the virtue of market mechanism. The contrary is true in voting since polling is made to decide the final allocative choice by society. The individual act of choosing between alternatives is social, even in a purely subjective sense. Third, since every voting choice is a collective one, the responsibility for every social choice is divided and diluted between the voters. Alternative costs are suffered by all the individuals, not only by the chooser. The opposite is true for market choice. Fourth, the voting choice is mutual conflicting and exclusive because of the collective nature of the process, which is influenced by vote indivisibility. The individual choice in the market is highly-divisible among the alternatives

and not mutually exclusive, i.e., infinite combinations of resource allocation between goods are possible. The object of choice is different in voting and the market.

Fifth, as discussed, the democratic process is an aggregative intransitive process of choice in which the defeated minority is coerced to the choice of the majority coalition. It is a collective intransitive choice because there are different majority coalitions between time, space, and subjects. Indivisibility of voting choice creates this minority and majority coalitions in the decision of a final set in collective allocation. By contrast, an individual choice in the market is never overruled or a defeated minority, the choice is absent of coercion. Sixth, and last, market choice is decision-making conducted under inequality between the individuals. Each biding can count differently between individuals since biding is discriminatory, a form of competition. Voting, on the contrary, ideally counts equally independent of the voter.

III. A SCIENCE OF CHOICE COMPUTATION OR EXCHANGE BEHAVIOR? SUBJECTIVISM, EQUILIBRIUM, AND COST

In his 1963 presidential address, Buchanan (1964) proposed that economists should study and investigate a particular form of behavior outlined by Adam Smith, the propensity to truck, barter, and exchange one thing for another, and the alternative institutional arrangements in which these exchanges take place. This Smithian intellectual enterprise of catallactics or symbiotics can be divided into two main forms or branches, the theory of markets and the theory of politics. The difference is the institutional framework within the exchange behavior of individuals operates, in particular the difference of coercion in these exchanges as discussed above. This normative proper scientific scope for economics is contrasted with the positive question of what economists really do. Economic profession mainly concentrates its efforts on problems of maximization of *given* scarce means to *given* ends, a problem of optimum resource allocation between multiple given ends.

Obviously, this is the precise characterization of Robbins' famous definition of economics as the science that studies the economic behavior that arises when it is present scarce and alternative means in relation to multiple desired ends. Indeed, Buchanan elected Robbins and his definition as the opposite side on his methodological account. Economic behavior defined as a maximization computation problem of some objective utility function was born in the context of individual

choice analysis. Economizing behavior is a choice between the alternative allocation of scarce means. Scarce means alone with multiple and alternative ends do not produce economic phenomena, because there is nothing to choose. There is no economizing act. In Buchanan's view, this is a legitimate and useful analytical tool but has to be confined as a separate field from the proper subject of economics, as a branch of applied mathematics or engineering.

A very different situation is evidenced when this individual choice computational problem is used in social contexts, as discussed in welfare economics. Robbins did not specify who exactly is the choosing agent, so the transposition of the maximization choice problem to other contexts and other choosers (e.g., the society) was somewhat direct. A society or a community of individuals came to be seen as resolving the same computation problem of individuals, as maximizing some social objective conceptual magnitude. Nevertheless, in Buchanan's (1975, p. 225) view, it is the social equilibrium organization, mediate via exchanges by different individuals who have different subjective expectations, that is the subject matter of economics. "The object for economists' research is 'the economy', which is, by definition, *a social organization*, an interaction among separate choosing entities."

A social organization is a setting within various kinds of exchanges takes place. Individuals can organize their social interactions and exchanges in a totally privately form. In this case, individuals are the decision makers by which the private objectives are pursued. This is mainly done within the sphere of exchanges and interactions via the market institutions. Some interactions and complex exchanges, however, cannot be made privately among individuals and have to be made in some form of collective basis. This is the domain of the political institutions. Individuals exchanges votes or support in majority coalitions for a commonly inter-individual shared goal, especially the provision of public goods in the Samuelsonian sense (i.e., goods that have collectiveness in consumption, nonexcludability, and problems of free-riding). Hence "[p]olitics is a structure of complex exchange among individuals, a structure within persons seek to secure collectively their own privately defined objective that cannot be efficiently through simple market exchanges" (Buchanan, 1987a, p. 246).

Political institutions are parallel to the market mechanism in the sense that both are means to organize social interactions and the effective realization of gains of productive specialization and mutually beneficial trade opportunities. Buchanan's account on the intellectual responsibility and methodological influence by Robbins on the rise of the standard maximization practice in

economics is difficult to accept entirely. The maximization paradigm is mainly derived from a specific view regarding the nature of equilibrium analysis. It is the conceptual philosophical understanding regarding the objectivist or subjectivist nature of the equilibrium construct the crucial point for the proper delineation of economics, along with the difference between the equilibrium setting in the individual and social context.

Robbins' *Essay* (1932) was basically trying to define the neoclassical economic theory in a common core based on the economizing behavior of individual choice. Confined in what Hayek called the pure logic of choice. It was a positive endeavor of what economic science *was* and the significance of this nature, not what economics should be. Moreover, Robbins' definition had a long road until its common acceptance in the profession in the 1960s. Of course, this is not to deny the unintended influence of his methodological narrow definition to the axiomatization of economics and the maximization paradigm (see Backhouse and Medema, 2009a, b, c).

The point that has to be stress is that Robbins' definition was not a *sine qua non* condition to the rise of the computation objectivist maximization view because this view was *already* live and strong before his definition could show its influence. Perhaps the main example is the optimum saving model by Frank P. Ramsey (1928). Ramsey hypothesized his model in terms of a central planner that had direct access to social preferences in its utility function. But Ramsey did not address the problem of how these social preferences could be formed through individual preferences. In the early 1950s, the first and second welfare theorems formalized the isomorphism between central planner and decentralized methods of achieving Pareto-efficient allocation, i.e., the isomorphism between individual and social equilibrium. This was just a re-formalization of the formal similarity thesis advanced by Wieser, Vilfredo Pareto, and Enrico Barone. Indeed, Ramsey approach was so influential that it provided a usual technical solution for dynamic optimization problems. Another example is the first restatement and so-called demonstration using general equilibrium theory of the theoretical (mathematical) and practical (trial and error) solution for the economic calculation controversy initiated by Mises in 1920 by Fred Taylor's 1928 American Economic Association presidential address (1929). This solution would be developed by Oskar Lange (1936, 1937), in the so-called Lange-Taylor approach.

The really fundamental dividing point was the nature of equilibrium analysis. In particular, the subjectivism or objectivism in equilibrium. It is the consistent application of subjectivism in the equilibrium construct that draws the line between the theory of resource allocation and the theory

of exchanges favored by Buchanan as the scientific delimitation of economics. One direct consequence of this subjectivist interpretation of equilibrium is the subjective opportunity cost emphasis that Buchanan stressed so deeply, as discussed below. The objectivist view of economic theory embodied in the maximization paradigm is well represented in a different methodological form by the founder of post-Second World War modern economics Paul A. Samuelson in his *Foundations of Economic Analysis* (1947). As is well known, one of Samuelson's main objectives in his book is to demonstrate the existence of operational propositions in economic theory, propositions that in principle imply testable operations.

Samuelson (1947, p. 5) argued that only two key-stone types of general hypotheses are the foundations of economic analysis and its meaningful theorems, i.e., the foundation for every operational proposition to be derived in economic theory. First, the maximization or minimization hypothesis, meaning that "conditions of equilibrium are equivalent to the maximization (minimization) of some magnitude." Note the use of the word *equivalent*. First order conditions are a necessary requirement for the determination of equilibrium and second order conditions determine the signal of the function multipliers and can thus be tested. Second, the dynamic stability hypothesis. Static equilibrium maximization position is relaxed and it is allowed non-equilibrium positions, but it is assumed or hypothesized that the variable converges to an equilibrium steady-state position through time. This implies certain values to the function derivatives and thus can also be passive of test. Finally, the correspondence principle allows the theorist to deduct under specific circumstances (i.e., under the hypothesis that the system is dynamic stable) various propositions about the appropriate comparative statics properties of a permanent change in one parameter that corresponds a new equilibrium position.

Samuelson's *Foundations* is almost the ideal type objectivist view in equilibrium and on what Buchanan called the theory of resource allocation. Every or almost all meaningful operational proposition in economic theory has to be derived from the conditions of equilibrium which are *defined* as the maximization of some objective magnitude function. This magnitude quantification in the objective function to be maximized demands increasing conceptual objectification. The theorist treats and manipulates the magnitude only in a symbolic or algebraic form, his attention is driven away from the initial imputed properties of objectivity itself. However, according to Buchanan ([1973] 1981, p. 4), so long as this objectification is restricted in the individual computational choice decision, "no harm is done and perhaps some good is added by conceptual

objectification." The problem arises when this objectivism is applied in the equilibrium properties as defined for markets, that is, in social equilibrium contexts. This confusion is especially intensified when the equilibrium properties as defined for markets "are transferred as criteria of optimization in *non-market* or political settings" (p. 5).

All major theoretical differences between Buchanan's approach to public finance, social choice theory, and welfare economics can be linked to the fundamental distinction of individual equilibrium and social equilibrium, as defined by Hayek (1937). But what is the source of this distinction? It is the consistent application of subjectivism in the individual tautological equilibrium *and* in social equilibrium. The individual tautological equilibrium has a clear meaning in the sense of the minimum subjective rationality principle. Equilibrium is a relation between means of action plan through time and desired ends, the rationality principle supports an economizing behavior between the scarce and alternative means to the desired ends. However, individual rationality is not guided by objective facts but by subjectively perceived elements. The individual tries to maximize or economize according to his belief that the action plan taken will be the best route.

It is in this sense that the individual equilibrium is tautological. It is necessarily true and only a transformation from the assumptions because of the subjective interpretation of his logic of choice. To be consistent with the minimum subjective rationality, the means of action only need to be non-contradictory in relation to the ends desired. The equilibrium or rationality of the pure logic of choice is *a priori* logical derivation from the assumptions. Subjectivism *guarantees* the individual tautological equilibrium. For the social equilibrium, the same consistent application of subjectivism is necessary for each individual. Likewise, for equilibrium, there must be a cohesive relation between action plans of different agents and its ends. As each individual has a different subjective expectation of the best way to economize its interpreted means of action regarding his ends, there must be compatibilization of the different subjective expectations of individuals to the cohesive social action plans. In addition, these social plans must be compatible with the objective external world to be carried successfully. Social equilibrium is thus defined as a mutually compatible and consistent subjective expectations by the individuals.

Samuelsonian paradigm treats the equilibrium as an objectivist magnitude to be maximized. It treats the social equilibrium as merely a horizontal sum of individuals tautological equilibria. Thus the problem is understood as a physical objectivist computation problem of final resource

allocation choice and not as mutual dynamic adjustment among different plans of action by different humans with different subjective expectations. In an objectivist view of quantifiable magnitudes, the individual has the objective and true vision of reality. Therefore, the individual always chooses the *de facto* best means of his plans of action to his desired ends, (s)he has all the knowledge or the correct foresight. Agents try to maximize and *de facto* optimize because each one has the exact knowledge of *how* to do it. It transforms the individual problem in a problem of computational choice of given objective means and given ends. By definition, in the objectivist notion, the individual always is at equilibrium. This physical-computation view is thus transferred to all the other kinds of situations since whatever problem can be expressed as the horizontal sum of its individual components optimization problems. Note that in the objectivist view there is really no difference between individual and social equilibrium.

This point is very explicit and clearly stated by Buchanan ([1973] 1981, p. 5) that argued that

> "It is here that the critical distinction between the equilibrium of the single decision-maker and that attained through market interaction, the distinction stressed by Hayek, is absolutely essential to forestall ambiguity and analytical error. The theory of social interaction, of the mutual adjustment among the plans of separate human beings, is different in kind from the theory of planning, the maximization of some objective function by a conceptualized omniscient being. The latter is equivalent, in all respects, to the problems faced by Crusoe or by any individual decision-maker. But this is not the theory of markets, and it is artificial and basically false thinking that makes it out to be. There are properties or characteristics of equilibria in markets that seem superficially to be equivalent to those attainable by the idealized optimization carried out by the planner. But shadow prices are not market prices, and the opportunity costs that inform market decisions are not those that inform the choices of even the omniscient planner. These appear to be identical only because of the false objectification of the magnitudes in question. This is what the great debate on socialist planning in the 1930s was all about, comment to the contrary notwithstanding. And modern economic theorists measure their own confusion by the degree to which they accept the alleged [Oskar] Lange victory over Mises."

In Buchanan's view, all the focus on the impossibility of rational economic calculation under a non-private property means of production scheme was misleading because market equilibrium properties and results cannot be replicated by another non-market institutional arrangement. The nature of a market social equilibrium is not characterized by a concept of efficiency or optimality comparable with the individual central-planner. In the first, the nature of optimal values is informed by different subjective marginal-values of various human beings participants in society. In the individual central planner equilibrium, the marginal-values estimates are of *his* subjective evaluation. It is in this sense that the concept of efficiency is not comparable between the two cases, the subjective evaluations are different. So the difference in subjective interpreted data confronted by different decision-makers in alternative "institutional settings is quite sufficient to prove that the properties of market [social] equilibrium cannot in the nature of things be duplicated under non-market institutional structures" (ibid.).

This difference stressed by Buchanan is only clear when we consistently apply subjectivism in the equilibrium construct, especially in the passage between individual to social equilibrium. In an objectivist view, there is only one optimal path to concrete marginal-values evaluations. There is only one final and objective equilibrium resource allocation setting. Whoever is to be the decision-maker, in whatever institutional environment, is confronted with the same optimal final allocation of resources. Note the connection with the distinction made by Buchanan on the pure theory of government finance, the organismic and individualistic approaches. The organismic approach has a measurable magnitude in an objective function to be maximized by the cohesive central organism. To Buchanan, this can be a valid way of proceeding according to certain problems, as the allocation of fiscal expenditures. But only when we realize that the objective function to be maximized is not objectively interpreted at all. The marginal-values in which it will be applied the equimarginal principle are subjectively interpreted by the central decision-maker. The same connection can be perceived in social choice theory and welfare economics.

The democratic decision-making process is intransitive because there are different and mutable majority coalitions in time and space. The nature of a majority coalition and a defeated minority demands by definition different, pluralistic, and contradictory positions in the political realm of collective action. Democratic pluralism, as a government by discussion, can only exist where different individuals have *different* positions or preferences regarding the social collective decision. Pluralism can only emerge when the same concrete and external reality is capable of

generating different opinions and interpretations by the individuals. In other words, when the reality is subjectively interpreted. This implies the absence of an objective and stable welfare function to be maximized by some mechanism of aggregating individual preferences without interpersonal utility comparisons. Therefore, Buchanan ([1973] 1981, p. 6) writes that "the increasing conceptual quantification, and objectification, of economic theory need not have sown confusion without the accompaniment of developments in theoretical welfare economics."

The objectivist view sees equilibrium only as a final state of rest, a fixed point in the optimum surface. In the state of equilibrium, subjective marginal evaluations by individuals are transformed in objective expressed values since the ratio of subjective marginal utility values (i.e., the marginal rates of substitution) is equal to the objective relative prices for all goods. Different marginal substitution rates between individuals create a mutually beneficial exchange opportunity. In equilibrium, all exchanges opportunities ceased, so all the subjective and different marginal rates of substitution are equalized into an objective form measured by the relative prices. Subjectivist economics emphasizes the always changing process toward the equilibrium, the unknown exchanges opportunities to be realized. It is in this spirit that Buchanan tried to delimit the scope of economics within the Smithian behavior principle of truck, barter, and exchange. Economics is about exchange and its institution only if we are *not* in the state of equilibrium and there are indeed exchange opportunities to be realized.

IV. SUBJECTIVIST ECONOMICS, CHOICE, AND OPPORTUNITY COST

According to Buchanan ([1973] 1981, pp. 5-6), "it is legitimate to trace the sources of error to fundamental misconception in the theory of opportunity cost, misconceptions that the London (and Austrian) scholars were attempting to clarify, and which later I tried similarly to rectify with my little book, *Cost and Choice*, in 1969." However, as hinted by Buchanan's view on Wieser, objectivism can also produce a theory of opportunity cost in objectivist terms. Take for example the case of production theory where the opportunity cost of one input is expressed on the alternative uses of it in other production processes. In equilibrium, the relative marginal products of each input must be equal to relative input prices. The natural price of whatever resource unit must in equilibrium represent its alternative product value. To attract one unit of productive resource one must cover the opportunity cost of alternative uses, the minimum reservation price of the resource.

The opportunity cost is a subjective evaluation of the individual who wants to attract a scarce resource from the alternative uses expressed in objectivist terms by the prices.

Hence, at the state of equilibrium, all the alternative opportunity uses are equalized and the subjective evaluations of opportunity costs are translated into objective alternative physical product terms. This can be illustrated by treating costs of production in money terms, as discussed in section I. This is just one way to homogenize in a common denominator the scarce resource and thus to eliminate the subjectivism of opportunity cost. It is sufficient to treat a hypothetical economy where all scarcity is represented as a homogeneous magnitude (e.g., a mass of schmoos or a standard measure of non-skilled labor). Any consumers' goods where the subjective value is expressed can be convertible and reducible to this magnitude. In this economy, the cost of any good can be expressed through the homogeneous magnitude (e.g., socially necessary non-skilled labor time) in terms of the displaced physical product alternative, since each of the n consumers' goods can be reduced to its homogeneous shmoo or labor inputs. Therefore, in this economy if some good X (say, beaver) use two times the homogenous input in its process than another good Y (say, a deer), it is straightforward that X cost in terms of alternative product displaced two times Y. So, if usually costs two times the homogenized labor to kill a beaver than to kill a deer, we can express the natural or normal exchange value in terms of the relative objective homogenous costs of production.

We are in Adam Smith's famous example in which the natural exchange value is determined in equilibrium by the relative labor time inputs. Thus Knight (1921, 1928) proposition that the opportunity cost of a deer is two beavers. Knight argued that the correct way to interpret the opportunity or alternative displace cost is as the alternative physical magnitude product and not as utility displaced in the alternative path of choice. The same was supported by Gottfried Haberler (*v*. Robbins, 1934). This is true *at* the state of equilibrium, where the only real-world objective magnitude, the relative money prices, are equal to marginal rates of technical substitution for all goods. In this case, the application of norms of welfare economics has meaning since the central planning maximization problem can be defined in marginal values of an objective homogenous magnitude. In more formal terms, the objective opportunity cost can be interpreted as the Lagrangian multiplier of the dual problem of the firm, i.e., its shadow-price or shadow social opportunity cost. Later, Knight (1934) would expand his opportunity cost theory to incorporate divergences of private and social opportunity cost.

Thus some version or notion of opportunity physical cost theory can be derived by objectivist analysis. Perhaps the notorious example of this objective opportunity cost use is Abba P. Lerner's *The Economics of Control: Principles of Welfare Economics* (1944). Note, moreover, that the familiar notion of marginal rate of substitution in the indifference curves system is essentially an objectivist view of the forgone utility. This is defined as forgone marginal utilities of a physical commodity and not as the forgone utility that can be applied to multiple ends. The choices along the indifference curve are an imaginary trade-off situation for a given utility level measured in physical objective commodities. Marginal utility of one unit of good X is the physical unities of the good Y forgone. Note that it is physical alternative good unities, not the subjective utility of forgone choices with genuine alternative sets. Opportunity cost is thus defined as the forgone commodities and not as the forgone utilities. We came back to the economy described above. As Karen Vaughn (1980, p. 705) observed, such genuine alternative sets and its subjective utilities can be represented by a movement along with the budget line constraint as moving toward higher indifference curves.

Only the budget line represents real alternative market choices as an open set to an individual. In this case, the opportunity cost is the utility level associated with the second best bundle that is forgone in the act of choice. The objectivist view is reflected also at the macro level since the production-possibility frontier measures the cost of producing one commodity as the amount of the other commodity that could be produced given the same resources. This physical measurement can be a reasonable proxy for the utility of the alternative particular commodity only but it is not a reasonable measure of the subjective second-best alternative forgone. It is necessary a subjective individual valuation of net utility to order the ranking of alternatives. Opportunity cost reasoning *per se* is not sufficient to stress the processes that Buchanan emphasized. Subjective opportunity cost reasoning is a fundamental *consequence* of subjectivism in the equilibrium analysis. The confusion or theoretical error that Buchanan attributes to the market socialists in the economic calculation debate or to welfare economics theorists in the 1950s is first a difference between the consistent application of subjectivism in equilibrium. It is only within this perspective that the purely subjective doctrine of opportunity cost can be derived.

Buchanan ([1969] 1999, p. 25) was conscious of this, but he stressed the subjective opportunity cost doctrine as a particular instance of the general subjectivism approach because his intellectual interlocutors had concentrate so much in general cost rules applied to a variety of situations from

the competitive firm to public goods. Some examples are the marginal cost pricing rules proposed by Lange and Lerner in a general market socialist economy and the marginal cost rule proposed by Harold Hotelling and Lerner to public goods later modified by Coase (1946) in a two-part tariff - one part in a lump-sum general tax and another part according to a marginal cost rule (Telles, 2019a).[11] The subjective opportunity cost doctrine emphasis derived from subjectivist economics was a perfect way to undermine these objective marginal cost rules since the rule has only sense when costs are externally objective, observable, and measurable. However, cost is a subjective expected evaluation of the best alternative option sacrificed by the chooser in the act of choice. Cost is a sacrificed alternative that can be only subjectively *ex ante* evaluated by the acting decision-maker. It is a forward-looking subjective expectation of the best alternative displaced in the act of choice by the chooser. A third-person cannot measure the cost taken by chooser, since it is mental expected evaluation at the moment of choice that date the cost (Alchian, 1969; Buchanan, 1991a, 2004; Coase, [1938] 1973, 1960; Seldon, 1981; Thirlby, 1946a, b, 1952, 1960; Vaughn, 1980, 1981; Wiseman, 1953, 1960).

Marginal costs *normative* rules came to be developed mainly in the 1930s, in the economic calculation debate context. As mentioned, the neoclassical theory, contrary to the English classical political economy, did not provide a positive-predictive dynamic theory of relative prices. Marginal utility theory is a body of propositions that can admit various sub-cases of interaction between supply and demand forces (e.g., the classical labor-cost value theory is one sub-case of the marginal utility theory). As such, neoclassical general exchange value theory in its purity is not falsifiable without supplementary hypothesis. The theory does not provide the equilibrating process of competition between individuals that forces values to be exchanged by their respective costs of production, as in Smith's deer-beaver model. Neoclassical theory only describes the properties of final *ex post* equilibrium allocation. It was denied the possibility for economists to make an objective prediction on exchange values and relative prices.

It is the competitive dynamic equilibrating market process that assured that exchange values between deer and beaver converged to their labor-cost of production. Classical economics had an implicit theory of dynamics, but neoclassical theory is static. In this sense, Knight's dictum that

[11] See also the contribution of Knut Wicksell on marginal cost pricing restated by Buchanan (1951). As is well known, Wicksell is perhaps the single main influence on Buchanan's approach to political economy and social philosophy. Wicksell anticipated the fundamental notions of methodological individualism, rational choice analysis, and politics as exchange (see e.g. Buchanan, 1986b, p. 456; 1987a).

the opportunity cost of one deer is two beavers can be understood only when the cost of production in organized markets are in equilibrium, i.e., where the competitive equilibrating process between the producers of deer and beaver already occurred. Buchanan ([1973] 1981, pp. 9-10) argues that the confusion was generated and emerged when "1) theorists overlooked the absence of objective content in neo-classical and general-equilibrium analysis, and 2) when they attempted to utilize the properties of market equilibrium as norms for the optimizing solutions of problems posed in non-market institutional settings. The presence or absence of objective content assumed instrumental significance only when the planner was introduced, whether in the administrations of state or public enterprises (piecemeal or *in toto*) or in levy of corrective taxes and/or subsidies on production in markets."

At the state of equilibrium, the subjective expected marginal benefits for each individual will be equal to his subjective marginal opportunity cost. This is expressed by the subjective relative marginal utilities of goods or opportunities. Only prices have real objective content. By definition, equilibrium demands that there is only one price for all the market and its participants otherwise would be gains of arbitrage and trade. Hence, all individuals face uniform commodities relative prices (the law of one price). If all individuals face the same objective relative prices, it follows that in equilibrium all marginal rates of substitution are equalized with the relative prices for all goods. In the demand side, the individual adjusts his consumption until his marginal benefit equals the price. In the supply side, the individual adjusts his sales until the expected opportunities forgone or his marginal opportunity cost, in equilibrium the factorial marginal product, equals the price. Thus all producers are earning zero economic profits and just covering its costs, i.e. covering the opportunity marginal costs of all factors of production. In both sides, prices are equal to all the participants, marginal opportunity cost is equalized through all producers with the price in supply. The same is true for demand, marginal benefit is the same for all consumers since it is equal to the price.

In other words, all marginal rates of substitution are equalized with consumers goods relative prices and all marginal rates of technical substitution are equalized with factors of production relative prices. As Mark Blaug ([1962] 1985, pp. 592-3) point out, all marginal conditions necessary to the attainment of maximum welfare (i.e., optimum conditions of exchange, production, for the composition of output, for intensity of factor use, and intertemporal condition) can be synthetized in one grand criterion of equalization between the subjective and objective

marginal rates of substitution. According to Buchanan, prices indeed *tend* to equal marginal opportunity cost in market equilibrium - marginal opportunity costs are the dual of marginal benefits. However, and this is the difference, prices are *never* at equilibrium. Costs only are indirectly measurable because of the continuous adjusting process by individuals, buyers and producers, in consumption and production in disequilibrium so that these adjustments can have a marginal effect in prices.

> "If the whole economy is not operating at full competitive equilibrium, profits-losses may occur and, hence, observed outlays cannot be taken to reject foregone opportunities of the actual decision-takers in any general setting. In full equilibrium, on the other hand, observed outlays directly represent the maximum contribution of resources in different uses. Therefore, to the extent that decision-takers behave economically, the observed outlays reject genuine 'opportunity costs,' even if somewhat indirectly. The apparent reconciliation here verges on the tautological, however, since the whole purpose of the economic theory in which cost is relevant is to demonstrate how choices made in nonequilibrium settings will generate shifts toward equilibrium. And choice in disequilibrium must be informed by opportunity costs that cannot, even indirectly, be represented by measured outlays. In disequilibrium, the opportunity costs involved in taking the 'wrong' decision must include the profits foregone in the rejection of the alternative course of action" (Buchanan, [1969] 1999, pp. 46-7).

The objectivity of prices does not imply any degree of objectivism in the subjective marginal evaluation of costs and benefits by different individuals. These subjective evaluations cannot be "employed as a basis for determining or setting prices" since they naturally differ and are just subjective individual *sui generis* interpretations. The subjective individual marginal evaluations are "brought into equality with prices by behavioural adjustments on both sides of the market" in the competitive dynamic equilibrating process (Buchanan, [1973] 1981, p. 10). If we should follow some kind of marginal-cost pricing, prices then have to be brought into equality with opportunity costs and marginal benefits. But both marginal benefits and marginal opportunity costs are subjectively evaluated. In this sense, the opportunity cost faced by a utility-maximizing firm owner cannot be the same as a utility-maximizing bureaucrat or manager.

Buchanan ([1973] 1981, p. 11) blamed subjectivist economics and its practitioners, the "London economists" and the "latter-day Austrians," for the failure "to develop a full-blown 'subjectivist economics' that commands intellectual respect while seeming to retain explanatory relevance. Mises and his followers have been too prone to accept the splendid isolation of arrogant eccentrics to divorce their teaching too sharply from mainstream interests, and too eager to launch into polemic: epistemological, methodological, ideological." Buchanan ([1969] 1999, pp. 25-6) says that were several reasons for the methodological failure in subjectivist economics, "but undue attention paid to the definition of equilibrium, although of immense importance in itself, may have retarded acceptance of the more general subjectivist notion." The attention and exclusive focus on equilibrium states in the economic calculation debate deviated the real central issues to one of stationary equilibrium settings.

V. CONCLUDING REMARKS: A SUBJECTIVIST-CATALLACTIC-DISEQUILIBRIUM ECONOMICS

This was the term that Buchanan (1991b, p. 18) used to contrast with the allocationist-maximization-equilibrium paradigm that dominated the profession in the twentieth century. He predicted that economics in the post-socialist century would have to change in some sort of "deconversion" from this objectivist paradigm toward a subjectivist-catallactic-disequilibrium approach (see also Buchanan and Vanberg, 1991). Once Buchanan ([1986a] 1999, pp. 26-7) reconstructed his intellectual evolution stating that "the ideas that capture my attention are those that, directly or indirectly, explain how freely choosing individuals can secure jointly desired goals. The simple exchange of apples and oranges between two traders – this institutional model is the sharing point for all that I have done. Contrast this with the choice between apples and oranges in the utility-maximizing calculus of Robinson Crusoe. The second model is the starting point for most of what most economists do."

The catallactic or symbiotic approach that Buchanan favors in contrast to the Robbinsian allocative maximization paradigm based on the individual choice and not in the exchange behavior is primarily a conversion (from an objective view) to a subjective definition of the scope of the discipline. This conversion is exposed first and foremost on the subjectivist notion of individual and social equilibrium constructs. Thus the economic discipline frontier and limits are now

determined, as Marciano noted (2009, p. 135), not by objective limitations imposed by the universal scarcity in the act of economic choice but by a human subjective propensity behavior, the propensity to truck, barter, and exchange one thing for another. Note that with Robbins the "exchange" relationship is with a human being and the inanimate scarcity nature, it is an objective physical relation (be that of material things, natural resources, time, and so on). Now the exchange is between two humans, a subjective relation derived by a psychological inner propensity.

In a footnote to his passage on subjectivism in which we started this essay, Hayek (1942, p. 281) argued that the consistent application of subjectivism "has probably been carried out most consistently by L. von Mises and I believe that most peculiarities of his views which at first strike many readers as strange and unacceptable are due to the fact that in that consistent development of the subjectivist approach he has for a long time moved ahead of his contemporaries." Indeed, the same argument can be made for James Buchanan. It was Buchanan's consistent and further subjectivism application to economic theory that produced the peculiarities and drastic and controversial implications on equilibrium, economic methodology, public finance, public choice theory, welfare economics, constitutional economics, and institutional analysis in general. In particular, the central role of objectivism and subjectivism in the analysis of the equilibrium construct was explored and reconstructed with certain detail in this essay from Buchanan's firsts writings on the pure theory of government finance, social choice theory, and welfare economics to his announced methodological account of economics as a science of exchange between individuals (thus a science of society) and the institutions within the exchange take place instead of a science of computation maximization individual (or analogous) choice.

Subjectivism in the individual and social equilibrium was the main difference against the orthodox objectivist economics of his time represented by Abram Bergson, Samuelson, and Arrow that implied Buchanan's view on government finance, social choice theory, and welfare economics. As soon as his second published article, Buchanan already stressed two opposing approaches on the pure theory of government finance that was not then completely separated. The organismic theory is founded on a single cohesive view of the state that maximizes an objective measurable expenditure function according to the equimarginal principle. The organismic approach sees public finance as a problem of resource allocation choice, similar to the individual physical computation problem. On the other hand, the individualistic approach is based on the analytical focus on the individual and the exchange relationships between the sum of individuals

in society with the state as a collective actor formed by these individuals for the provision of public goods.

This perspective allows the broadening theoretical scope in relation to the fiscal net benefits that each individual enjoy. Public finance is an exchange relationship guided by mutual beneficial opportunities of trade and some degree of collective coercion by the formation of democratic majorities. It is a particular scope of what Buchanan would call the theory of politics, a subset of economics as an exchange behavior that distinguished itself by the degree of coercion. Exchanges can only occur outside equilibrium and in a social environment since it requires more than an individual to exchange, i.e., economics as catallactics deals with social equilibrium settings formed by different individuals that have different subjective evaluations of reality. Thus the name individualistic theory.

In this sense, Hayek's response when asked by Buchanan about individual subjectivism is very appropriate when understood properly, i.e., when individualism is understood as an indissociable to subjectivism: "If the decisive factor is the knowledge and attitudes of individuals, the particular question of preferences and utilities becomes a minor element in the individual action and habits being the driving element. To me subjectivism really becomes individualism, methodological individualism" (Hayek, 1983, p. 242). It is methodological individualism as properly understood that Buchanan (1987b, p. 3) consistently applied throughout his career. "Methodological individualism characterizes everything that I've done because I simply don't know how to proceed with anything else", as he admitted.

Politics as an exchange is totally opposed to the welfare economics effort to construct some kind of rational social welfare function based on individuals preferences, essentially an objectivism maximization project. Arrow's impossibility theorem results are only valid when equating voting and the market in a social welfare function context, one that is an attempt to transpose the individual computation choice problem to the social sphere. Rather, when the analysis is on the real collective decision-making process, we find that a democratic collective choice demands intransitivity in time and space because the majority voting mechanism is made by always changing majority coalitions and defeated minorities. Democracy defined as government by discussion necessary demands an intransitive or unstable welfare function, i.e., democratic real collective decision-making cannot be understood by some sort of objective magnitude maximization synthesized by a welfare function. Non-market or majority voting is fundamentally

different in kind to the market when the comparison is on real social decision-making processes rather than as social preferences transitiveness for deriving social welfare functions. The institutions in which the exchanges take place are different, one regards to the market and the other to politics.

The organismic theory in public finance is a particular application of a general view of economics as an individual equilibrium resource allocation, an objectivist understanding of equilibrium analysis as a quantifiable and objectifiable magnitude to be maximized. The individualistic theory in public finance is a particular application of a general view of economics as the study of exchange behavior and its institutions. The behavioral Smithian proposition to truck, barter, and exchange focus the scientific analytical device on the coordination of different individuals with different subjective expectations of the world. The social equilibrating process is seen as the mutual reinforcement of subjective knowledge by the actors. Since we are never at the equilibrium state, opportunity costs and benefit evaluations are subjectively interpreted and cannot be measured or the subject of objective external understanding. One consequence is that the notion of opportunity cost only makes sense in this context as the *ex ante* expected and subjective second best path of action that is given away in the act of choice by the chooser.

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A Hayek and Keynes Connection? Variations on a Theme in Three Rounds

ABSTRACT. The first frontal clash between Hayek and Keynes in 1931 was unique in scale and influence. Although this first round was very loud and had intense repercussions in the profession as a whole since, there are two other intellectual historiographical episodes in which Hayek and Keynes crossed swords in some sense. One is the indirect confrontation between both men in relation to the new developments in their respective theories after 1931. Namely, Keynes' *The General Theory* (1936) and what Hayek planned to be his decisive model grounded in a more solid capital theory without the frailties of the time mensuration component, what became *The Pure Theory of Capital* (1941). This was what we called the missing round mainly because there was no public direct frontal confrontation with the active engagement of both sides. Nevertheless, the intellectual conflict still was very meaningful but only in indirect terms. In addition, a lesser known episode is the central and direct clash between Hayek and Keynes on the re-foundations of the international monetary order in 1943. This clash is somewhat neglected in the secondary literature but is very important since it was the first direct frontal public debate with engagement of both sides after the first round. We called this debate the proper second round between Hayek and Keynes. The great theoretical intersection point between Hayek and Keynes is on the implicit appreciation of the connections that fulfill the notion of economics as a coordination problem. A major example of this relation is their respective profoundly distinct views in macroeconomics, even though both build their theories in the loose joint of money exchanges. The monetary disturbance is a key destabilizing factor in both Hayek and Keynes macroeconomics. The introduction of money loosens the connections of intertemporal preferences for consumption and investment. In Keynes, this is seen in the discoordination between aggregate savings and investment. In Hayek's view, the discoordination appears not in aggregate but relative organic terms in the capital structure of production. The coordination role of the natural interest rate in a purely non-monetary economy disappears and now leads to disturbing tendencies. Expectations, uncertainty, and ignorance are introduced *pari passu* with money. This is important in all levels of

analysis, in particular at the macro-level. All this is shared by Hayek and Keynes in the first round confrontation in 1931.

Key-words: Friedrich A. Hayek, John Maynard Keynes, coordination, savings and investment, Knut Wicksell, international monetary order..

JEL: B25, B31, B41.

I. PROLOGUE

One of the most famous controversies in the history of economic thought is doubtlessly the central and direct clash between Friedrich A. Hayek and John Maynard Keynes in 1931. Hayek first met Keynes in 1928 in London at a meeting of institutes and centers of business cycles research. At the time, Hayek was the director of the Austrian Institute of Business Cycle Research. The institute was founded one year earlier by Hayek as its first director with the indispensable support of his ten years mentor, Ludwig von Mises. Already in this meeting, Hayek and Keynes had their first strong disagreement in some aspect of interest theory. Keynes was sixteen years older and had an established worldwide reputation. Although Keynes "had a somewhat intimidating manner in which he would try to ride roughshod over the objections of a younger man," Hayek ([1966] 1978, p. 283) remembers that "if someone stood up to him he would respect him forever afterwards even if he disagreed."

Two years later after this first meeting, Hayek was invited by Lionel Robbins to give four advanced lectures at the London School of Economics (LSE) in the lent term of 1930-1. Robbins had been impressed by Hayek's ideas on "The Paradox of Savings" ([1929b] 1931a) that first appeared in German. The paper was a critique of very influential pre-Keynesian American underconsumption theories of William Trufant Foster and Waddill Catchings in the 1920s. Hayek had entered in contact with these theories when he was on his United States trip in 1923-4, probably in Wesley Claire Mitchell's business cycles classes. Robbins read German and he saw the critique advanced by Hayek as also properly suited against Keynes' attempt to structure a monetary theory variant of the underconsumption thesis for England in the post-First World War. Keynes was expressing his views and positions in the Committee of Economists of the Economic Advisory Council. In the autumn of 1930, Robbins had his famous row with Keynes on policy recommendations for the depression in the Committee but, as Susan Howson (2001, p. 370) noted, the invitation and acceptance for the lectures by Hayek occurred before this public disagreement. The four lectures were announced in the LSE calendar for the period of 1930-1 and they were early collected and published as *Prices and Production* (1931b) in September 1931.

At the beginning of the twenty century, British academia was dominated by the influence of Alfred Marshall. Within the Marshallian dictatorship, the British economic profession was relatively closed to foreign influences and theories, especially from the Continent. "Theoretical

innovations, imported or otherwise, were rather a waste of time; it was all in Marshall," as Terence W. Hutchison (1955, p. 13) put it paraphrasing Arthur Cecil Pigou. In this context, it is understandable that the lectures given by Hayek were received in an almost incomprehensible way but also with curiosity and some kind of fascination with this new strange guy. With the refusal of Jacob Viner in February to take the long-vacant Tooke Chair, Hayek was invited in April 1931 to take a visiting position using the Chair. After two terms, in 1932, the Tooke Chair was offered permanently to Hayek. As Robbins (1971, p. 127) remembers, "[t]he lectures were at once difficult and exciting; and they conveyed such an impression of learning and analytic invention that when, greatly to my surprise, [William] Beveridge asked if we would care to invited to join us permanently as holder of the Tooke Chair of Economic Science and Statistics [at LSE] which had long been without a tenant, there was a unanimous vote in favor."

Before Hayek was appointed to the visiting position, Robbins in charged him to do a review of *A Treatise on Money* (1930a) by Keynes published in October 1930 for the LSE department's journal, *Economica*. The *Treatise* was an attempt to build a monetary theory of savings and investment drawing from the Swedish economist Knut Wicksell ([1898] 1936, [1901] 1934) within the underconsumptionist framework. It was supposed to be a definitive statement on monetary theory which would confirm and solidify the position of Keynes as an authoritative scholar, contrasting and complementing his position as a public intellectual.

The historical context in which Keynes was inserted is important to understand some aspects of Keynes' theory and his aspirations with the *Treatise*. The period that started with the end of the First World War and the culmination of the Great Depression in Britain was the background in which Keynes reacted to. This period was marked by poor economic activity, high unemployment rates, and deflationary tendencies. For Keynes, since the end of the war, the expected returns to new investments (i.e., the marginal efficiency of capital) were in a secular declining term. Because of the war effort, this return had been remarkably high in the war period. This rate is intrinsically linked with long-term expectations on capital goods yields, and these are deeply uncertain and volatile. After the war, the British treasury decided to return to the gold standard abandoned in the war. However, the returning proposed was the old pre-war gold parity. In the war period in which the gold standard had been abandoned, there were naturally inflationary tendencies and real devaluations pressures. To return to the pre-war parity means that an overvalued exchange rate parity should be maintained, thus the price levels had to fall in relation to gold and had to be

defended in that fixed exchange rate. The manner to do this transition is by higher interest rates and wages (and income) downward adjustment.

The combination of a lower marginal efficiency of capital, the return to pre-war overvalued gold parity, and higher interest rates caused a recessive stagnant economic picture with massive unemployment rates in Britain for all the decade in the 1920s. The depression in the 1930s seemed just a prolonged and intensified agony that Britain already experienced in the anterior decade, contrary to the American experience. All these factors favored an underconsumption (underinvestment) approach to business cycles. According to Keynes, in a context when the economy was changing to a diminishing marginal efficiency of capital and a lower rate of investment, the natural rate of interest should also decline to compensate for both parameters. But the fall of the natural rate did not occur, the conventional expectational average market opinion of the proper natural rate emulated the previous mental model period of the war. The expectational element in the financial markets created by the speculative movements of traders in relation to a possible decline of the interest rate constituted the interest rate coordination failure as a price mechanism. In Keynes' view, because of the political inability to abandon the pre-war gold parity, only short-run fiscal policies could alleviate the monetary causes of the misadjustment.

The translation of "The Paradox of Savings" from German to English by Nicholas Kaldor and Georg Tugendhat was published in *Economica* in May 1931. The first part of Hayek's review, "Reflections on the Pure Theory of Money of Mr. J. M. Keynes" (1931c), was published in August, untimely followed by a reply by Keynes (1931) and a rejoinder by Hayek (1931d) in November. The early reply by Keynes was incentivized by Hayek (1931c, p. 294) for the elucidation of some basic definitions of Keynes' fundamental equations as to "provide a firmer basis on which discussion may proceed." Thus, the second part of the review that was planned to be published in November 1931 only appears in February 1932 (Hayek, 1932a). This is a great entrance for an ambitious Austrian young professor. As well as Keynes, Hayek was trying to construct a dynamic monetary theory in almost purely Wicksellian terms but the main theoretical factor in his theory was the heterogeneous structure of capital, reminiscence of his Austrian tradition of Carl Menger, Eugen von Böhm-Bawerk, and Mises. Wicksell ([1893] 1954) was very much influenced by the Austrians, especially Böhm-Bawerk, and one of his first theoretical attempts was to make compatible the marginal productivity theory and Böhm-Bawerk's capital theory within a general equilibrium structure.

After this attempt, Wicksell ([1898] 1936) went on to build his monetary theory of cumulative process. Mises in *Theorie des Geldes und der Umlaufsmittel* (1912) was the first explicit endeavor to combine the Wicksellian short-run interest rate cumulative process with the heterogeneous structure of capital derived from Menger and Böhm-Bawerk in a long-run business cycle theory, on what would be called Austrian Business Cycle Theory (see the first lecture in Hayek, 1931b). The theory states that deviations of the market interest rate (determined in the monetary market, actually observed) from natural interest rate (a hypothetical rate that equilibrates savings and investments in real terms) by long periods induce distorted investments in the structure of capital. If the money rate is persistently lower than natural rate then higher orders goods (more capitalistic, with greater roundabout production methods) will be more produced. Capital and labor will move from lesser capitalistic methods of lower production orders to greater capitalistic methods. But this state of things cannot endure forever. At some point the shortage of capital and consumption goods in lower orders will be revealed, hence the money interest rate will be increased and the previous investments made in more capitalistic methods of production will have to be reviewed. This process liquidated some productive real investments, causing capital consumption and real income loss.

The money market is in equilibrium when the market and natural rates are equal. This is only possible when savings and investments are also equal, i.e., when the loanable funds (goods) market is also in equilibrium. It is a monetary equilibrium in the sense of price level stability absent productivity gains and money real-neutrality. It is a real equilibrium in the sense of consistency of intertemporal consumption preferences with the real capital structure and intertemporal possibilities of production. Mises and Wicksell (as Mises interpreted him) were the benchmarks in which Hayek developed his own theory of industrial fluctuations. Wicksell did not agree with the use of his short run cumulative process within a long run business cycle theory. He narrowed his cumulative process only in the short run analysis and price level determination. Wicksell's business cycle theory is not concerned with the short-run cumulative process but is determined by real factors associated with variations in the natural rate itself (see Boianovsky, 1995). Wicksell was very critical of the attempt to integrate a short run cumulative process analysis into a long run business cycle theory. However, his writings on how the cumulative process influenced relative prices and thus on real maladjustments allocations are ambiguous regarding the desirability of this integrative effort.

II. THE FIRST ROUND: HAYEK, KEYNES, AND THE FOUNDATIONS OF MACROECONOMIC THEORY

The *mise-en-scène* of the first round between Hayek and Keynes then was that both men were trying to develop their own trade cycle theory with a ground on Wicksellian roots but each one derived antagonist propositions in relation to the other. Keynes used the cumulative process as a thread in which savings and investment determined income, consumption, and the price level. With uncertainty in the operation of financial markets, there is a tendency to a positive deviation of the money rate in relation to natural rate in the sense that when saving overcome investment there is a disequilibrium that is corrected by income adjustment. The speeds of quantity and price adjustments create coordination failures in macroeconomic aggregate variables. Therefore, Keynes integrated Wicksell's monetary theory within his own underconsumption (or oversaving) framework. By his turn, Hayek integrated Wicksell in line with the Austrian capital theory. Deviations in the money and natural rates occur by the banking system for an overinvestment since there is a structure of capital that cannot be supported after the money rate rises. It is overinvestment in the sense that it is created *wrong* types of capital goods that do not fit in the capital structure compatible with the intertemporal preferences of consumers, i.e., the natural interest rate.

Indeed, both theories laid in the role of the interest rate as a (dis)coordination element in the incentive to save and invest throughout time, i.e., in allocating resources intertemporally. Coordination failures in the natural and market interest rates produce output fluctuations. Once output fluctuations are given, deviations may result in failure to return to the steady-state path of equilibrium with full employment of productive resources. There may be no automatic correcting mechanism that guarantees full employment in a monetary economy. This (macro)coordination problem theme in an expectational, capital theoretic, and monetary economy was called by Axel Leijonhufvud (1981) as the "Wicksell connection." As pointed earlier, the British academia at the time was really insulated from the various developments in economic theory at the Continent. These include German and Austrian Schools, French and Italian theorists of Lausanne School, and the Swedes of Stockholm School. Continent authors only began to be massively translated into English in the 1930s, in part by the initiative of Robbins and Hayek. Wicksell is one of these

authors. At the time of the controversy between Hayek and Keynes, Wicksell's works were available only in the original language, mainly German. In his early work on *Value, Capital, and Rent* ([1893] 1954), Wicksell draws from Böhm-Bawerk's capital theory and sustained a close relationship between the natural interest rate and capital returns determined by the roundabout capital structure (see especially the second part of the book). The book was reprinted in German in 1933 by LSE as number 15 in the Series of Reprints of Scarce Tracts in Economic and Political Science, but only was translated to English in 1954.

Another example, *Interest and Prices* ([1898] 1936), a relevant influence on Keynes' *Treatise,* was only translated into English by Richard F. Kahn with a foreword by Bertil Ohlin in 1936. Wicksell tried to consolidate the quantity theory of money with marginal utility. Marginal utility theory explains only the relative prices structure in an economy which is a function of the equality of subjective and objective marginal substitution rates. Classical quantity theory explains the nominal price level as a function of monetary supply, real income, and money velocity of circulation. However, quantity theory does not explicitly stated the causal mechanism chains in which the money supply changed the price level. Wicksell introduced agents' real cash balances linking the commodity and monetary market. An increase in money supply makes individuals cash balances higher than the real desired level, thus an increase in money spending is realized in order to bring the real cash balances back to the individuals' level preference. By this process, Wicksell imagined that changes in money supply have in general a neutral impact on relative prices since the commodities marginal utilities and thus marginal substitution rates would remain the same.

After Wicksell's *Interest and Prices*, it was Mises' *Theory of Money and Credit* (1912) the more robust, systematic, and influential work in monetary economics in the early twentieth century. Naturally, Mises also wrote in German. Mises diverged with Wicksell on the disproportionate impact of changes in money supply in relation to relative prices and distributional income and wealth. Moreover, Mises integrates relative prices changes caused by monetary factors into a business cycle theory which emphasized the influence of distorted relative prices in the capital structure of production. The first point was a reaffirmation of Richard Cantillon's view that the route in which the new monetary supply enters in the economy is important and affects the real relative price structures and individuals' endowments. Thus, it also affects the real composition of the heterogeneous capital structure. The second point was a consequence of the integration between the cumulative process and the Austrian theory of capital in a monetary induced - but real

based - business cycle theory. Even in a pure credit economy, expansionary cumulative process has real limits in the productive factors, a continuous expansion can only be maintained with increasing inflation toward hyperinflation, as the Austrian experience in the 1920s.

Hayek obviously read German, it was his first language. However, by his turn, Keynes ([1930b] 1971, p. 178) in a footnote in the second volume of *Treatise* admitted and regretted that

> "I should have made more references to the work of these [Continental German] writers if their books, which have only come into my hands as these pages are being passed through the press, had appeared when my own thought was at an earlier stage of development, and if my knowledge of the German language was not so poor (in German I can only clearly understand what I know already! — so that new ideas are apt to be veiled from me by the difficulties of language)."

Earlier in the *Treatise,* Keynes ([1930] 1971, p. 154) discussed the similarity of his distinction between savings and investment and its central importance to his theory in comparison to the then German contemporary literature. Keynes, following the German authority of Albert Hahn and Joseph Schumpeter, mentioned Mises (1912) as the first author to introduce this distinction in the German literature. Keynes ([1930] 1971, p. 178) also notes the influence of a German and Austrian "neo-Wicksell school, whose theory of bank-rate in relation to the equilibrium of Savings and Investment, and the importance of the latter to the Credit Cycle, is fairly close to the theory in this *Treatise*. I would mention particularly Ludwig Mises's *Geldwertstabilisierung und Konjunkturpolitik* (1928)." Moreover, Keynes cited *Der Tauschwert des Geldes* (1928) of Hans Neisser and Hayek's *Monetary Theory and the Trade Cycle* (*Geldtheorie und Konjunkturtheorie*) ([1929a] 1933a).

Surprisingly, Keynes saw in the *Treatise* a remarkable convergence between his theory and Mises' work, especially on the Wicksellian heritage about the coordination of savings and investment and the central role of the latter (volatility) during the business cycle. Moreover, apparently, Keynes had forgotten his early *blasé* review of Mises' book. This is important because Hayek's main criticism about the *Treatise* was that Keynes did not incorporate the microeconomic capital theoretical foundations of Wicksell's early work, i.e., the capital theoretic structure of Böhm-Bawerk. In Hayek's ([1966] 1978, pp. 284-5) opinion, Keynes "ideas were rooted entirely

in Marshallian economics," and what "had been achieved by [Léon] Walras and [Vilfredo] Pareto, the Austrians and the Swedes, was very much a closed book to him." Central in this critique is that Keynes "had ever thought systematically on the theory of capital," even of English Classicals such as John Stuart Mill and the marginalist developments of William S. Jevons.

This point is vividly illustrated in Hayek's review by his very critical account on Keynes' definition of investment and profits. Keynes' approach only permits to treat these variables in aggregate terms of production factors, but the analysis of what makes investment more or less attractive in a specific situation in the production stage is necessary to the description and explanation of the phenomena. Therefore, a true explanation of investment can "only be reached by a close analysis of the factors determining the relative prices of capital goods in the different successive stages of production - for the difference between these prices is the only source of interest" (Hayek, 1931c, p. 277, italics omitted). Keynes' focus on aggregate concepts such as the total homogeneous factors of production, total profits, and the general price level excluded in principle the capital theoretic micro-foundation of heterogeneous investments and relative profits. Moreover, it "conceal[s] the most fundamental mechanisms of change" in capital complementarity or substitutability in such structures. In Hayek's view, Keynes started a complex analysis of the dynamic investment processes in a monetary economy without a solid static analysis of the fundamental micro relative movements. "All this would do no harm if his analysis of this complicating moment were based on a clear and definite theory of capital and saving developed elsewhere, either by himself or by others. But this is obviously not the case" (p. 278). This difficulty appears more and more profound when Keynes introduced the Wicksellian cumulative process since "[i]n Wicksell's system these [ideas] are necessary outgrowths of the most elaborate theory of capital we possess, that of Böhm-Bawerk. It is *a priori* unlikely that an attempt to utilise the conclusions drawn from a certain theory without accepting that theory itself should be successful" (p. 279).

According to Hayek, although Keynes systematically ignored the capital theory literature and never struggled seriously with micro-foundations, he seemed to realize that some work in this theme was necessary and "he sat to work one out for himself" in volume two of the *Treatise*. As Hayek (1931c, pp. 279-80) noted, Keynes supplies at least with a part of the required theoretical foundation as he ironically "discovers a new certain essential elements of Böhm-Bawerk's theory of capital, especially what he calls [...] the 'true wages fund' and earlier Böhm-Bawerk's formula

for the relation between the average length of the roundabout process of production and the amount of capital." Hayek then asks: "Would not Mr. Keynes have made his task easier if he had not only accepted one of the descendants of Böhm-Bawerk's theory, but had also made himself acquainted with the substance of that theory itself?"

The review by Hayek led to a quick response by Keynes not only counter-argumenting the points raised but mainly attacking Hayek's own cycle theory developed in his four lectures and reprinted in *Prices and Production*. Keynes' early response, even before the publication of the second part of the review, was very rough. Keynes (1931, p. 394) accepted the critique that a development of the theory of capital "would be highly relevant to my treatment of monetary matters and likely to throw light into dark corners." Keynes went so far as to admit that

> "[i]t is very possible that, looking back after a satisfactory theory has been completed, we shall see that the ideas which Böhm-Bawerk was driving at, lie at the heart of the problem and that the neglect of him by English pre-war economists was as mistaken as their neglect of Wicksell. But there is no such theory at present, and, as Dr. Hayek would agree, a thorough treatment of it might lead one rather a long way from monetary theory. Nevertheless, substantially I concede Dr. Hayek's point."

Later on, in *General Theory* ([1936] 1973, p. 176), Keynes would reaffirm the soundness of the Marshallian tradition of homogeneity and fixity of capital in the short run as stated then by Frank Knight (1934) in contrast to the "useless of the Böhm-Bawerk analysis" and the Austrian theory of capital. The discussion between Hayek and Keynes is affected by the language intractability and the contrasting definition of concepts. Hayek disagreed fundamentally with the conclusions of Keynes' theory, but the clashing of different intellectual traditions made it difficult to demonstrate the exact point of disagreement. Hence, in Keynes' opinion, Hayek's complaint of the language was a rhetorical strategy "to discovering some verbal contradiction or insidious ambiguity" (Keynes, 1931, p. 387).

The major difference seems to be that, in Keynes' interpretation, savings and investment are propense to processes of discoordination by monetary and real factors. In the case of the real factors this is so because of the uncertainty on the saving and investment rates, in particular by the volatile preferences of entrepreneurs. In the long run, Keynes seems to accept that the natural

interest rate makes the ultimate steady-state equilibrium between savings and investment. But there is no guarantee in the short run of this price-mechanism coordination to lead to full-employment. The corrective properties cannot be trusted as an efficient instrument to coordinate intertemporally decisions on consumption, savings, and investing at full-employment.

Therefore, it is an aggregate macro-coordination problem, especially concerning the investment rate. Quantities adjustment speed of disequilibrium between savings and investment is greater than the price adjustment speed, i.e., interest rate adjustment. Savings and investment are inelastic to interest rate and this rate in fact does not reflect consumers' intertemporal preferences but the expectational consensus in a monetary economy of production. For Keynes, there is no place for intertemporal coordination by interest rate in relation to the length of the capital structure and consumers' intertemporal preferences. Disequilibrium between savings and investment not only can exist with alterations in monetary and banking features but also within alterations of *real* decisions of consumers and entrepreneurs on saving and investment rates even when the quantity of money is *unaltered* by the banking system. That is, disequilibrium properties can emerge caused by real decisions that modify the *natural* rate. Even with no changes in money and credit supply, savings and investment can and indeed do get out of

> "gear without any change on the part of the banking system from 'neutrality' as defined by Dr. Hayek, merely as a result of the public changing their rate of saving or the entrepreneurs changing their rate of investment, there being no automatic mechanism in the economic system (as Dr. Hayek's view would imply there must be) to keep the two rates equal, provided that the effective quantity of money is unchanged" (Keynes, 1931, p. 393).

In Hayek's (1931c, pp. 401-2) note in rejoinder to Keynes' early response, he focused on this point of disagreement. In his view, Keynes' denial of the role of interest rate in the short run as an automatic mechanism in the loans funds market to keep the rates of investment and savings equal can be extended to the general level contention that there is no such (price coordination) mechanism in any relevant market in the economic system. Such a view by Keynes is due to the neglect of the interest rate role in the loans fund market where there is no banking system. Hayek attributes this to the ignored "fundamental non-monetary problems of capitalistic production," which is intrinsically connected with capital theory and the loans fund market. Keynes admits that

the profession has no satisfactory theory of capital and that this is necessary for monetary theory. However, Hayek argued that "even if we have no quite satisfactory theory we do at least possess a far better one than that on which he [Keynes] is content to rely, namely that of Bohm-Bawerk and Wicksell. That he neglects this theory, not because he thinks it is wrong, but simply because he has never bothered to make himself acquainted with it, is amply proved by the fact that he finds unintelligible my attempt to develop certain corollaries of this theory - corollaries which are not only essential for the very problem we are discussing, but which, as experience has shown me, are immediately intelligible to every student who has ever studied Bohm-Bawerk or Wicksell seriously."

It is difficult for Hayek to conceive a Wicksellian theory without stressing the decisive role of the interest rate in the coordination of savings and investment. In Hayek's opinion, drawing from Wicksell as Keynes does without seeing the coordination "function of the rate of interest in a society where there is no banking system" is absurd. If Keynes' theory lacked the Wicksellian microfoundations of capital theory, Hayek's theory lacked the Wicksellian temporal notion of restricting the cumulative process analysis only in the short period realm and not in connection with business cycle theory based on relative prices. Moreover, Wicksell also stressed the potential for disequilibrium and aggregate fluctuations caused by volatility in the natural interest rate itself, a point that Keynes noted in his rejoinder. The incongruencies and differences seemed so great that Keynes did not respond to the second part of the review byHayek, there would be no reason to do it. It is in this period that both men began to exchange letters, twelve letters from December 1931 to March 1932.

After the first round of central direct clash between Hayek and Keynes, Keynes convened the Italian economist Piero Sraffa (1932a) to do a review of *Prices and Production* to the *Economic Journal*. The review appears in March 1932 with a reply by Hayek (1932b) and a rejoinder by Sraffa (1932b) in June. Sraffa was a prestigious member in the Cambridge Circus around Keynes at Cambridge. Keynes, of course, was the editor of the *Economic Journal*. Sraffa along with the four other members of the Circus - Joan Robinson, Austin Robinson, James Meade, and Richard Kahn - studied carefully the *Treatise* and helped directly Keynes with the formulation of a new theory of aggregate income determination in *The General Theory* (1936). The choice of Sraffa was not by chance, he was a promising young Continental economist that was a political refugee at Cambridge brought by Keynes in 1927 and was familiarized with the Continental economic

literature in dispute, particularly the theory of capital. Sraffa's main points were on the internal logical inconsistencies of Hayek's theory, especially the inflation effects on compulsory savings and thus the new equilibrium *ex post* forced savings and the definition of the natural interest rate in a dynamic economy. First, Sraffa argued that e*x ante* forced savings could be transformed into a kind of *de facto* voluntary savings *ex post*. Second, he argued that the natural rate is a vague concept outside the long run state of equilibrium in the monetary market and when it is acknowledged the endogenous motion of capital to the money rate.

In his recollections, Hayek ([1966] 1978, p. 284) says that he had put a great deal of work in the two-part review and that he felt that he "had largely demolished" Keynes' "theoretical scheme (essentially volume I)," although he had "great admiration for the many profound but unsystematical insights contained in volume II" of the *Treatise*. Later, Hayek (1983, p. 408) was about to say that "the second part of the *Treatise* was probably the best thing that Keynes ever did." At the time that the second part appeared in February 1932, Keynes told Hayek that in the meantime he had "changed his mind and no longer believed what he had said in that work." Indeed, soon after the publication of the *Treatise* Keynes began to work in a new project of what would become *The General Theory*. After the controversy with Hayek, Keynes eliminated the Wicksellian roots of his theory and dropped the loans fund market and the natural rate of interest even in the long run by the liquidity preference. Thus, in *General Theory* there is no relevant role for the dynamic of the natural and money rates since the rate of interest is determined by the liquidity preference and, in the simplest form, the exogenous money supply in the monetary market.

In *General Theory*, one of the central permanent structural causes for recurrent unemployment is that the money demand for precautionary speculative reasons, i.e., liquidity preference, prevents the correct adjustment of the long period natural rate of interest to the appropriate level compatible with full-employment. The intertemporal coordination price mechanism failure and the inelasticity of the interest rate in savings and investment are central problems for Keynes. This is a particular and most important case of a general elasticity pessimism on what Sir John Hicks called fix-price markets. Markets which in the short period supply and demand price pressures are negligible because adjustments are made by variations in quantity. In this way, the emphasis in intertemporal coordination failures is changed to problems of market imperfections like the nominal rigidity of prices, especially the sticky money wages in the labor market. In a sense, there is a deepening of

subjectivism and the role of expectations in Keynes' theory. A common appreciation of subjectivism and expectational problems is an intersection point between Hayek and Keynes. The critique of Gunnar Myrdal (1933) about the lack of expectational features in Hayek's theory of business cycles would also become one of the influences for the decisive central epistemic postulation of Hayek's research program some years later, in "Economics and Knowledge" (1937).

In the absence of a loans fund market and incorporating the expectational nature of investment and savings, savings must vary with income to be equal to investment at a full-employment equilibrium for a given exogenous investment rate. This is so because interest rate is ineffective to equilibrate *ex post* observed savings and investing rates to the planned or expected *ex ante* rates. Therefore, *ex ante* permanent disequilibrium of savings and investment rates is transformed in *ex post* equilibrium through income (and savings via the marginal propensity to save) variation. The Marshallian heritage is visible in several aspects. First, the importance of business expectations in the economy, especially in investment. Second, the partial equilibrium notion and the short period as an instrument of analysis, this permits to treat capital as fixed and make the dichotomy division of asset portfolio in money and bonds (non-money assets). Capital is treated as a fixed homogeneous stock and labor can vary to increase production. Another coordination financial constraint is the inelasticity of interest rate expectations in relation to savings and investment.

The relative price between non-money assets (or bonds) and money wages is what determines aggregate investment, therefore full employment equilibrium can only be maintained if the price of non-money assets is "right." This price is also connected with durable long-lived capital goods. In a declining marginal efficiency of capital scenario, maintenance of non-money assets prices (thus, bonds and capital goods prices) required a drop of the natural conventional rate of interest in which bonds are discounted. This did not occur because the financial market agents had the previous pre-war period mental inelastic and inertial expectations. Hence, investors turned to money assets in savings deposits and bonds and capital goods prices did not adjust in a compatible way with full employment equilibrium. In this context, contraction via effective demand failures is due to market trading at false prices that transmitted false knowledge emerged in financial markets. Financial markets and its actors are a disrupting mechanism of processing and transmission of knowledge, especially with respect to consumers' intertemporal plans to future consumption via savings. The price mechanism in the financial market cannot express the right relative value between present and future. An institutional mechanism of knowledge creation is

needed to guarantee the coordination of investment expectational prospects with the consumers' intertemporal preferences.

Hayek did not see in financial markets the disequilibrating role that Keynes put as central in his theory. The prominence of financial markets in Keynes' theory made his account more realistic in relation to the financial sphere development and its connections with the real economy, particularly with the fluctuations of marginal efficiency of capital. The partial equilibrium method isolates the desired part of the economy that is under the analytical focus and the dynamic processes in a comparative static analysis. Now the disequilibrium adjustment variable of *ex ante* and *ex post* savings and investment rates is not the rate of interest but employment and income, the rate of interest is highly inelastic to real variables such savings and investment. The notions of natural interest rate and long-run equilibrium are dismissed.

It can be argued that Keynes assumed in the short period a fixed-price environment in the general goods market where price making in each industry was made basically to correspond to the respective level of money wages. The monetary market, on the contrary, is an extremely flex-price market where the interest rate determination is hyper-sensitive to the expectational, conventional, and psychological behaviors of financial markets. Even though the elasticity of the interest rate to savings and investment rates are low. It can be argued that Hayek in *Prices and Production* considers the monetary and financial assets as in general a fixed-price market where the banking system competitively fixed the money rate of interest. The general goods markets are considered flex-price markets. Later Hayek will incorporate money wage and price rigidity in his theory. The third Marshallian influence is that the Cambridge version of the quantity theory permitted the money portion destined to transactions to be volatile and not a constant relation, this opens the door for the liquidity preference theory.

Leijonhufvud (1981) called the period after the *Treatise* and before *General Theory* as the "Z-theory," he condemns the introduction of liquidity preference theory and elimination of the loans fund market. This movement neglects the interest rate macro-discoordination for savings and investment determination, the central problem within macroeconomics. Hence, the Wicksell connection had in this way vanished from the center of macro-theory. Problems of intertemporal coordination were substituted by market imperfections, especially downward money prices and money wages rigidities. The coordination problem is the central aspect for both Hayek and Keynes,

although they had different views not only of *what* (in the macro and micro level) must be coordinated but also *how* the (dis)coordination may emerge within different institutions.

For Hayek the nature of the coordination problem is in itself *the* fundamental economic problem. Later, he advanced this notion to the neoclassical equilibrium theory by introducing the notion of subjective, disperse, and tacit knowledge. Hayek formulated the economic problem as two level problems of coordination. First, coordination between plans of action of different individuals in intra-plans subjectively perceived; and, secondly, coordination of this coherent plans structure with the real external world. The main point of theoretical convergence between Hayek and Keynes is the broad view that the (macro)economy is composed of coordination problems understood as failures of creation, transmission, and maintenance of knowledge.

III. THE MISSING ROUND: HAYEK AND *THE GENERAL THEORY*

After the first very polemic round of direct exchange between Hayek and Keynes, both men felt that it would be necessary to work and improve their respective theories. In his final letter of 29 March in the 1931-2 exchange with Hayek, Keynes says clearly that he had "been much occupied in other directions" and that he did not have yet studied closely the second part of Hayek's review. Hence Keynes "doubt[ed] if I shall return to the charge in *Economica*. I am trying to reshape and improve my central position, and that is probably a better way to spend one's time than in controversy" (Hayek, 1995, pp. 172-3). In other words, Keynes already in March 1932 "changed his mind" about the merits of his *Treatise* and began to work on a new theory of aggregate income determination. As Keynes changed his mind, a response to the second part of the review would be sterile. It is important to note the timing and the *prima facie* influence of the members of his Circus for this turn. This was exactly the same time as the controversy between Hayek and Sraffa. Moreover, a few months earlier in June 1931, the crucial paper by Kahn (1931) on the multiplier was published. Kahn was the main interlocutor between the Circus and Keynes. The main attack by Sraffa to Hayek was on the fragility of the Wicksellian loans funds market and the natural rate of interest. Hence, it was also an implicit attack on the background of the *Treatise*. The multiplier was the key not only to the aggregate effective demand determined equilibrium but also for the adjustment of savings to investment via income change and not via the interest rate. Thus, the way

for such new ideas to emerge was the more or less abandonment by Keynes of the Wicksell connection.

Also in 1931, Britain had left the gold standard and the Bank of England abandoned the defense of a fixed exchange rate via short-run interest rates. Therefore, the long period (natural) interest rates no longer were tied up with the disequilibrating high short period money rate. The failure of financial markets to form the conventional adequate interest rate compatible with full employment after the gold standard abandonment became clear to Keynes. This failure suggests that uncertainty due to the real long-run natural rate in bonds market cause this rate to be deeply susceptible to the psychological conventional average opinion of the market participants. The idea of a natural interest rate loosed validity. The rate of interest thus is formed by the expectational speculative features of the relevant participants in the market. This opens the door to the liquidity preference theory abandoning the natural rate as a significant concept. In his pamphlet *The Means to Prosperity* (1933), Keynes used for the first time Kahn's multiplier idea but still focused on the role of the interest rate to stimulate private investment as the central discoordination element. Marginal efficiency of capital and the role of expectations to investment would be the last missing part for the *General Theory*. From a Wicksellian theory of the price level determination in *Treatise*, Keynes would pass to a theory of aggregate demand and income determination in *General Theory*.

In the first round, Hayek seemed to have been relatively successful. He pointed to Keynes' negligence of the theory of capital literature. Keynes developed a Wicksellian macro-theory without the proper Wicksellian capital microfoundations, and he in some degree agreed with this criticism. By his turn, Hayek has a theory of capital incorporated in his cycle theory. Although the merits of his theory were also dubious and fragile, Hayek had the advantage in this first round. Nevertheless, Hayek was also widely criticized by precisely his Austrian approach to capital theory and it was recognized that the main deficiency of the Wicksell-Böhm-Bawerk theory of capital was its temporal dimension embodied by the average period of production where the capital roundaboutness could be measured. Hayek's own theory also needed to be developed in more sophisticated grounds. Thus, in the same vein of Keynes, Hayek started to work on a new two-volume book project that would form in definitive grounds a capital-based macroeconomics with its connections to monetary theory. Hayek ([1983] 1995, pp. 251-2) felt that "an elaboration of the still inadequately developed theory of capital was a prerequisite for a thorough disposal of Keynes's argument." The product was *The Pure Theory of Capital* (1941).

The initial project that Hayek was prospecting for the two volumes was never completed. The book took much longer than Hayek expected and was very difficult to follow analytically. Hayek (1994, pp. 90-1) worked seven years on the book and he barely finished the first volume. “I was dead tired of the subject before I got to the monetary aspects (i.e., the planned second volume).” In the meantime, of course, Hayek lost the timing of the battle with Keynes. Keynes had finished and published his new theory five years earlier with much enthusiasm within the profession and the public. It was the announcement of an expected revolution. Why did Hayek take so long to publish his book? Soon after the first round with Keynes, Hayek’s intellectual attention was dispersed on many fronts. More precisely, in 1932 Hayek was involved in the controversy with Sraffa. One year later, in 1933, Frank Knight (1933, 1934, 1935) published the first paper of a capital theory controversy with Hayek (1936), a reedition to the early neoclassical controversy between John Bates Clark and Böhm-Bawerk. In 1935, Hayek (1935b) struggled with the expectations and general equilibrium criticism by Myrdal and Oskar Morgenstern (1935) along his cycle theory. Moreover, Hayek initiated the economic calculation debate in English language translating the German-speaking debate to his audience in *Collectivist Economic Planning* (1935a). This was a very widening range of themes and controversies, but all these subjects were connected with the knowledge and coordination problem that Hayek marked at his central epistemic ground.

Still, even if his intellection attention was dispersed and even if the supposed theoretical groundbreaking book that Hayek was imagining was in a gestation phase when *General Theory* came in February 1936, why Hayek did not review the *General Theory*? Indeed, it is perfectly plausible to expect a review from Hayek on such occasion but this second direct interaction did not occur. Caldwell (1998) answered this question noting the many reasons that Hayek gave along his life to this intellectual fatal omission. Caldwell identified five different places where Hayek commented about the subject. The first is in a 1963 series of lectures delivered at the University of Chicago (Hayek, 1995, ch. 1 and 12), the second is a 1966 article on Keynes (Hayek, [1966] 1978), the third is the references to the episode on the series of interviews that Hayek conceded to the Oral History Project of the University of California at Los Angeles in the late 1970s (Hayek, 1983, [1994] 2008), the fourth is an article in *The Economist* (Hayek, 1995, ch. 13), and the fifth is in an interview with W. W. Bartley III (Hayek, 1994, pp. 88-98). Both the fourth and fifth occurred in the 1980s.

In the 1960s, Hayek offers basically two main reasons for not having reviewed the *General Theory.* The first is that he had a not so encouraging experience with Keynes in the first round. Hayek had put a great deal of effort on the long two-part review of the *Treatise* and Keynes soon after the second part was to say that he was reshaping his central position. For Hayek, Keynes quickly changed his mind sometime in March 1932. Hayek always mentioned this reason as significant to his hesitation to do a review of *General Theory*, it appears in the five places. The second reason is that Hayek felt that he not only disagreed with specific points in dispute but that he opposed Keynes' general aggregate method of analysis. In his 1966 piece, Hayek ([1966] 1978, p. 284; cf. [1963] 1995, p. 60) summarized his 1960s position:

> "Great was my disappointment when all this effort seemed wasted because after the appearance of the second part of my article he told me that he had in the meantime changed his mind and no longer believed what he had said in that work. This was one of the reasons why I did not return to the attack when he published his now famous *General Theory* - a fact for which I later much blamed myself. But I feared that before I had completed my analysis he would again have changed his mind. Though he had called it a 'general' theory, it was to me too obviously another tract for the times, conditioned by what he thought were the momentary needs of policy. But there was also another reason which I then only dimly felt but which in retrospect appears to me the decisive one: my disagreement with that book did not refer so much to any detail of the analysis as to the general approach followed in the whole work. The real issue was the validity of what we now call macro-analysis, and I feel now that in a long-run perspective the chief significance of the *General Theory* will appear that more than any other single work it decisively furthered the ascendancy of macroeconomics and the temporary decline of micro-economic theory."

In his 1963 lecture, Hayek mentioned the "tiredness of controversy" as something connected with Keynes changing his mind. In the last March 1932 letter to Hayek, Keynes added that reformulating his central position was probably more productive and important "way to spend one's time than in controversy." Hayek should have in mind this phrase when mentioning the tiredness of controversy, therefore the tiredness of controversy and Keynes changing his mind are connected. An additional reason that Hayek mentions in the quote is that he clearly saw the

General Theory new ideas as a tract for the times, what would reinforce Keynes' attitude in changing his mind one more time as soon as the spirit of time has changed. In the late 1970s interviews, Hayek (1983, pp. 114-6, 408) stressed exclusively the changing mind reason. In the 1980s, Hayek tells the same story but now he put emphasis on what a positive offensive would require to counter Keynes' *General Theory*. It would require a development in macroeconomics based on heterogeneous capital theory but without some problems related to it, such as the average period of production. The theory of capital that he used had inappropriate simplifications, the most important of them was the attempt to introduce the time factor using only one single time interval, that is, the average period of production. Hayek ([1983] 1995, pp. 251-2) had perceive that Keynes's "disregard of what seemed to me the crucial problems made me recognize that a proper critique would have to deal more with what Keynes had not gone into than with what he had discussed, and that in consequence an elaboration of the still inadequately developed theory of capital was a prerequisite for a thorough disposal of Keynes's argument."

The proper response then was to be done in his two-volume project on the theory of capital and money, but he had not completely succeeded in this attempt. If this account is true, this did not fully justify or explain why Hayek did not produce a shorter critical review. Hayek ([1983] 1995, p. 252) accounts that his failure to do so was also an attempt to avoid public disagreement with Keynes. In 1940, Hayek totally supported Keynes on his struggle against inflationary war financing in *How to Pay for the War* (1940). This illustrates the "tract for the times" character of Keynes' mind and proposals. In the war, unemployment was not anymore the central concern. Even so, from February 1936 to 1940 is a long time, Hayek missed the timing. In this period Hayek worked on a competing model to *General Theory* in his *The Pure Theory of Capital*, and when the book was published in 1941 Hayek was already then close to Keynes at Cambridge and supported his anti-inflationary war effort funding. The LSE was evacuated to Cambridge in 1940 because of the bombardment of London. Keynes helped Hayek to get rooms at King's College and both men became very close friends in the war years. After the war, Hayek was counting on Keynes to oppose in public the inflationary tendencies that Hayek thought his Cambridge pupils were pursuing and promoting. But Keynes died before this could be possible.

Caldwell (1998, p. 558) proposed some alternative interpretations. First, maybe no one asked Hayek to do a review. In the first round, Hayek was asked to do a review by Robbins. Even so, Hayek could do a review if he wanted to. Early in February 1936, Hayek in his letter in response

to Keynes, who had sent an advanced copy of the book, on his first impression about the *General Theory* suggest that he would probably ask Keynes his hospitality in a space in the *Economic Journa*l for "some notes on particular points" (see Keynes, 1979, p. 208). As Caldwell (1998, p. 559, italics in original) notes, "Hayek was not *prevented* from doing a review; he *decided* not to do one. It is his decision that must be explained." Caldwell's position is that Hayek decided not to review the *General Theory* because he preferred to concentrate his efforts against Keynes in his work on the theory of capital. Hayek reasoned that the proper capital-theoretical microfoundations and its integration within monetary problems were the prerequisite to counter back Keynes' theory. It turned out that the analytical difficulties and complexities were so great that Hayek not only was consumed by the book, but he did not complete his expected original project. When Hayek finally decided to publish what was the first volume on *The Pure Theory of Capital* (1941), Keynes' revolution had already dominated the profession and the public hearts and minds. Hayek's book was barely noted at the time. This period marked his departure from pure theory and technical economics, his interest was enlarged by deeply philosophical problems.

This interpretation appears to be robust, as the letters of Hayek to Fritz Machlup and Gottfried Haberler indicates. Along with Hayek, both Machlup and Haberler were members of the Mises' circle in Vienna. Hayek reported his progress with his new voluminous book on the theory of capital and the daily work activities at LSE. Hayek seems to have started writing the book at some point in 1933. Howson (2001, pp. 370-1) finds in the minutes of the School's Rockefeller Research Fund Committee that Hayek and Robbins were sharing the research assistantship of E. S. Tucker in 1933 and that Hayek in the minutes of 14 December 1933 "reported that Tucker had assisted him in the preparation of 'a large work now in progress on the pure theory of capital.'" On the same date, Hayek also requested for further assistance a mathematician to help him with the diagrammatical device of his analysis.

> "During the next eighteen months (or two years at the outside) I hope to finish what, I am afraid, is going to be a rather voluminous volume on the theory of capital. [...] In the further course of preparation of this volume, about one-fourth of which is already completed, I shall badly need the continuous assistance of a really good mathematician, who would not only be able to work out with greater exactness the rather elaborate diagrammatical apparatus which I have developed but also to help me in the analytical exposition which,

> although I hope to confine it to appendices, is unfortunately indispensable" (quoted in Howson, 2001, p. 371).

Hayek found mathematical assistance after some months of search and worked with him in 1934 and 1935. In 1934-5 Hayek discussed with Machlup and Haberler his controversy with Knight on the theory of capital and his progress in his book. Two weeks after Hayek has received an advance copy of *General Theory*, Hayek wrote to Haberler: "I try to concentrate exclusively on the work on my book and must leave everything else. Even though it would be exaggerating to speak of an early appearance, I still hope to complete the first draft in the Easter holidays." This means that the book would be published as soon as in 1936 or early 1937, and thus could make front to Keynes (Hayek to Haberler, 15 February 1936, quoted in Howson, 2001, p. 371). A month later, on 14 March, Hayek wrote to Haberler "that within a week he expected to have drafted all his book except two chapters that were essentially revisions" of two of his articles (p. 372). In the next day, Hayek wrote again to Haberler returning a Haberler's critical note on the multiplier that had been submitted to *Economica* alleging some difficulties to publish the note. The difficulties were that in the May issue would appear the long critical review of *General Theory* by Pigou (1936) that came first. Therefore, the editors did not want a feeling of "planned campaign against Keynes." At the time it was Robbins the acting editor of the journal, and because of this journal policy, a review article in *Economica* by Hayek also would be a closed-door. *Au contraire* of the first round, where Hayek had a privileged space in *Economica*. Hence, due to this editorial line Hayek planned to write a note on the *Economic Journal*, "where Keynes cannot well refuse."

> "In the May number appears Pigou's article on Keynes [Pigou 1936], which in the meantime has also come in first and is immensely sharp, or will be (I have not yet seen it myself). You will understand that in these circumstances we want to avoid anything which could create the impression that we are conducting a planned campaign against Keynes. I myself have for that reason determined to submit a note (which I probably no longer need to write after yours and Pigou's article but want to write) to the Economic Journal, where Keynes cannot well refuse. (In the June number of the E.J. a review by Hicks will appear.) I believe you should try first of all the same. In the event he refuses, one can then talk about other possibilities. I hope you will really understand our difficulties. The chance exists just

> now to isolate Keynes and to bring to a stand a common front of other Cambridge and London [economists]. These possibilities we would not jeopardize by putting Economica in the forefront of the attack. Pigou's article will cause enough sensation." (Hayek to Haberler, 15 March 1936, Haberler Papers, box 67, quoted in Howson, 2001, p. 372)

It is explicit in the letter that Hayek was well aware of the situation timing, he planned a common front line between the economists in Cambridge (with Pigou) and LSE to isolate Keynes' influence. The main power strength in this front was to be crowned with the publication of his own treatise on capital. Hayek felt that the best way to allocate his time and energies was on his book, the nature of *General Theory* demanded not a short negative critical note but rather a detailed critical review. The best way to do this contrasting examination, Hayek thought, was in his forthcoming positive analysis book. In December 1936, Hayek reported to Machlup that he had drafted half of the introduction, wrote a new version of chapter two and revised the chapters on the maintenance of capital and utility analysis and interest. In a rough way there remained only two to three appendices to be done. Hayek hoped for publication in the spring of 1937 (Howson, 2001, p. 373). In this period, Hayek also had written and delivered his 1936 presidential address to the London Economic Club, "Economics and Knowledge."

However, a year later in December 1937 Hayek still did not have the mathematical research assistantship that he had been granted one year earlier to help him with the diagrammatic exposition and appendices. Thus, with the war in 1939, Hayek (1941, p. viii) decided that it was time to publish now or never. He wrote the preface in June 1940 and the book was only published in 1941 without the intended mathematical features and appendices. Hayek lost his silent cold battle with Keynes. So, an additional reason on why Hayek did not review Keynes' *General Theory* lies on the editorial line in *Economica* because of the sharpness of Pigou's review. Hayek strategy was to submit a note in *Economic Journal*, but when he finished the book in May 1936 he perceived that it demanded a more general detailed examination. This detailed critical examination should have been supported by a positive theoretic analysis on his work on the theory of capital, but the project did not progress in 1937-9, in part for a missed granted research mathematical assistantship for the diagrammatical features and appendices. In the end, Hayek completed only the first volume of a planned two-volume project, remaining the connection between this new more grasping theory of capital with the monetary and cycle theory.

In addition, there is some evidence that corroborates the primacy of the positive analytical response to his critics. The first evidence is in "Capital and Industrial Fluctuations" (1934), published on April 1934, where Hayek responded to the "sympathetic criticism" of Alvin Hansen and Hebert Tout in the Annual Survey of Business Cycle Theory (1933) in the first volume of *Econometrica*. Hayek (1934, p. 152) stated that the critical comments of Hansen and Tout "are mostly directed against points where real difficulties present themselves," and that although he could answer the main objections, the more productive and profitable way to respond to the critics were "by means of a further systematic development of my thesis than by wasting time on the comparatively unimportant discussion of whether these developments were already implied in my earlier statements, or whether the interpretation put upon these by Messrs Hansen and Tout can, or cannot, be justified from the admittedly sketchy and incomplete exposition in *Prices and Production*."

This suggests that already in early 1934 Hayek had understood and internalized the notion that a proper response to his critics in general, and to Keynes in particular, was a further deeper exposition of his admittedly sketchy and incomplete lectures. This suggestion is confirmed in the second edition preface to *Prices and Production* (1935b) in August 1934. Hayek (1935b, p. vii) admitted that the exposition was "limited to what I could say in four lectures, which inevitably led to even greater oversimplification." Moreover, the criticisms and discussions that resulted in such an "irresistible temptation to publish these ideas at an earlier date" has caused to be more profitable to work in a "later more complete exposition" than if he had worked on these problems without such feedback. However, "the time for that more exhaustive treatment of these problems has not yet come." Hayek explains that perhaps the main gain for such earlier publication was to see that a precondition to further development is a building of a more sophisticated, detailed, and realistic theory of capital.

In this second edition, Hayek also added an appendix that reprinted "Capital and Industrial Fluctuations." In 1934 Keynes already released earlier partial drafts of *General Theory* and the expectations were also present in the air. In 1935, in a letter to George Bernard Shaw, Keynes (1978, p. 395) anticipated the consequences of his book saying that "I [Keynes] believe myself revolutionize - not, I suppose, at once, but in the course of the next ten years - the way the world thinks about economic problems." What Hayek (1941, p. vi) did not expect was the magnitude of the task that awaited him, what was initially planned "as little more than a systematic

exposition of what I imagined to be a fairly complete body of doctrine which, in the course of years, had evolved from the foundations laid by Jevons, Böhm-Bawerk, and Wicksell" was, in reality, a totally new dimension of theoretical work.

Keynes' revolution was not mainly due to some particular theoretical innovation such as liquidity preference or marginal efficiency of capital, but was about the emergence by his interpreters of a relatively simple tractable common mathematical framework that represented the economy in aggregative measures (e.g., Laidler, 1999). Macroeconomic theory now was capable of analytical interpersonal translation to a common general mathematical structure. The interwar neoclassical pluralism could be synthesized in a common mathematical model and language. Keynes' interpreters were able to synthesize many ideas in an aggregative general equilibrium framework. Hence the famous IS-LM aggregate demand model was born, one equation represented the goods market where investment and savings are equal in equilibrium and another equation represented the monetary market where the liquidity preference money demand and exogenous money supply are also equal in equilibrium. The extremely theoretical fertile interwar period became unified into a single coherent work-horse model by the Keynesian revolution, with apparent formal rigor and authoritative policy prescription. The cohesive framework was very tractable in the sense that the model could represent different theoretical ideas and policy conclusions as particular derivations. This permitted the empirical and econometric turn in macroeconomics, although Keynes (1939) himself was critical of the econometric method, the "[Jan] Tinbergen's method."

Keynes mentioned Hayek directly in *General Theory* only four times ([1936] 1973, pp. 39, 60, 79-80, 192). The first referred to Hayek (1935c) criticism of Pigou on capital and the second is a critical reference on Hayek's definition of income in the same article. The third reference is on "the much vaguer ideas" associated with forced savings. "Is any clear significance discoverable in these?" According to Keynes, the meaning of the proponent authors that employed this phrase (i.e., Hayek and Robbins) has *no* relation to his use for the difference between investment and savings in the *Treatise*. What is clear for Keynes (pp. 79-80) is that forced savings "is a phenomenon which results directly from, and is measured by, changes in the quantity of money or bank-credit." In this case, there will be a change in the employment and output volume, which will cause a change in total income measured by wage-units. This change in wage-units will, by its turn, have a double effect. It will cause a "redistribution of income between borrowers and lenders and a change in aggregate income measured in money." In both effects, redistribution and change in income, there

will be a change in the amount saved (by the marginal propensity to save on the new changed income). Therefore, changes in the quantity of money or bank-credit may result from their indirect effects on market interest rate in a change in volume and redistribution of income. And "such changes may involve, indirectly, a change in the amount saved."

In a variation of Sraffa's second argument on forced savings, Keynes (ibid.) argued that this change in savings amounts by changes in volume and redistribution of income due to an increase in quantity of money is "no more 'forced savings' than any other changes in the amounts saved due to a change in circumstances." There is no qualitative distinction between such a case and one where savings amounts increased due to whatever reason in the occasion unless there is a specification on "the amount saved in certain given conditions as our norm or standard." In this sense, all savings are forced savings and all forced savings are voluntary savings. Thus, forced savings is only meaningful when it is defined and specified *ex ante* some standard of savings. According to Keynes, perhaps the only reasonable selection of this standard of saving is "the rate of saving which corresponds to an established state of full employment." Forced savings would be, therefore, the excess of actual savings over what would be saved in a full employment long period equilibrium. Analytically this definition of forced savings would make sense but this case it is not empirically relevant in Keynes' interpretation. In Keynes' view, the empirical corroborated stylized fact and usual state of affairs is a "forced *deficiency* of savings."

Keynes mentions Hayek's "Note on the Development of the Doctrine of 'Forced Savings'" (1932) saying that this forced excess savings definition in relation to a full employment long run equilibrium was, in fact, the original meaning of the term in Jeremy Bentham's concept of forced frugality. The central underlined hypothesis in Bentham's definition is an increase in the quantity of money when "all hands being employed and employed in the most advantageous manner," i.e., in the long period full-employment equilibrium. In these circumstances, the stimulus in aggregate demand by quantity of money increases in relation to the real productive factors available will result in forced savings or forced frugality. Real income cannot be increased and additional investments turn to forced savings *ex post* via inflation. Keynes argued that all classical economists have this full employment situation in mind, but the attempt to extend this notion of forced savings in a "less than full employment involves difficulties."

Keynes ([1936] 1973, p. 81) critique is that his contemporary theorists who used the forced saving notion employed it in an empirical context where the hypothesis of full employment was not valid.

Hayek and Robbins did not extend their analysis to initial conditions where there is an installed idle factors of production. Therefore, if the usual state of affairs is underutilized production factors, the concept of forced savings "is not likely to be fruitful." Keynes challenges Hayek and Robbins to incorporate underutilization of resources and unemployment in their models. "I am not aware of any attempt having been made by the modern writers who are interested in 'forced saving' to extend the idea to conditions where employment is increasing [i.e., unemployment]; and they seem, as a rule, to overlook the fact that the extension of the Benthamite concept of forced frugality to conditions of less than full employment requires some explanation or qualification."

Finally, the fourth place where Hayek is cited directly in *General Theory* is in the appendix to chapter fourteen on the rate of interest. Keynes ([1936] 1973, pp. 192-3) refers to the "peculiar theory of the rate of interest" that has been proposed by Mises and Hayek, with also the adoption of Robbins. This theory, in Keynes' opinion, states that changes in the rate of interest can be identified with changes in the relative price of consumption and capital goods. Even though it is not clear to him how this conclusion is reached by its defenders, that is, via the theory of capital. Keynes mentions Mises' *Theory of Money and Credit* in the then recent English edition, suggesting that he had re-read the book in English after his review in 1912. Keynes then presents Mises' argument as how it appears to him. For Keynes, it seems that marginal efficiency of capital is by a drastic simplification translated and measured by the ratio between the supply price of new consumers' goods and new producers' goods. This ratio is identified with the (natural) rate of interest. This drastic simplification as a "special assumption" could only be justified in a long period equilibrium, "[b]ut when the prices in question are prices prevailing in slump conditions, the simplification of supposing that the entrepreneur will, in forming his expectations, assume these prices to be permanent, is certain to be misleading."

In a fall of relative price of consumers' goods in relation to capital goods, the argument goes on, the interest rate will fall and resources in the lower stages of production will be transferred to higher stages in form of investment in producers' goods. There is established a direct connection between a change in individual saving and a change in aggregate investment. For this movement to occur it is necessary that an increase in individual saving cause a fall in the prices of consumption goods and "quite possibly" a greater fall in the prices of capital goods. Thus, the relative price between the production factors in lower orders in relation to higher orders will be lower, the rate that links between present and future consumption decrease, i.e., there is a reduction

in the rate of interest and investment increases. However, Keynes (p. 193) argued, an increase in individual saving in decreasing the demand for consumption goods also has the effect of lowering the particular marginal efficiency of capital and "hence a lowering of the schedule of the marginal efficiency of capital in general."

This has exactly the opposite effect to the reasoning above by Mises and Hayek. For Keynes, the investment function depends on the rate of interest *and* of marginal efficiency of capital, aggregate investment is stimulated by a raise in marginal efficiency of capital (demand or return of capital) and by a reduction of interest rate (supply or cost of capital). "As a result of confusing the marginal efficiency of capital with the rate of interest, Professor Mises and his disciples have got their conclusions exactly the wrong way round." The nature of this disagreement on the interest rate has the seeds, again, on the capital theory in which the Austrian macroeconomic analysis is based. In abandoning the Wicksellian roots of his theory, Keynes is able to disconnect interest rates of any aspect of the real economy. This excluded any role of interest rate as derived from the microfoundation profits rates. The rate of interest is a conventional rate of return that equilibrates liquidity preference of investors based on a psychological expected future with money supply.

According to Ludwig Lachmann (1983, p. 371), Mises and Hayek were merely following the distinction between the natural and money rates in Wicksell and "Keynes's own distinction between marginal efficiency of capital and the latter is exactly parallel to it." As mentioned, Keynes in *General Theory* (p. 176, f.n. 3) reaffirmed his compromise with the Marshallian tradition over the Böhm-Bawerkian analysis on the theory of capital in the then dispute between Knight and Hayek, "the theory of interest is given precisely in the traditional, classical mould." Although Hayek did not review Keynes' book or wrote a critical note on some themes that he was puzzled, he nonetheless reacted to Keynes in his *Profits, Interest and Investment* (1939) and in part IV of *The Pure Theory of Capital*. Indeed, Hayek lamented that part IV has become rather condensed and sketchy by the urgency of publication in the context of the Second World War. Also sacrificed were the various appendices on controversial themes "in recent years" that were intended to be dealt with detailed discussion. Of course, Hayek referred to the Keynesian revolution.

In *Profits, Interest and Investment*, Hayek counter-attack Keynes' main conclusion on the role of aggregate demand and the always positive relationships between consumption, investment, and income incorporating unemployment and under-utilization of productive resources in general

(including capital). Hayek shows that in his model the conclusions are preserved even with unemployment and *some* capital under-utilization in *some* stages of production. In this case, an expansionary monetary policy still generates a misallocation and maladjustment of capital and labor resources. Nevertheless, maladjustments effects in the capital heterogeneous structure are not in principle less dangerous in this case. Monetary stimulus is injected in some specific stages of production and spread in the economy. If the initial stimulus is in stages of production where there are underutilized capital and labor, this will cause a rise in the demand for complementary capital and fall in substitute capital. A capital organization restructure will be required. Wrong capital complementation will be demanded and wrong capital substitutes will be neglected, other stages will in this process be sacrificed because capital is heterogeneous and cannot be transferred and modified without costs.

The stages that were stimulated will grow in employment and investment but all changes in the capital structure that were done at real economic movement costs (since in other stages there is no sub-utilization productive resources) will not be compatible with the natural rate of interest. If the stimuli is generalized and continued, this will cause maladjustments in the capital structure that will be corrected with forced savings and capital consumption. The exception in this rationale is the case where *all* the different types of productive resources are idle in *all* stages of production. Only in this case Keynes' theory is validated temporary, i.e., there is at the margin an infinite elasticity of production structures in *all* goods stages. When all unemployment of capital and labor in all stages of production ceases, the inverse relationship between consumption and investment returns.

As Hayek ([1966] 1978, pp. 285-6, italics in original) puts it, "[t]here are undoubtedly certain conditions in which an increase of the demand for consumers' goods *will* lead to an increase in investment. But Keynes assumes that this will always be the case. It can easily be demonstrated, however, that this cannot be so and that in some circumstances an increase of the demand for final products must lead to a *decrease* of investment. The first will generally be true only if, as Keynes generally assumes, there exist unemployed reserves of all factors of production and of the various kinds of commodities. In such circumstances it is possible at the same time to increase the production of consumers' goods and the production of capital goods." For Hayek, Keynes appears to have made the opposite mistake which he accused the so-called classical economists. If classical economists have their theory based on the assumption of full employment, Keynes has based all

his reasoning and conclusions on the assumption of full *un*employment, i.e., "the assumption that there normally exist unused reserves of *all* factors and commodities." In this sense, Keynes' economics of abundance was a special case of Hayek's economics of scarcity. Of course, for Keynes, this proposition does not make any sense because capital stock is homogeneous and fixed in the short-run. It does not matter if all factors of production and commodities in all stages of production are unemployed, it is only enough that there exists *some* unemployed resource of production *some*where.

In part IV of *The Pure Theory of Capital*, Hayek central critique is the liquidity preference determination of (money) interest rate. Hayek did not dispute the logical validity of liquidity preference theory. Liquidity preference loosens the connections between the macro interest rate and the micro investment return rate or profitability. But liquidity preference is not the main determinant of the market rate of interest. The role that liquidity preference plays in the monetary market is small, the main forces that determine the market rate are investment profitability (or return) and willingness to save. The Wicksellian natural rate is called by Hayek as the profit or return rate that equilibrates the loans funds market for a given saving rate. The market rate is called merely as rate of interest. Only in the extreme case where the liquidity preference or the propensity to hold money is perfectly elastic that the interest rate is insensible to variations of the profitability of investments. Thus, the interest rate is mainly a function of investment demand. For Hayek, this extreme case is not empirical relevant for a *general* theory of the rate of interest, it is only applied to the deepens of a depression. This would reinforce the character of a tract for the times in Keynes' book, a set of ideas greatly needed in the 1930s. But Hayek (1978, p. 297) blamed Keynes for having called such a tract for the times as the *General Theory*.

IV. THE SECOND ROUND: HAYEK, KEYNES, AND THE INTERNATIONAL MONETARY ORDER

A surprising neglected episode of direct clash between Hayek and Keynes is the debate on the commodity reserve currency in 1943-4 in *Economic Journal*. Although the proportions and scope of this direct battle are quite smaller than the very louder review of the *Treatise of Money* by Hayek in 1931, the episode is important since it is the first public *direct* clash confrontation between Hayek and Keynes in a professional journal after the first round. It can be considered as the second

round since we can define each round as a direct public clash with an engagement of both sides. All the other disputes and confrontations in the 1930s and 1940s occurred in an indirect form battle and not in namely direct responses by each side, both in public media and professional journals. Therefore, in the *Profits, Interest and Investment* (1939) or in *The Pure Theory of Capital* (1941) the critical confrontation to Keynes' theory is clear but there is not a public direct exchange between Hayek and Keynes. The same is true for the private exchange letters. In addition, there are public confrontations or endorsements by Hayek on Keynes' policy prescription as the positive endorsing review of *How to Pay for the War* (1940) (other general public confrontations are, e.g., Hayek, 1939a, 1939c, 1939d, 1939e).

The second round neglect is surprising not only because this exchange is the second round *stricto sensu* but mainly because this specific controversy illustrates as a punctual evidence some grand lines of philosophical agreement and at the same time the practical disagreement between Hayek and Keynes. It is a good empirical intellectual stylized fact of the nature of the relationship, connections, and intersections between the economic and social thought by Hayek and Keynes. The round is centered on the broad discussion of the international monetary order reconstruction post-Second World War. During the war, Keynes was in his public service at the British Treasury. As the war was signaling its end, he and the profession in general started to think in the most appropriate international monetary institutions to prevent the economic consequences that in part had led to war, the dangers of recession and unemployment as well as of inflation. In this context, one proposal of monetary reform that had been well received was of a commodity international standard by Benjamin Graham, the father of value investing, in *Storage and Stability* (1937).

The basic idea was to replace the gold standard by an international monetary standard based on a predetermined common (or not) basket of raw commodities. In this standard, raw commodities reserves would act much better as buffer stocks especially regarding deflationary pressures and at the same time would attach money to a real commodity with growth constraints. One year later of Graham's book publication, Keynes (1938) had received warmly these preliminary ideas of an international commodity standard. The commodity international standard was also independently developed by Princeton economist Frank D. Graham (1940, 1941, 1942) which emphasized the replacement of an inelastic single commodity reserve as gold for a multi-commodity basket reserve (more elastic in counter-react changes in the money velocity and recession periods) as a pro full-employment policy.

In the early 1940s, Keynes and the German economist Ernst F. Schumacher developed the embryonic ideas for a supranational currency named Bancor (bank gold) that was supposed to exercise only the international unit of account function and trade clearing. This became the official United Kingdom proposal at Bretton Woods in 1944. Each national currency would be linked by a fixed rate of exchange to the international currency. The currency was planned to be used in all international trade and exchange between nations as a common unit of account inserted in an International Clearing Union (ICU) that meant to perform the central multi-clearing house for all countries-members. The unit of account would be used in all international financial transactions and international flows of capital, assets, and income via the ICU. Bancors were not supposed to be transacted between individuals or to be held as a money asset. All international relations should be valued and transacted in bancors. Correction mechanisms would act symmetrically in countries with surplus trade and bancor assets and countries with trade deficits and bancor liabilities to approach the approximately zero bancors balance equilibrium. In May 1943, Schumacher published the "Multilateral Clearing" (1943) in *Economica*, the paper was already in private circulation since November 1942. Also in May 1943 the proposal formalized the idea and set the basis of Keynes' (1943a) plan for an International Clearing Union, published as British government's White Paper in the House of Lords.

According to Keynes, international liquidity problems and deflationary pressures would be present in postwar international monetary order in the same way as occurred in the 1920s in Britain after the First World War. Keynes' proposal intended to manage international aggregate demand failures that could result from balance of payments problems. In the old international order, problems in balance of payment created an *a*symmetrical pressure for adjustment in deficitary countries and the privileged surplus countries could maintain a passive position in accumulating international reserves. It forced only deficitary countries to take appropriate measures to counterbalance the disequilibrium, notable with recessive and contractionary demand policies. In this scenario, with a cut in aggregate demand by the deficitary countries and accumulation of international reserves by the surplus countries, deflationary pressures would be a global norm.

The International Clearing Union desistimulate the accumulation of international reserves in bancors, thus making pressures in the surplus countries to inflation their respective economies. In the June-September 1943 issue of *Economic Journal*, Hayek published "A Commodity Reserve Currency" (1943) basically reaffirming the initial idea of substituting gold as reserve commodity

for a multi-product basked of raw commodities. Thus, opposing Keynes' proposal for an international currency and clearing union. Keynes replied stating that this international institutional arrangement imposed a stable price level from with-out, forcing a non-expansionist policy when necessary. After this critical note, Frank Graham surveys the controversy by criticizing Keynes' imposing view on Hayek. Finally, Keynes step-back and find a middle ground on the debate. Below we reviewed this symptomatic direct exchange with detail.

Hayek starts his commodity reserve currency proposal by remembering the merits and advantages of the gold and an international standard. For Hayek (1943, p. 176), the gold standard in his pre-war form had several grave defects but it is unwise to condemn its failures without looking to the alternatives. Hayek is skeptical of a globally international currency unit in Keynes' lines. Therefore, "[a] wisely and impartially controlled system of managed currency for the whole world [Keynes' proposal] might, indeed, be superior to it [gold standard] in all respects. But this is not a practical proposition for a long while yet." Alternative options lie within various schemes of monetary management on a national scale. In this context of national scale arrangements, the gold standard had three advantages. Namely, (i) "it created in effect an international currency without submitting national monetary policy to the decisions of an international authority," i.e., the gold standard is capable of creating an international monetary order that preserved the national scale autonomy and dispense a decision making central committee; (ii) "it made monetary policy in a great measure automatic, and thereby predictable," i.e., it prevented unexpected discretionary policy that can affect the system stability; (iii) "and the changes in the supply of basic money which its mechanism secured were on the whole in the right direction," the standard acts qualitatively in the right direction when the demand for money rises or falls. Although the gold standard did not act in the right intensity quantitatively, i.e., the gold price elasticity of demand is low.

According to Hayek, these advantages are not trivial ones. Especially because of the costs and complexities of national entities coordination in an international order, the difficulties that the problem of deliberate international coordination demands cannot be underestimated. "The difficulties of a deliberate co-ordination of national policies are enormous, because our present knowledge gives us unambiguous guidance in only a few situations." Thus, conflicting national interests in crucial ambiguous subjectively perceived decisions is a major difficulty to overcome. "Uncoordinated national policies, however, directed solely by the immediate interests of the

individual countries, may in their aggregate effect on every country well be worse than the most imperfect international standard" (p. 176). The problem is naturally of institutional means to coordinate individual countries conflicting positions. The gold standard can in some degree surpass this problem because the policy derivative is guided by known impersonal rules which can be expected and foreseen by the players. In addition, the fact that gold supply is encouraged when the price rises and vice versa also acts in the right direction of stabilization of its value, even with its inherent defects in practice.

This last point is perhaps the main defect of gold as a commodity reserve. The "really serious objection" is the "slowness with which its supply adjusts itself to genuine changes in demand" (p. 177). Gold inelasticity to fluctuations in demand cause time delays in the supply response to changes in demand. Often supply only becomes available when it is not needed anymore, which accentuates fluctuations tendencies in the business cycle. Moreover, gold supply response to a temporary increase in demand remains a permanent change in gold stock. As money demand fluctuates the gold standard provides the basis for excessive expansionary policies when the demand turns to fall again. Reserve supply inelasticity is deflationary when temporary increases in demand occur and is inflationary when the delayed supply responds to the temporary demand. This causes the logical paradoxical feature of the gold standard, "the fact that the striving of all individuals to become more liquid did not put society into a more liquid position at all" (p. 178). A similar problem is faced with effective demand failures. This is a situation where the horizontal sum of individual rational decisions leads to a discoordination in the social aggregate level.

Note the similarity of the gold standard discoordination "paradoxical feature" due to knowledge failures with Keynes' argument regarding the individual rational decision to save and the effective demand failure with an aggregate discoordination result. The coordination failure element in the use of knowledge in the passage of the individual analysis to the aggregate level is essentially the same. This was the so-called paradox of saving that Hayek reacted and that caught Robbins' attention. A more rational monetary system, Hayek argued, is one that when the liquidity preference rises the whole society can be put in a more liquid position. This passage is done by the change of production being measured in less useful illiquid to more useful liquid commodities, things "which will be needed in all conditions, such as the most widely used raw materials. The true irony of the gold standard is that under its rule a general increase in the desire for liquidity

leads to the increase in the production of the one thing which can be used for practically no other purpose than to provide a liquidity reserve to individuals" (ibid., p. 178).

The advantages of the gold standard, Hayek reminds us, are not "directly connected with any property inherent to gold. Any internationally accepted standard based on a commodity whose value is regulated by its cost of production would possess essentially the same advantages" (p. 176-7). What made gold the international commodity standard was a certain irrational prejudice toward this metal and its value, and that made it the more acceptable commodity. This irrational prejudice was the basis on which an international monetary system could be built and operated "at a time when any international system based on explicit agreement and systematic co-operation was out of the question" (ibid.). The international gold standard was a notable example of an emergent coordination order within an institutional architecture. Remind that perhaps the greater example of spontaneous order is the creation of money itself, classically described by Menger. This spontaneous order notion is one of the major relevant differences between the coordination and knowledge approaches between Hayek and Keynes. That said, the public psychological perception to gold and its merit as an international standard were very shaken by its failure in the 1920s. Hence, it was important to think in new alternative systems that preserve the advantages of an automatic and impersonal international standard (as the gold standard) with freedom from the special particular defects of gold as a single commodity reserve. One of the alternatives is, in particular, very appealing to those who in the past defended the gold standard. This is not because it is an ideal arrangement but because it appears to be feasible to the pragmatic times of the post-war. This new system is the multi-commodity reserve currency.

A more rational scheme, therefore, is the use of many raw commodities as a reserve currency, the proposal of Benjamin Graham and Frank D. Graham. The idea "is that currency should be issued solely in exchange against a fixed combination of warehouse warrants for a number of storable raw commodities, and be redeemable in the same 'commodity unit.' $100, e.g., instead of being defined as so and so many ounces of gold, would be defined as so much wheat, *plus* so much sugar, *plus* so much copper, *plus* so much rubber, etc., etc. Since money would be issued only against the complete collection of all the raw commodities in their proper physical quantities (twenty-four different commodities in Mr. B. Graham's plan), and since money would also be redeemable in the same manner, the aggregate price of this collection of commodities would be fixed, but only the aggregate price and not the price of any one of them" (Hayek, 1943, p. 179).

These different reserve commodities would be connected with money in fixed proportions, and not in the way as bimetallism where it is possible to change a unit of only gold or silver via an exchange rate to a unit of money. Rather, it is close to Alfred Marshall's (1887) suggestion of symetallism where only a certain fixed weight of gold *and* silver at a certain fixed price could be exchanged by a money unit and where the individual price of each metal was flexible.

In a commodity reserve currency, raw commodities elasticity that formed the multi-product fixed reserve basket would be high to respond to money demand changes. Money demand increases would not produce time lags neither fluctuations tendencies. The impersonal mechanism would act in the right qualitatively direction (as the gold standard) and, in addition, with the right velocity. Also, the increased demand for liquid assets in a scenario of high uncertainty would be fulfilled by the accumulation of raw commodities stocks defined in the fixed multi-product basket. These commodities are of the most general usefulness and would not increase permanently the commodity reserve stock as in the case of gold, thus the system would be much more stable. These raw commodities stocks would then regulate the aggregate index price level. As the fixed collection of commodities could be always exchanged by a fixed money units, the general price level could never fall below this fixed proportional exchange (with arbitrage). Since money can also be exchanged by the fixed collection of commodities at approximately the same rate, the aggregate price of the fixed collection of raw commodities will never rise. Of course, as long as the monetary authority could use the commodity reserves and quickly sell or buy the commodity price unit at the fixed price.

The plan as proposed by B. Graham and F. Graham is designed primarily for the United States, but Hayek (1943, p. 180) stated that this "plan not only could, but, to achieve its ends, ought to be adopted internationally - or, what comes in practice to the same thing, that it ought to be operated on the same principle by all the major countries." The most favorable period to the commodity reserve currency introduction is in a period of slackness, i.e., when a fall in demand is threatened. The arrangement can be designed to automatically enter into practice in such a context by fixing beforehand a buying price for the multi-product basket commodity unit slightly below the market value. When the slackness hits the raw commodities market and deflationary pressures come to prices, the national monetary authority will buy any commodity units which cannot enter in the market at the fixed established price of exchange. These purchases will make up for all the money accumulated in public hands a corresponding amount of raw commodities unit in warehouses. In

this way, demand for commodities in general is maintained. It is general demand for the multi-product raw commodities basket and not for any particular individual commodity. The commodities industry secure income as a significant industry of the economy, contrary to the gold mining industry, would also have significant counterbalance effects on aggregate income in recessions periods.

One of the great merits of this system are the checks on possibilities of monetary overexpansion. The system does not permit expansion that leads to consistent and permanently rises in general prices. It is important to note that sustainability and effectiveness of this proposal lies on its implementation during a depression phase to first accumulate commodity stocks in warehouses and thus its utilization to sustain the fixed price exchange of money and commodity units in the boom period. An additional advantage is that the proposal requires no "need for the monetary authorities or the Government in any way directly to handle the many commodities of which the commodity unit is composed. Both the bringing together of the required assortment of warrants and the actual storing of the commodities could be safely left to private initiative" (p. 182). Hence, the practical daily operation of monetary authority would be automatic and mechanical as in the gold standard, only defending the fixed price exchange of money and commodity units by buying or selling. Hayek ended discussing some minor detailed technical features of the proposal implantation such as substituting currents contracts of specific commodities for future contracts and emphasizing the many ways in which gold could be linked to the new commodity reserve currency if desired without any disadvantageous feature to the general framework.

Keynes replied to this proposal by Hayek in a short note, "The Objectives of International Price Stability" (1943b), in the same issue of *Economic Journal*. For Keynes, there are two main complaints against the orthodox gold standard system as an instrument for international price stability. First, the gold standard does not provide the appropriate quantity of money in the different contexts of changing money demand. Gold as a commodity is inelastic to respond to fast and abrupt changes in demand for money. Keynes classified this criticism as the "familiar, old-fashioned criticism" of quantity theory proponents. Many authors tried to meet this problem, e.g., the tabular standard symetallism of Marshall, the compensated dollar of Irving Fisher, and the commodity reserve currency of Hayek.

Keynes then described how his International Clearing Union would handle this problem of quantity. The grand merit of his proposal, Keynes argued, is that the Clearing Union as a design

policy instrument acts in international money chronic shortages by operating through the velocity of circulation (V) rather than through the volume or quantity of money (M). Money volume is only necessarily required to satisfy "hoarding, to provide reserves against contingencies, and to cover inevitable time-lags between buying and spending" (p. 185). As Keynes' idea was to punish money hoarding, and reserves against contingencies in ICU are provided by facultative injections, a very small credit quantity would be sufficient in clearing national monetary authorities. The Clearing Union would abolish the problem of defining the correct quantity at each time and place "by making any significant quantity unnecessary." In a national price level perspective, Keynes goes on, each national price level is "determined by the relation of the national wage-level to the national efficiency," i.e., by the relation between money-costs to the national currency unit. If price-levels are determined by money-costs to efficiency, an appropriated volume or quantity of money in a given context "is a necessary condition of stable prices, it is not a sufficient condition." Stabilizing price-levels is, therefore, stabilizing the relation of money-costs (especially money-wages) in relation to national efficiency (p. 185).

From this last point it follows the second (modern) criticism of gold standard, "that it attempts to confine the natural tendency of wages to rise beyond the limits set by the volume of money, but can only do so by the weapon of deliberately creating unemployment" (ibid.) In other words, the gold standard can only stabilize price-levels on the social cost of unemployment through recession. Since money-wages are downward rigid, any automatic mechanism of deflation by the gold standard is flawed in money-wages (or money-costs in general), thus the adjustment in the labor market is done in quantity, i.e., unemployment. And "this complaint may be just as valid against a new standard which aims at providing the quantity of money appropriate to stable prices, as it is against the old gold standard." In Keynes' view, the commodity reserve currency does not have any effective measure through the money quantity manipulation in which price-levels stability is necessary compatible with full employment. Keynes did not detail his reasons against the advantages of multi-product raw commodities basket in stabilizing the price level and income that Hayek stressed out.

According to Keynes, the international monetary policy only has a strictly limited objective, it is not to pursue international stable prices but only to serve as an account unit for the Clearing Union. If the pursuit of international stable prices was the objective, these international prices which are stable in terms of an international monetary unit should be translated and forced into national price-

levels as gold standard does in deflationing the domestic money-costs. In Keynes' idea, the international unit of account as unitas or bancors is only a unit for international transactions clearing. Paradoxically, the pursuit of international stable prices in the international monetary unit is not reflected in a corresponding stability of the various national entities and their domestic price-levels because they have to be disciplined by the deflationary money-costs mechanism. Thus, pursuing international price stability leads to domestic price *in*stability.

The primary policy objective within the international currency scheme should be, Keynes (1943b, p. 186) writes, "to prevent not only those evils which result from a chronic shortage of international money due to the draining of gold into creditor countries but also those which follow from countries failing to maintain stability of domestic efficiency-costs and moving out of step with one another in their national wage-policies without having at their disposal any means of orderly adjustment. And if orderly adjustment is allowed, that is another way of saying that countries may be allowed by the scheme, which is not the case with the gold standard, to pursue, if they choose, different wage policies and, therefore, different price policies." Thus, Keynes' model is designed to allow individual nations some discretionary power to implement and pursue different targets on wages and prices, i.e., different price-levels and unemployment. This opens the door for different economic policies according to the particular necessities of each country-member.

Keynes' position is in consonance with his caution and rejection of the very tight international constraints that are imposed in some dictating degree form into nations, as in his criticism of the Treaty of Versailles in *The Economic Consequences of Peace* ([1919] 1973). Therefore, "[t]he fundamental reason for thus limiting the objectives of an international currency scheme is the impossibility, or at any rate the undesirability, of imposing stable price-levels from with-out. The error of the gold-standard lay in submitting national wage-policies to outside dictation" (Keynes, 1943a, p. 187). The most difficult task in this scheme is to deal with country-members getting too much out of the track in their respective domestic wage and credit policies, that is, countries with more than reasonable expansionary (or restrictive) monetary and fiscal policies. In this case, the inflationary (deflationary) pressures in this country would destabilize the international clearing system based on fixed exchange rate between the national monetary unit and the international account unit.

To meet this problem, Keynes considered, first, to ask countries seriously out of step to reconsider their policies, and, second, to alter the exchange rates as "to reconcile a particular national policy

to the average pace. If the initial exchange-rates are fixed correctly, this is likely to be the only important disequilibrium for which a change in exchange rates is the appropriate remedy" (p. 186). Hence, the main message is that "[i]t is wiser to regard stability (or otherwise) of internal prices as a matter of internal policy and politics." For Keynes (p. 187), Hayek's proposal fails right in this important point, "[c]ommodity standards which try to impose this [price stability] from without will break down just as surely as the rigid gold-standard."

Hayek did not reply to the note by Keynes. More than one year later, in the December 1944 issue of *Economic Journal*, Frank Graham enters into the controversy between Hayek and Keynes on the international monetary order. Graham (1944, p. 424) first notes that the main point that Keynes raised against commodity reserve currency, i.e., that the system as an international price stabilizator imposes from outside a domestic price level that only can be realized with unemployment, is only true if the commodity reserve standard proposed has an immutably fixed exchange rate. This point is more appropriate in an international price instability context in which the volatility inevitably fails to correspond to the varying money-costs and "shifts in independently determined efficiency-wage rates." Graham agrees with Keynes about the difficulty of securing wage-earners demands with national stable prices in a scenario where domestic prices appears to be decided by an international convention rather than national policy direction. However, Graham disagrees with Keynes' opinion that the error of the gold standard is to submit national wage-policies to exogenous dictation. This position throws away the merits of the gold standard with its virtues. For Graham (ibid.), the gold standard system "did not submit wage-policies to *dictation*, by governing authority anywhere, but made them the result of impersonal forces issuing out the disposition, and potentiality, of individuals to follow what they conceived to be their interest."

Like Hayek, Graham praises the automatic character of the gold standard. This is *per se* a good thing, it settles the basis for a previsible system behavior. One of the main prerequisites of a coordination process is the previsible mutual behavior capacity by the decision-making agents. The virtues of this model are evidenced by a spontaneous process of adhesion to it and by the form of its fall. It was only after the adoption of a gold standard subjected to varying national policies management that the standard was abandoned. If Keynes' imposing dictation price level position is only valid in a immutably fixed exchange rate case, by his turn, Hayek did not explicitly state whether in his commodity reserve currency version there would be fixed exchange rates immutably. If it is not the case, with no problem there could be an international clearing

organization in offer freely to exchange in both ways in buyers and sellers of the international commodity unit "against warehouse receipts covering a designated composite of raw material" (ibid.). Graham mentions the "new 'Fund' or the Bank for International Settlements." Therefore, in this scheme no monetary policy could be imposed on any individual country. Each country would choose the value of its own currency fixed against the international commodity currency and against other national currencies.

So far the national priorities or particular situation changes, the country is able to choose its own value currency compatible with expansionary monetary and fiscal policies (i.e., a rising price level) by devaluing its currency against the international commodity standard and the rest of the world. In this case, Graham (p. 425) concludes that "Lord Keynes' arguments that an international commodity reserve currency would *impose*, from without, a price-level policy on any country, or would break down, is quite untenable." That said, there would be no fundamental divergence and logical impossibility in the combination of this sort of international commodity reserve currency in Keynes' proposal lines, the international currency bancor could be the proper commodity currency with the operation support of a Clearing Union (or another international fund) institution. Graham (p. 426) believes that "[s]uch a standard would represent a great advance over anything we have had in the past" and this system not only could be functionable to any country desirous of stable prices in fixing its exchange rates and thus linking his own currency to the international standard unit but would also permit the domestic autonomy possibility in national monetary and credit policies as Keynes desired.

Graham is critical to Keynes' original proposal to have only a merely unit of account function in a pure debt international monetary standard. If no tie with anything real can be made to anchor money, the wage-earners pressures to gain an ever increasing real wage not based on labor productivity can only result in an inflationary path. This pressure is what Keynes assumed as one of the major failures of any commodity currency, it is the loose joint of the gold standard. The pressure, i.e., downward wage-money rigidity, make the coordination failure adjustment in quantity and not in price in the labor market. In Graham's (p. 426) opinion, "any monetary policy which does not confine such tendency as (money) wages may have to rise beyond the limits within which it is possible to preserve a stable price level, provides a very vicious 'standard.' If Lord Keynes takes the contrary view, he seems to me, in effect, to be plumping for a progressive inflation, wholly indefinite as to time and amount." Another problem is that if the money cannot

be in some level distributional neutral, whoever is in control of the monetary authority will have totalitarian power over the citizens, discretionary decisions in monetary affairs have serious upper limits.

The real problem in unemployment, Graham continues, is not that it is the result to the denied opportunity to work at a given fancy wage that the wage-earner desire, but that due to abnormal conditions of liquidity preference workers are denied the opportunity to work at wages that they could accept under normal liquidity conditions. The merit of commodity reserve currency is that the system operates to keep liquidity preference in normal conditions. Hence, satisfying the demand for more liquidity in an individual and aggregative societal level. A function that the gold standard cannot perform, as Hayek argued, due to the institutional failure coordination design of single commodity currency. In the new proposal, liquidity money demand in depressing times is counterbalanced. Graham (p. 427) agreed with Keynes that a necessary condition to stabilizing prices is stabilizing the relation of money wages (money-costs in general) to efficiency. This is precisely the commodity reserve purpose. "As the efficiency of labour rises, money wages would tend to rise in correspondence - no more and no less - and there would be a steady tendency towards full employment without a trace of inflation."

Graham (1944, p. 428) ends his intervention reaffirming that so far exchange rates were free to change in correspondence to the national money-costs against the international commodity currency and other countries Hayek's proposal is fully compatible with Keynes' ICU. Moreover, Keynes' criticism of the imposed with-out stable prices is not validated. "If one insists upon an unstabilised price level at home, there is nothing in a stabilised international unit to prevent it, or nothing to prevent other countries having stable price levels if they so desire. No country, therefore, would be any more inhibited in the presence of an international monetary unit of stable value than in the presence of an international unit without anchor, and a stable-value international unit would not interfere in any way with anything that Lord Keynes has proposed in his Clearing Union." Graham (p. 428) raises a question that emerged in personal correspondence with Keynes on the subject. "It is the intransigence of the attitude taken here, and by Professor Hayek, which is, I think, troubling Lord Keynes." Keynes was ruthless to accept unemployment social costs in the name of some international standard purity. "How much otherwise avoidable unemployment, he asks, would you be willing to bring about for this purpose?"

Keynes (1944, p. 429) replied to Graham in a short two-page note. He observes that "Prof. Graham's statement of my point is a very fair one," and regrets that the note in which he responded to Hayek he expressed himself much more briefly than what would be necessary by the complex nature of the subject. Keynes concedes the point that a commodity reserve currency is intrinsically more elastic than the single commodity gold standard, he admitted that "[m]y own sympathies have always fallen that way. I hope the world will come to some version of it some time. But the opinion I was expressing was on the level of contemporary practical policy; and on that level I do not feel that this is the next urgent thing or that other measures should be risked or postponed for the sake of it." Keynes did not disagree with the commodity currency reserve as a better suitable theoretical proposal. On the contrary, he endorsed it and praised for one day some version of it could be applied. His point is merely on the pragmatic and practical ground on the feasible arrangement compatible with the then contemporary practical policy and public needs. It was a feeling of the times as his *General Theory*.

Keynes (p. 429) justifies his position for four reasons. First, the immediate task "to discover some orderly, yet elastic method of linking national currencies to an international currency, whatever the type of international currency may be. So long as national currencies change their values out of step with one another, I doubt if this task is made easier by substituting a tabular standard for gold. Indeed the task of getting an *elastic* procedure may be made more difficult, since a tabular standard might make rigidity seem more plausible. Perhaps unjustly, I was suspecting Prof. Hayek of seeking a new way to satisfy a propensity towards a rigid system." The second is on the political wisdom of an international system that makes some pressure in national prices levels. Keynes is skeptical of this external pressure on national wage levels because of the numerous political possible negative ramifications. This, of course, is not to deny that Keynes condemns any policy destined to make "money wages forever soaring upward to a level to which real wages cannot follow." Keynes is also personally allergic to inflation, as his writings from *The Economic Consequences of Peace* (1919) to *How to Pay for the War* (1940) demonstrated. For Keynes (1944, p. 430), "it is one of the chief tasks ahead of our statesmanship to find a way to prevent" this indiscriminate persistent inflationary pressure, but the proper realm of this task is within the domestic national level.

The third reason is a purely practical, pragmatic, and political one. "Why waste one's breath on what the Governments of the United States, Russia, Western Europe and the British

Commonwealth are bound to reject?" The fourth and last point is concerned with the timing of the proposal. According to Keynes, the right way to adopt the tabular standard commodity reserve currency is to develop a technique for such and gradually "accustom men's minds to the idea through international buffer stocks." When the technique was politically matured and oppositions and prejudices to the model overcome, only then "it will be time enough to think again." In regard to the buffer stocks, Keynes says that he can "enthusiastically join forces with Professor Frank Graham and Mr. Benjamin Graham," although he felt a reserve about the timing of the implementation of this in his days, December 1944, when many materials and raw commodities were scarce. In conclusion, Keynes (1944, p. 430) reiterate the particular discussion practical. "All this, I agree, is very low-level talk; for which I apologise. But it was in fact from a low level that I was, in the first instance, addressing Professor Hayek on his dolomite."

Doubtless, this was a contextual controversy on the adequate policy for the times. Hayek and Keynes have totally different postures and styles in approaching the controversy. Hayek was worried with the theoretical soundness and its logical connections to the desired end of international monetary order understood with international stable prices. Keynes is very much touched by the timing sensible aspect and the political implications of it, he is naturally policy-oriented for rapid and short-period implementation of his policies recommendation. Keynes is a man for the times, where the times are always changing. Hayek is the opposite. Although his proposal is prospected to the policy needs of his times as he understood it, Hayek is a more traditional scholar, preoccupied not only with the short-run necessities but with a more long period stabilized system. Hayek himself would change his views of the better institutional design for the monetary policy norms along his career. He ended up with a radical denationalization of money idea (Hayek, 1976).

Interestingly, Hayek changed his monetary policies views many times, for an early productivity norm on an input index and raw-material price level to a stable final output consumers' price level at the end of his career. Hayek joined Keynes' position on the optimal monetary policy, one that should stabilize the consumer price level, although Keynes also recognized the merits of the productivity rule in the 1930s. Hayek and Keynes end up with the same view of how the price level should behave but still disagreed on how to operate the best means for this end (cf. Selgin, 1999; White, 1999). In the 1940s and early 1950s, the commodity reserve currency was largely debated. See especially the critical account by Milton Friedman (1951). But with the 1944 Bretton

Woods agreement the proposal did not gain very much appeal in the general profession neither in practice. The commodity currency reserve was resurrected with strength twenty years later by Hart, Kaldor, and Tinbergen (1964) and would be supported by Kaldor in his bancor campaign in the 1960s. In the inflationary early 1980s, Robert Hall (1982) also endorsed it arguing that the commodity standard moved closely with the living in the United States and therefore would be better than gold to stabilize the dollar purchasing power.

V. TOWARD RECONCILIATION AND BEYOND: THE HAYEK AND KEYNES CONNECTION

As said earlier, the relationship between Hayek and Keynes improved dramatically in the 1940s. With the LSE evacuated to Cambridge, Keynes found rooms for Hayek at the King's College. Both men could spend much time together, the time and space sharing permitted the development of a close personal and intellectual relationship. In fact, Keynes was already a hero to Hayek and his generation long before Keynes had established his reputation as an economic theorist. Keynes' *The Economic Consequences of the Peace* (1919) was a vividly and lucid evaluation of the failure lines in the Treaty of Versailles. Hayek ([1966] 1978, p. 283) as a young veteran soldier in Austria, a country member of the Triple Alliance defeated in the First World War, could not praise Keynes more. "Was he not the man who had had the courage to protest against the economic clauses of the peace treaties of 1919? We admired the brilliantly written books for their outspokenness and independence of thought, even though some older and more acute thinkers at once pointed out certain theoretical flaws in his argument." This reconciliation is not only conceived in the personal relationship sphere, Hayek and Keynes as economic theorists and social philosophers also have deep convergences along with the more explicit laudatory differences exposed in the three rounds surveyed here.

The first convergence is about the goal of monetary policy in general and the dangers of inflation in particular. Keynes ([1919] 1971, p. 149) was a decided fighter against inflation, his critical notes on the inflation eroding the pillars of western civilization and the market are very famous in *Economic Consequences*.

> "As the inflation proceeds and the real value of the currency fluctuates wildly from month to month, all permanent relations between debtors and creditors, which form the ultimate foundation of capitalism, become so utterly disordered as to be almost meaningless, and the process of wealth-getting degenerates into a gamble and a lottery. Lenin was certainly right. There is no subtler, no surer means of over-turning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose."

Keynes' anti-inflationism, as well as his anti-deflationism, is a common constant in his writings, evidenced in *A Tract on Monetary Reform* ([1923] 1978) to his proposal to *How to Pay the War* (1940). In the *Tract*, Keynes used the quantity theory of money and purchasing power parity to defend not some pre-war fixed exchange rate purity but to stable final consumers' prices index levels as the main goal of monetary policy. This contrasted to the misleading return to gold policy. The return to the gold standard means abandoning the *status quo* stable price level policy objective since prices had to adjust to the old overvalued parity to gold. This is the same argument that based Keynes' rejection of commodity currency reserve in the second round with Hayek. In this case, the problem is not the commodity reserve *per se*, but the altered focus in the exchange rates toward some fixed rigid system, this is a non-objective to international monetary policy. "The individualist capitalism of today," Keynes (1973, p. 36) argued, "presumes a stable measuring-rod of value, and cannot be efficient - perhaps even cannot survive - without one."

The convergence with Hayek in the matter of anti-inflation and price stabilization is deep. In his endorsing review of Keynes' 1940 pamphlet, Hayek (1940, pp. 321-2) himself acknowledged this. "After Mr. Keynes had acknowledged that 'in war we move back from the Age of Plenty to the Age of Scarcity' and that 'the Age of Scarcity has arrived before the whole available labour has been employed,' the difference which had so long separated him from the more 'orthodox' economists had disappeared and any contribution to the burning problem coming from him was certain of the closest attention." As discussed, Hayek at the end also adopted Keynes' position of pursuing a stable output consumer index price level. Hence, in a sense Hayek also was an anti-deflationist (i.e., an anti-productivity rule for price level) as Keynes.

The difference in this convergence between Hayek and Keynes against inflation lies on the reason for such. Keynes is against inflation because it benefits the contractual debtor and prejudices the contractual creditor. The contractual arrangement is the ultimate ethical foundation of capitalism. Moreover, inflation erodes the mechanisms that defined a modern market economy, the monetary economy of production and the banking and credit system. Perhaps more important, inflationary processes disrupt the moral foundations on which capitalism is based, inflation (and deflation) brakes the moral sense of justice of pecuniary income returns. A market system can only be morally justified when its institutions deliver more efficiency and growth in a moral rationale accepted by the people.

In the 1920s and 1930s, liberal democracy was questioned in these moral and economic bases. Keynes fought to manage the flaws of capitalism because he wanted to counter-attack the negative moral and economic led outcome reactions. This view reflects Keynes as the moral philosopher and it is linked to his early membership of the Apostles and the Bloomsbury circle. For Keynes, inflation or deflation is a moral redistribution problem that erodes the banking and credit institutions that made possible the modern economy. Hayek agreed with these justifications, but for him the main reason for which inflation is bad is because it distorts the most important guide-transmitter system of knowledge, indispensable to consumption, production, and investment schemes of an industrial society, the price system.

The second notable convergence between Hayek and Keynes is in regard to methodology, in particular, the rejection of positivistic notions of methodological monism and skepticism with the role of econometric estimations in fulfilling economic models. Thus, the second convergence is a methodological criticism convergence in regard to some naturalistic tendencies in economic theory. In a famous letter exchange with Roy F. Harrod in July 1938, Keynes (1973, p. 296) touches in several methodological themes. In a letter of 4 July responding to Harrod on his presidential address to Section F of the British Association and Keynes' controversy with Tinbergen, Keynes states that economics is a branch of logic, a way of thinking, and the progress in the subject "consists almost entirely in progressive improvement in the choice of models. The grave fault of the later classical school, exemplified by Pigou, has been to overwork a too simple or out-of-date model, and in not seeing that progress lay in improving the model." The real legitimate realm of statistical methods in economics "is not so much to fill in missing variables with a view to prediction, as to test the relevance and validity of the model." That is, the legitimate

role of statistics is in qualitative tests of the formal model applicability and verification into a particular historical reality, and not in fulfilling the model with numerical estimations in order to precise prediction. Keynes emphasized that "economics is a science of thinking in terms of models joined to the art of choosing models which are relevant to the contemporary world."

Keynes' position stressed a primary view of the different materials as object and method in social sciences vis à vis natural sciences. Natural sciences have intrinsically materials that are homogeneous in time and space, there are no general historical peculiarities in physical science, laws are general and always applicable. There is no art of choosing models which are relevant to the contemporary world. Social sciences have a different ontological and epistemic material to deal with, men and their relationships with things and other men are the object of study in social sciences. The models' scientific domain is "to segregate the semi-permanent or relatively constant factors from those which are transitory or fluctuating" as to develop a general scientific theory that is applied to the real world and which permits the scientist to understand the particular cases through the general model (ibid., pp. 296-7). Good economists are the ones that have "the gift for using 'vigilant observation' to choose good models." Keynes undoubtedly was a good economist in this definition. Social science has an entirely different epistemic nature problem. A slavish imitation of natural sciences - especially physics - denies the proper social scientific object. This is the definition of what Hayek ([1942-4] 1952, p. 24) called scientism.

In this sense, ironically, Keynes adopted the classical economic methodology in lines of John Stuart Mill, John Neville Keynes, and Alfred Marshall. In a 16 July letter to Harrod, Keynes focused on his controversy with Tinbergen. According to Keynes, economic models are important only if they remained generic, to estimate econometrically economic models is to deny the *raison d'être* of the model as an instrument of thought, i.e., to be a generic account of the most important causal logical relations between the relevant variables.

> "I think it most important, for example, to investigate statistically the order of magnitude of the multiplier, and to discover the relative importance of the various facts which are theoretically possible. My point against Tinbergen is a different one. In chemistry and physics and other natural sciences the object of experiment is to fill in the actual values of the various quantities and factors appearing in an equation or a formula; and the work when done is once and for all. In economics that is not the case, and to convert a model into a

> quantitative formula is to destroy its usefulness as an instrument of thought. Tinbergen endeavours to work out the variable quantities in a particular case, or perhaps in the average of several cases, and he then suggests that the quantitative formula so obtained has general validity. Yet in fact, by filling in figures, which one can be quite sure will not apply next time, so far from increasing the value of his instrument, he has destroyed it. All the statisticians tend that way. [...] The point needs emphasising because the art of thinking in terms of models is a difficult - largely because it is an unaccustomed - practice. The pseudo-analogy with the physical sciences leads directly counter to the habit of mind which is most important for an economist to acquire. I also want to emphasize strongly the point about economics being a moral science. I mentioned before that it deals with introspection and with values. I might have added that it deals with motives, expectations, psychological uncertainties. One has to be constantly on guard against treating the material as constant and homogeneous. It is as though the fall of the apple to the ground depended on the apple's motives, on whether it is worthwhile falling to the ground, and whether the ground wanted the apple to fall, and on mistaken calculations on the part of the apple as to how far it was from the centre of the earth." (Keynes, 1973, pp. 299-300).

Practically every point in Keynes' critical statements on the Tinbergen's method is developed in detail by Hayek in his extensive methodological writings in the 1940s and 1950s. Hayek also deeply condemns the scientistic mentality. In fact, he wrote a whole book about it, *The Counter-Revolution of Science* ([1952a] 1979). In a nutshell, Hayek methodological thinking can be divided into two phases. First, in the 1940s, he planned to do a big project, a real *tour de force* on the history of ideas and methodology called the Abuse of Reason Project. Hayek distinguished the natural and the social sciences by their respective objects, the most important common characteristic in natural sciences is that it is objective, it does not open space for subjectivism in the scientific analysis. The opposite is true for social sciences, men and their relationships with objects and other men are primarily subjective phenomena. Different people interpret the objective reality in subjective different ways.

The same physically shared central nervous system leads to different subjective interpretation of reality throughout different neuronal connections that form the idiosyncratic neuronal fibers relationships in mind apparatus. The brain structure is a common organ that classifies the numerous

distinct sensory inputs along with the particularly formed complex neuronal connections that interpret these inputs and produce different subjective outputs, i.e., subjective interpretations of the same objective reality. The brain classifies and categorizes and thus interprets the external stimulus. In social sciences, the only valid explanations are general explanations of the principle of the phenomena and the only predictions are pattern predictions. Hayek's major critique is that scientism, i.e., the illegitimate tentative to apply natural science methods to the social sciences, denies the subjective foundations elements of social sciences (see Hayek, [1941] 1952a, [1942-4] 1952a, 1952b).

The second phase concerns Hayek's methodological writings in the 1950s. Hayek starts with the Popperian basic framework but in the heart it is the development of his early particular *sui generis* methodological position. The main change in this phase is that Hayek adopted the complexity language, he no longer adopted a dichotomous distinction on objective natural science and subjective social sciences. Hayek ([1955] 1967, [1964] 1967) adopted a continuum line spectrum of sciences with a lesser complexity degree (e.g, mechanical physics) and sciences with a greater complexity degree (e.g., economics, biology). The complexity degree is defined as the minimum number of explanation variables sufficient to reproduce the qualitative pattern of the analyzed object. The limitation to explanation and prediction in complex sciences is the same faced by the early defined social sciences.

A remarkable shared view between Hayek and Keynes, besides the general methodological grounds, is on the methodological role of models and the attempt to fulfill the empty parametric spaces with numerical econometric estimation to prediction and refutation of the general model. In this Hayek is in totally agree with Keynes. As Hayek ([1974] 1978, pp. 27-8; cf. Hayek, [1955] 1967, p. 16) wrote in his Nobel Memorial Prize Lecture:

> "I regard it in fact as the great advantage of the mathematical technique that it allows us to describe, by means of algebraic equations, the general character of a pattern even where we are ignorant of the numerical values which will determine its particular manifestation. We could scarcely have achieved that comprehensive picture of the mutual interdependencies of the different events in a market without this algebraic technique. It has led to the illusion, however, that we can use this technique for the determination and prediction of the numerical values of those magnitudes; and this has led to a vain search

> for quantitative or numerical constants. This happened in spite of the fact that the modern founders of mathematical economics had no such illusions. [...] I must confess that I still doubt whether their search for measurable magnitudes has made significant contributions to our *theoretical* understanding of economic phenomena - as distinct from their value as a description of particular situations."

However, if there is a remarkable methodological criticism to naturalism and positivism in Hayek and Keynes, there is a divergence in the positive methodological approach of each one. It is fair to say that much of the rejection of the Keynes' macro-aggregates approach by Hayek is grounded in his methodological views. In Hayek's interpretation, Keynesian macroeconomics is a particular manifestation of an influential general approach of philosophical scientistic justification. The creation of abstract homogeneous aggregates (aggregate investment, average price level, and so on) that represent the main economic causal relationships and that can be by definition measured in cardinal magnitudes appears much more scientific against the old price theory. The structure of relative prices, wages, and different profitability of different capital structures are by no means statistically measurable and cannot be expressed in terms of averages or in aggregate mass. Because macroeconomics can be measured, estimated, and can realize predictions based on econometric estimations, it had in the scientistic attitude a greater appeal.

It is not by chance, ironically, that Keynes' macro-approach gives rise *pari passu* to the formalistic econometric revolution. Hayek ([1966] 1978, p. 284) reminds this point saying that "it is rather an irony of fate that Keynes should have become responsible for this swing to macro-theory, because he thought in fact rather little of the kind of econometrics which was just then becoming popular, and I do not think that he owes any stimulus to it." The aggregate and average notions paved the road for more simplistic hydraulic models of simple and constant functional relationships between such aggregates. In this sense, the pseudo-exactness is conquested at the price of real limited knowledge of the complex relationships that really matter for scientific understanding.

However, Keynes is closer to Hayek in grand general methodological lines than Hayek's account suggests. It is in the specific subject of macroeconomics that the divergence is at the core of the controversies. The difference in positive methodological grounds certainly exist and marked the concurring theories, but it is more problematic in the specific question of macroeconomic theory.

This kind of agreement and convergence in general lines but disagreement and differences in more particular and lesser abstract theoretical issues seems the primary constant tone in Hayek and Keynes intellectual relationship. It appears in the controversies on macroeconomic coordination (first round and the missing round) and international monetary standard (the second round). This seems to be the major tone of the connection between both men.

This tone is repeated in the third remarkable convergence between Hayek and Keynes, namely, subjectivism. As discussed, subjectivism is firmly connected with the methodological features of Hayek and Keynes. For Keynes, economics as social and moral science has to deal with introspection and with values (ends). Motives, expectations, and psychological uncertainties are the raw material to economic models. The same is true for Hayek, the defining line of what constitutes social sciences is the subjective character of men and their relations. In human relations with their peers or to inanimate objects, things are what the acting people think they are. In subjectivism the intellectual pattern repeats. At the same time that exists grand lines of convergence in the importance of subjectivism, Hayek and Keynes derived different varieties of subjectivism. These differences are mainly due to the philosophical and social theoretical approach.

Hayek tried to base subjectivism as a consequence of his physiological psychology in *The Sensory Order* (1952b). He pursued a kind of scientific foundation for subjectivism in his theory of mind, in what could be called a scientific subjectivism (Caldwell, 1994). Keynes derived his social philosophy and his adhesion to subjectivism in his *Treatise on Probability* ([1921] 1973), in which he reasoned the belief and expectation formation as based on logical probability reasoning. Expectations based on conventions are the last resort in which beliefs are formed, this happens only when Knightian uncertainty is present (especially in the long period). When agents deal with limited knowledge but not with total ignorance, they can make rational subjective probability consistent expectations, independently of mere conventions. In this scheme of expectations, public institutions are crucial to form a resistance to social negative consequences of conventional behavior due to uncertainty. Public institutions have a key role to coordinate individuals' expectations, especially in regard to volatile psychological optimism and pessimism (and its economic consequences to investment). The formation of beliefs and expectations differ in the broad agreement to subjectivism (e.g., see Butos and Koppl, 1997, 2004; Carabelli and De Vecchi, 2001a).

For Lachmann (1983, p. 375), "[r]ather to the surprise of some of us, Keynes emerges as being more deeply committed to subjectivism than is his Austrian opponent." In Lachmann's view, it was Keynes that advanced with more commitment the consistent appreciation of subjectivism in economic theory after the 1930s. The notion of social facts as a human creative manifestation in an uncertain environment was very explored by George L. S. Shackle. Lachmann's justification for such is the contraposition of subjectivism by the complexity vision in Hayek. What Lachmann ignored is the central role of the psychology foundations in Hayek's thought, which grounded the subjectivist commitment in the individual sensory and social order. Complexity is a consequence of subjective grounds that human mind and relations have with objects and other people. Lachmann's position is somewhat understandable because Hayek's work in philosophical psychology was for a long time neglected.

The fourth convergence between Hayek and Keynes is relating the general political philosophical view and the social philosophy for a liberal world. Hayek and Keynes shared a deep conviction to the fundamental liberal values and principles that characterize the modern great, open, and extended society. However, they have different policy conclusions and recommendations derived from these shared common liberal *values*. Each one draws the line in different places between the legitimate and illegitimate state intervention, but both agreed that the extreme poles of negation of individual and economic liberties are excluded. The most intriguing and famous evidence of this convergence is Keynes' letter to Hayek on his impressions of *The Road to Serfdom* (1944). Keynes was crossing the Atlantic ocean on the way to the Bretton Woods conference that was delivered during the first three weeks of July 1944. In a letter of 28 June 1944, Keynes (1980, pp. 385-8) finished reading the book and wrote to Hayek:

> "In my opinion it is a grand book. We all have the greatest reason to be grateful to you for saying so well what needs so much to be said. You will not expect me to accept quite all the economic dicta in it. But morally and philosophically I find myself in agreement with virtually the whole of it, and not only in agreement with it, but in a deeply moved agreement. [...] I should say that what we want is not no planning, or even less planning, indeed I should say that we almost certainly want more. But the planning should take place in a community in which as many people as possible, both leaders and followers, wholly share your own moral position. Moderate planning will be safe if those carrying it out are

> rightly oriented in their minds and hearts to the moral issue. This is in fact already true of some of them. But the curse is that there is also an important section who could almost be said to want planning not in order to enjoy its fruits but because morally they hold ideas exactly the opposite of yours, and wish to serve not God but the devil. [...] What we need is the restoration of right moral thinking - a return to proper moral values in our social philosophy. If only you could turn your crusade in that direction you would not feel quite so much like Don Quixote. Dangerous acts can be done safely in a community which thinks and feels rightly, which would be the way to hell if they were executed by those who think and feel wrongly."

Again the convergence pattern in abstract general principles is remarkable between Hayek and Keynes. But the detailed, specific application of these general moral values agreements are problematic in the sense that evidentiates the more profound social theories differences. Although Hayek and Keynes agreed on the general principle of liberal values, each one would draw the line between the legitimate public direct intervention in different places. This is based on the differences in philosophical and economic foundations of respective social theories. They agreed in the end values of a cosmopolitan liberal market society, but the means to these values are distinct. Hayek took Keynes' challenge to build a coherent liberal political theory that addressed the question of demarcation between legitimate and illegitimate public intervention. First, this was the theme of the positive reaffirmation of the liberal tradition values and principles in *The Constitution of Liberty* (1960), the demarcation principle was the restating of the rule of law as the main institutional principle of a liberal society. After, there was a kind of update of the liberal tradition to the modern problems and the welfare state in the trilogy on *Law, Legislation, and Liberty* (1973-9).

The fifth and last convergence is the somewhat hide common theoretic emphasis on the many coordination problems levels in the economic and social realm. The great theoretic intersection point between Hayek and Keynes is on the implicit appreciation of the connections that fulfill the notion of economics as a coordination problem. A major example of this connection is the profoundly distinct views in macroeconomics, even though both build their theories in the loose joint of money exchanges. The monetary disturbance is a key destabilizing factor in both Hayek and Keynes macroeconomics. A monetary economy demands considerations that have to deal with

the secession of the real goods market with strong elements of price coordination and the world of pure expectational credit. The introduction of money loosens the connections in intertemporal consumption and investment. In Keynes, this is seen in the discoordination between aggregate savings and investment. In Hayek's view, the discoordination appears not in aggregate but relative organic terms in the capital structure of production and intertemporal preferences. Expectations, uncertainty, and ignorance are introduced *pari passu* with money. This is important in all levels of analysis, in particular at the macro-level. All this is shared by Hayek and Keynes in the first round confrontation in 1931.

One contrasting permanent key aspect for the abyss in the concurring policy conclusions is the relevant time period in analysis. Keynes' theory explicitly is about the short period, he builds his entire theory on the assumption that capital stock in the economy was fixed and constant. In short period the nature of the macroeconomic problem changes significantly, movements of relative prices and profitability in the various stages of capital production and in money-wages do not cause changes in the capital structure simply because these changes could not realistically occur in the relevant time. There are idle capital and productive installed capacity, the adjusting variable is labor given a capital structure. Investments decision takes long time periods to be realized and matured, simply short-period changes in relative prices are not to be expected to be so effective in changing the heterogeneous capital structure.

In Hayek's case, his theory is only applicable in relevant time periods where capital structure movements can be realized. This relevant temporal realm in the analysis is perhaps why Wicksell was so conservative to integrate his price level determination and cumulative process to a long period business cycle theory. In this sense, Keynes internalized more than Hayek the Wicksellian spirit of the temporal relevant analysis. In Wicksell's scheme, monetary effects on relative prices and its impact in the allocative structure are transitory and do not have permanent consequences to the real production structure, linking cycle theory to relative prices monetary disturbances and its effects on capital structure due to wrong knowledge signals is not compatible with Wicksell's initial vision.

This temporal dimension neglect is possible one of the main fragilities of Hayek's capital based macroeconomics. Although Hayek stressed that his theory was also valid and applicable in the short period because the same qualitatively maladjustment rationale, this seems an unrealistic account. His failure to recognize the relative long period temporal dimension in his theory maybe

was caused by excessive focus on the relative prices coordination process, this hyperopia vision to other kinds of macro-coordination problems where relative prices played a minor role was a closed door to Hayek. This seems largely due to Mises' interpretation of Wicksell. Hayek neglected discoordination problems in non-monetary variables as the rate of saving or investment even when the quantity of money was constant, i.e., problems relating to the natural rate. In both Hayek and Keynes, the business cycles problem can be rationally reconstructed as an intertemporal coordination problem in the macro level. The role of the rate of interest as a price coordination mechanism did not provide the right kind of knowledge to savings and investment coordination.

For Keynes, in the short-period the interest rate intertemporal coordination function is totally flawed due to interest inelasticity and liquidity preference. Even in the long period liquidity preference in an uncertain world prevents the natural rate to decline to a level where aggregate investment and savings are compatible with full employment. The price mechanism is flawed to create the relevant knowledge to the intertemporal coordination of savings and investment. Later, the focus on disequilibrium tendencies is on nominal rigidities of fixed-price markets, especially the labor market. In a fixed-price market, the adjustment to changes in circumstances (e.g., fall in aggregate demand or deflationary pressures) and thus the multiplier vicious circle can be explained even in a general equilibrium framework. As prices do not provide the relevant knowledge, trading occurs in false prices (i.e., false knowledge) that do not correspond to the all potential gains of trade in the various different marginal substitution rates. Therefore, potential gains of transactions are not made, potential sellers did not make their desired sales. This enforces their effective demands in all the other markets. By the multiplier effect, this initial discoordination effective demand failure is amplified in all the other interdependent markets. Disequilibrium properties of an initial impulse are amplified by the system, coordination failures necessarily involve a vicious circle of destabilization of the system.

It is in this sense that Keynes attacked Hayek's review of the *Treatise*. In this context there is no automatic coordination property by the market institutions that counterbalance the problems subject to the false knowledge transmitted into the system. There is no endogenous automatic self-adjustment property by the price mechanism to return to a previous full-employment equilibrium position after an effective demand failure. For the discoordination feedback in the system it is only sufficient that in general equilibrium trade occurs at false prices where not all the desired transaction occurs, i.e., where there is no *deus ex machina* like the Walrasian auctioneer. Fixed-

price markets or downward rigid money-wages assumption are not necessary, neither are other institutional constraints assumptions to price flexibility like labor unions or minimum wage laws on maximizing individual utility to generate and explain finite price velocities. As Leijonhufvud (1967, p. 403) noted, "[i]t is sufficient only to give up the equally strong assumption of instantaneous price adjustments. Systems with finite price velocities will show Keynesian multiplier responses to initial changes in the rate of money expenditures." In this interpretation, fixed-price markets are mainly consequence and not cause of the Keynesian quantity adjustment pattern (e.g., money-wage rigidity is seen as a policy prescription and not as a behavioral assumption).

With a developed banking and credit system, these discoordination properties are even more relevant. In a disequilibrium situation, credit means of payment could expand or contract at an increasing speed at the discretion of the individual central system traders - practically without any basis on the real cash means of settlement. Thus, inflationary tendencies could emerge and be sustained even without any increase in the monetary stock and *vice versa*. Any sufficient interruption in cash and credit flows could produce extreme restrictions on trade and therefore effective demand failures. "This could lead, in turn, to rapid declines in output and employment, and to consequent price deflation, resulting eventually in widespread insolvency among trade [central local coordination] specialists as well as bankruptcy of many individual economic agents. In this kind of world, corridor phenomena might well be of major consequence; i.e., sustained and serious coordination failures might occur because insolvency of trade specialists would temporarily eliminate from the economy market homeostats that are essential for effective coordination of the notional economic plans of individual agents" (Leijonhufvud and Clower, 1975, p. 187).

Discoordination negative feedback tendencies are naturally the consequence of fallible and imperfect knowledge about the market-clearing price. Searching and information costs and mental past reservation price also influenced the coordination failure. In fact, demonstrating coordination failures in a theoretical framework that assumes *ex ante* perfect knowledge is an easy task, it is only sufficient to dismiss the *deus ex machina* assumption of the *tâtonnement* mechanism. It is sufficient to assume that the "the generation of the information needed to coordinate economic activities in a large system where decision making is decentralized will take time and will involve economic costs" (Leijonhufvud, 1967, p. 404). Thus, the philosophical difference between Keynes

and his neoclassical opponents is not that individuals do not maximize utility or that money price is rigid in fixed-price markets. “It is not necessary to deny the existence of a vector of nonnegative price and interest rates consistent with the full employment. To be a Keynesian, one need only realize the difficulties of finding the market clearing vector” (ibid.).

However, such a view is in some degree a trivial one when it is compared with the fictions of the neoclassical knowledge postulates. The real philosophical economic relevant problem is not that individuals did not have perfect knowledge, but that is no *a priori* reason to assume that individuals have *any* kind of knowledge at all of the subjective expectations of other individuals and of external objective reality. The coordination process is a process of creation, dissemination, and retention of subjective, dispersed, and tacit knowledge. These processes are mainly a function of the institutional environment in which activity and exchange take place. The price system is perhaps the main, but not the only, communication institutional mechanism that creates a positive feedback coordination relationship in the economic system (Hayek, 1945). Even the price system is embedded in an immense institutional structure that enables such coordination properties, there is no relevant and genuine price formation and dissemination without private property and profit and loss accounting.

In general philosophical terms, Hayek could see in more explicit and articulate notion the nature of the coordination problem based on lack of knowledge. Thus, it is in this sense superior to Keynes. Nevertheless, Hayek ignored situations where the knowledge problem could be manifested in other ways that did not correspond to the more traditional price theory. He did not stress negative outcomes for a spontaneous disorder that are the result of human rational action but not human design. Effective demand coordination failures due to the intertemporal coordination failure is not contemplated by Hayek in this sense.

These effective demand failures are especially important in deflationist spirals. These are aggravated in an increasing scale returns and non-linear input-output environment system with strong complementary relation between firms. In addition, general economic productivity in these environments is highly correlated with the activity level, i.e., aggregate demand. Total factors productivity is pro-cyclical and depends on the level of aggregate final goods demand. In a negative aggregate demand shock, intertemporal coordination failures are boosted in spirals of effective demand failure by the multiplier. Keynes’ macroeconomic theory is a depression theory. However, macro-coordinations problems have in the general philosophical sense the same nature

of micro-coordination problems, both are problems of knowledge and how knowledge is created, disseminated, and retained by the relevant actors in the system.

This is somewhat surprising because Hayek's appraisal for the knowledge problem is noteworthy. Hayek attempted to build an entirely macroeconomic theory based on heterogeneous subjective capital theoretic foundations which demand processes of creation, transmission, and storage of subjective, tacitly, and dispersed relevant knowledge between individual actions plans to coordinate the capital structures in a cohesive pattern. The main possible reason for Hayek's negligence and failure to praise the knowledge implicit coordination problem in Keynes' theory is because it was perhaps *too* implicit. It is difficult to Hayek conciliate the knowledge-based macro-problems with the too much aggregative methodology by Keynes. Hayek opposed the aggregative approach because this procedure hides the economic problem of knowledge in the individual realm. Hayek developed an entire research program to the various institutional responses that the basic economic coordination problem demands. Hayek's analysis emphasizes the emergent coordination properties within the many basic institutions that formed the broader institutional architecture in which individual activity takes place in modern liberal society. Keynes lacked this or any type of systematic microfoundations and political philosophy. He also lacked an appreciation for the micro-coordination aspects of individuals' plans in his rather intuitive, conjectural, and sensible aesthetic approach for the problems of his day.

Hayek incorporated the non-addictively causes and organically emerged coordination problems, but only in the micro realm level, all the short period macro-knowledge problems are reduced in some sense to these micro-based action plans of individuals. Hayek failed to see the possibility of other kinds of coordination problems in some kind of aggregative scope that is independent of the addictively microeconomic behavior. In his turn, Keynes seems to only see these macro-aggregative problems and ignored all the rest - maybe because of the spirit of the times and his policy-oriented preoccupations. In any case, this is the justification for the aggregative measures. The different coordination problems in different aggregative scopes demand different institutional and theoretical responses. However, different theoretical responses do not deny a common cohesive theoretical body based on coordination problems.

Indeed, Leijonhufvud (1968, p. 401) seems to advance this notion when he points out that "[w]hat is required, I believe, is a systematic investigation, from the standpoint of the information problems stressed in this study, of what elements of static theory of resource allocation can without further

aid be utilized in the analysis of dynamics and historical systems. This, of course, would be merely a first step: the gap yawns very wide between the systematic and rigorous modern analysis of the stability of simple, 'featureless,' pure exchange systems and Keynes' inspired sketch of the income-constrained process in a monetary exchange-*cum*-production system. But even for such first step, the prescription cannot be to 'go back to Keynes.' If one must retrace some steps of past developments in order to get on the right track - and this is probably advisable - my own preference is to go back to Hayek. Hayek's Gestalt-conception of what happens during business cycles, it has been generally agreed, was much less sound than Keynes'. As an unhappy consequence, his far superior work on the fundamentals of the problem has not received the attention it deserves."

VI. EPILOGUE

The first frontal clash between Hayek and Keynes in 1931 was unique in scale and influence. Although this first round between both men was very loud and had intense repercussions in the profession as a whole since the date, there are two other intellectual historiographical episodes in which Hayek and Keynes crossed swords in some sense. One is the indirect confrontation between both men regarding the new developments in their respective theories after the first round. Namely, Keynes' *The General Theory* (1936) and what Hayek planned to be his decisive new model grounded in a more solid capital theory without the frailties of the time mensuration component, what became *The Pure Theory of Capital* (1941). This was what we called the missing round because there was no public direct confrontation with the active engagement of both sides. Nevertheless, the intellectual conflict still was very meaningful but only in indirect terms. In addition, a lesser known episode is the central and direct clash between Hayek and Keynes on the re-foundations of the international monetary order in 1943. This clash is somewhat neglected in the secondary literature involved but is very important because it was the first direct frontal public debate with engagement of both sides after the first round. We called this debate the proper second round between Hayek and Keynes.

In the first round, both Hayek and Keynes disputed in some degree the Wicksellian heritage of intertemporal coordination failures of savings and investment by the rate of interest. Hayek's main criticism is that Keynes incorporated the Wicksellian cumulative process of price level determination but did not incorporate the capital theoretical microfoundations of the natural rate

developed by Wicksell drawing from the Austrian capital theory tradition, especially from Böhm-Bawerk. In general, the cause for this omission of the Austrian capital theory literature is placed mainly in the English tradition insularity to the economic theory developments in the Continent. The failure of Keynes in particular is placed in his not complete domain of German, the main language in which Wicksell and Böhm-Bawerk wrote. Keynes accepted Hayek's criticism about a lack of capital theory in his own theory but maintained his position of coordination failures in the loan funds market by factors related to the introduction of financial and money markets in the analysis. Moreover, Keynes in the response also attacked Hayek's book, *Prices and Production*, in which he stated that by starting with the wrong assumptions on reality a remarkable logician ends up with nonsense conclusions. As soon as in March 1932, with the entrance of Sraffa in the debate, Keynes changed his mind and abandoned the positions of *Treatise* in the controversy. At the same time, he started to work in a new book, the *General Theory*.

Hayek apparently is the winner of the first round. Hayek had appointed a real failure of Keynes in ignoring the Wicksellian roots in capital theory. Be that as it may, the controversy ends up with a comparison of two models with alleged critical failures. Hayek soon sensed that the main difference between him and Keynes was grounded in the capital theoretical micro-foundations. Therefore, Hayek went up to a big book project in which he planned to restate the capital theoretical literature in the English speaking world. This was planned to be a new development of capital theory drawing from and systematizing the roots of Böhm-Bawerk, Wicksell, and Mises in the volume I. The volume II was planned to introduce these new capital theoretical foundations into monetary theory and the business cycle.

In the writing process, Hayek (1941, p. vi) perceived that the very simplification that his predecessors had "such far-reaching consequences as to make their conceptual tools almost useless in the analysis of more complicated situations." The main deficiency was the attempt to introduce the temporal aspect dimension in the capital structure, resumed in the average period of production. The task showed itself much more painfully difficult than the initially foreseen and Hayek did not complete his initial project, only publishing a part of the what would be the volume I in *The Pure Theory of Capital*. Keynes, of course, had developed his aggregate income determination scheme five years earlier. This was the missing round. Hayek did not respond directly, nor wrote a review of *General Theory*. The main reason for such absence is that for Hayek the only proper response to Keynes' new theory was to be advanced in the positive theoretical ground, in developing his

own theory and in deepening his foundations. The nature of the *General Theory* did not permit punctual and specific criticism, but an account of the whole approach taken by Keynes.

In fact, Hayek responded to some of the criticisms made by Keynes ([1936] 1973, pp. 79-81) in *General Theory* on forced savings. This came in his *Profits, Interest, and Investments* (1939) where Hayek introduced unemployment of factors of production in his model. In addition, Hayek also criticized the liquidity preference theory in part IV of *The Pure Theory of Capital*, but in all these were only indirect confronts incomparable with the first round. Keynes is the incontestable winner of the missing round that had all the probabilities to occur but did not. Hayek missed the timing and failed to give a proper response to the *General Theory*. The rest is history. The second round between Hayek and Keynes, defined as a direct public controversy with the engagement of both sides, only would occur in 1943 in the context of the international monetary reform proposal by Keynes and Ernst F. Schumacher on the International Clearing Union. This round was less influential in comparison to the first round and the missing round. Nevertheless, it is important to illustrate as specific evidence the intellectual relationship shared by Hayek and Keynes. Hayek's proposal was to adopt a commodity currency reserve, an idea that Keynes himself had initially warmly received in the late 1930s.

The multi-basked commodity reserve would be a more efficient system to counteract deflationary pressures and trade cycles mainly because the multi-product commodity unit would be more elastic to money demand and would better coordinate liquidity preferences in both individual *and* aggregate societal level. The old gold standard did not provide an elastic currency supply feature (provoking excessive price adjustment and intertemporal coordination failures) neither provided as institutional mechanism the means to augment liquidity in the societal level when necessary. Keynes' main criticism of Hayek's proposal was that any commodity currency reserve arrangement would impose from with-out the international price level. As Frank Graham pointed out, entering the debate, this is not necessarily true unless the reference country fixed exchange rate was not allowed to devalue. Keynes acknowledges Graham's argument and agrees with some terms of Hayek's proposal in the long run, but invoked his proposal as suited in a pragmatic and conjectural time.

The three rounds of intellectual conflict have a pattern that is the agreement in certain general grand philosophical and moral lines of the problem in analysis but disagreement and profound differences in more particular and lesser abstract theoretical and practical issues. The major

theoretical philosophical element in common between Hayek and Keynes, in which the general grand line of agreement manifests itself, is the problem of coordination understood as derived from lack of creation, transmission, and storage of relevant knowledge in the various possible contexts.

In the first round, the coordination problem is set by Keynes in the failure of the interest rate to coordinate intertemporally savings and investment in a monetary economy of production. In a money-credit economy with developed financial markets, the conventional money rate is persistently above the long-run natural rate. In the context of the declining return and the rate of investment in Britain after the First World War, the situation required a decline of the natural rate but the average conventional market opinion in the financial markets that determined the money rate emulated the previous pre-war context when the natural rate was higher. The speculational movements in financial markets regarding the fall of money rates created a failure for a sufficient natural rate adjustment to the new fundamentals scenario. Thus a failure to coordinate savings and investment at full employment. Money rates higher to the new natural rate created an excess of savings incompatible with full employment equilibrium, savings excess do not turn to new investments but become trapped and sterilized in the speculative financial markets on the expectational movements of interest rates.

According to Hayek, the problem is also of an intertemporal coordination failure by the rate of interest in a credit economy, but the central disturbing element comes from the expansionary credit policies by banks that are not compatible with the natural rate movements. The general relevant pressure for such policies is for excessive credit expansion in which the money rate artificially turns to be lower than the natural rate for a relevant period of time. Thus, new money rates false signalized to agents that consumers' time preferences changed, transferring consumption to the future. Entrepreneurs are fulfilled with wrong knowledge about time preferences, this is transmitted to the rest of the system augmenting the extension and deepness of the capital structure of production. Higher orders goods become more profitable and economic productive resources are transferred from lower orders in the capital structure to the higher orders. The fact that the consumers' time preference did not really change is noted when the new investments are faced with not sufficient real savings to finance the new projects, many investment projects need to be revised or abandoned. Overinvestments in relation to real savings then must be equilibrated in the system by forced savings, higher general prices to the real production possibilities, i.e., inflation.

In the missing round, Keynes introduced the speculative discoordination element in the money demand function by liquidity preference abandoning the natural rate and the loans fund market as a reference even in the long period. The natural rate and loans fund market departure hides the intertemporal coordination problem. The speculative element in *Treatise* is an inverse relation between speculative money demand and the interest rate, in *General Theory* the speculative money demand depends on the money rate departure to the average conventional expected rate. This made the nominal price rigidities, especially in the labor market, to overcome the coordination problem in some sense.

More important than Hayek's painful and incomplete struggle to create a new capital theory is the epistemic postulation of fallible knowledge in the neoclassical concept of equilibrium in "Economics and Knowledge" (1937). Hayek was capable of formulating in an analytical consistent and explicit way the philosophical economic problem in terms of coordination involving the creation, transmission, and storage of subjective, dispersed, and tacit knowledge. Hayek created an abstract analytical structure in terms of knowledge to understand the relevant economic problems in various levels and domains of analysis. This can be seen in the microeconomic level of agents' plans coordination by price mechanism in the absence of changes in preferences and tastes and with constant institutional background (e.g., neoclassical price theory and the general domain of general equilibrium theory) and can be seen in an analysis where the institutional framework is in itself a changing dependent variable with the impacts of different institutional structures upon the use of knowledge in society. Therefore, the meaningful empirical coordination problem is about institutional propositions of creation, transmission, and maintenance of relevant knowledge in the system. Thus, the knowledge problem demands necessarily an institutional response. In this sense, Keynes' emphasis on aggregate macro-coordination failures can be seen as a subset of the general knowledge problem proposed by Hayek as Leijonhufvud (1968) analysis implicitly suggests. One practical application example of this institutional problem is the second round on the international monetary order.

The second round between both men is not about an abstract and general theoretical problem, but practical design of an institutional framework for better international monetary order post-Second World War. Hayek admired some qualities of the gold standard, the standard itself was formed by emergent coordination properties so characteristic of money and other market economy essential institutions. Hayek admired especially two features of the gold standard, the automatic and

impersonal character of the system with clear and predictable rules of operation and the qualitative right reaction in relation to changes in its price. The failure of the standard is first an elasticity failure in desirable quantity variation of gold. Second, the gold standard propagates economic fluctuations and intertemporal problems because the necessary quantity only becomes available when is often not needed anymore. This extra-quantity becomes a permanent available monetary base for a new expansionary policy. Hayek believed that the commodity reserve currency would be a better institutional design proposal because it maintains the qualities of the gold standard and attacks its frailties.

Keynes concedes that the commodity reserve currency is indeed a better system than the gold standard (more price-elastic) and even admitted that his own sympathies always have fallen in this way. However, Keynes does not see the proposal as feasible in the contemporary 1940s practical policy. First, Keynes aimed to discover some elastic, not rigid (as the gold standard) and yet orderly arrangement to link national currencies to an international currency, with the flexibility of changing exchange rates to the international unit to accommodate different domestic and contextual shocks. Second, Keynes is extremely skeptical of any international monetary order that exercises some kind of pressure into national prices levels. The international monetary standard objective is not a rigid fixed exchange rates system but stable national prices levels. It was such rigidity on a fixed exchange rate in relation to pre-war gold parity that provoked the disastrous economic consequences in England in the 1920s, it prevented the natural rate to fall. Third, the political pragmatic atmosphere in the 1940s simply denied any chance of the commodity reserve proposal development. *Au contraire*, for Hayek the commodity currency reserve would be more politically feasible than the Keynes' proposal for the Clearing Union. Fourth, and last, the particular timing of post-Second World War was bad for the commodity reserve because of the scarcity of raw materials.

Hence, the difference in the second round is subtle to the initial political and pragmatic marginal conditions of implementation for each institutional international monetary arrangement. There was not much difference in the theoretical general grounds of what the best international framework is. In an institutional analysis, the historical and contextual particular circumstances in which the problems of coordination and knowledge are inserted are important to the proposed arrangement. This seems to be the case in the second round on the international monetary order between Hayek and Keynes.

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Economics, Knowledge, and Ignorance: The case of F.A. Hayek and T.W. Hutchison

ABSTRACT. In the methodological disputes of the 1930s, Friedrich A. Hayek and Terence W. Hutchison were on opposite sides. Hutchison is well-known for being the first economist to introduce the influences of logical positivism and a testability criterion into economics, he was mainly reacting in opposition to Ludwig von Mises and Lionel Robbins. Although the severe critics to Hayek in the 1930s, in Hutchison's mature methodological writings a remarkable convergence is noticed with Hayek's methodology of complex phenomena and its emphasis on the limitations of explanation, prediction, and control in social and economic sciences. This essay explores the connections, similarities, and differences between Hayek's mature methodology and Hutchison's later writings on a humbler scope of economics than he advocated. It is argued that Hayek and Hutchison have in common an appreciation for the epistemic dimension of fallible knowledge, ignorance, and uncertainty. Even though each one internalizes this notion differently in their singular and particular methodological position.

Key-words: Friedrich A. Hayek, Terence W. Hutchison, knowledge, ignorance, falsificationism, inductivism.

JEL: B25, B31, B41, B53.

I. INTRODUCTION

In his authoritative intellectual biography of Friedrich A. Hayek, Bruce Caldwell (2004, pp. 202-4, 230) mentions the surprising intersecting points in relation to some methodological themes between Hayek and Terence W. Hutchison. A special convergence of positions is noticed in the mature methodological positions of both authors on the limitations of explanation, prediction, and control of social sciences in general and economic science in particular. Caldwell (2004, p. 230, f.n. 16) writes about a quoted Hutchison's passage that "Hayek would disagree, I think, with the claim that forecasting was a chief aim of economics, although he would certainly acknowledge it as an important goal. As for the rest of what Hutchison wrote [in the passage quoted], Hayek himself could have written it. Although their paths to them were different, the conclusions reached by Hayek and Hutchison ended up being remarkably similar. The similarity may account for what Hutchison was so eager to try to convince Austrians (perhaps even Hayek himself) that Popper, rather than Mises, was the right person to follow regarding methodology."

However, Caldwell does not present how Hayek and Hutchison reached such remarkable similar conclusions by radically different paths. Hutchison seems *prima facie* to have a complex and idiosyncratic intellectual relationship with Hayek. A notorious example is his (Hutchison, 1981, 1992a, 2009) interpretation of Hayek's famous paper on "Economics and Knowledge" (1937) as a methodological U-turn between the so-called Hayek I (Misesian-Wieserian) and Hayek II (Popperian falsificationist). The debate between Hutchison and Caldwell (1988, 1992a, 1992b, 1994a, 2006, 2009) on the nature of the U-turn and Popper's influence on Hayek evidenced the former interpretation as fragile. Hayek himself in letters to Hutchison and Caldwell (reprinted in Caldwell, 2009, pp. 323-4) emphasized that he never accepted Ludwig von Mises' apriorism either pre or post 1936, the year that he would come to know Karl Popper's work. Hayek also denied any influence of Popper in his decisive essay, mentioning that his "definitive hypothetico-deductive view" was already present in *Collectivist Economic Planning* (1935a). In this book, Hayek addressed the difference of the empirical element between social and natural sciences, thus contrary to falsificationist methodological monism.

According to Hutchison (2009, pp. 307-8; see 1938, pp. 131-7, 155), "in 1935 he [Hayek] was still pretentiously claiming that thanks to introspection, the social sciences could claim firmer foundations than the natural sciences, an idea he probably owed to [Friedrich von] Wieser." However, the passage that Hutchison refers to does not seem to corroborate with his thesis that

Hayek defends an infallible apriorism. Hayek ([1935b] 1948, p. 126-7) claims that the essential difference of the empirical element "is that in the natural sciences the process of deduction has to start from some hypothesis which is the result of inductive generalizations, while in the social sciences it starts directly from known empirical elements and uses them to find the regularities in the complex phenomena which direct observations cannot establish." Hayek points out that there is more evidence of his pre-Popper thinking contained in his inaugural lecture at the London School of Economics (LSE), "The Trend of Economic Thinking" (1933) (May 15, 1983, Hayek to Hutchison, reprinted in Caldwell, 2009 p. 323-4). Later in his mature methodological position, Hayek abandoned the dichotomy of social and natural sciences for one of a continuous spectrum of lesser and greater phenomena complexity degree, yet preserving the particular and limited character of explanation and prediction of the so-called complex phenomena.

Ironically, for Hutchison (2009, pp. 307-8) these two references mentioned by Hayek (i.e., 1933; 1935a, pp. 126-7) are the major evidence of Hayek's adherence to Misesian apriorism, exposing the dogmatic and infallible notion of knowledge of the so-called Hayek I. Hayek sees evidence of his pre-1937 thinking that are compatible with Popper, thus dismantling Hutchison's thesis between Hayek I and Hayek II since these were not introduced by the contact with Popper ([1935] 1959) in 1936. However, from the same textual evidence, Hutchison sees elements of a supposed apriorism and anti-fallibilism pre-1937. Where Hayek sees evidence of his hypothetico-deductive view before the contact with Popper and then invalidating the U-turn in 1937, Hutchison understands a dogmatic apodictic apriorism derived from Mises and Wieser. This position would later change to a fallible character with the introduction of the empirical element in economic theory in 1937, validating the U-turn. Nevertheless, Hayek ([1942-4] 2010, pp. 99-107; [1943] 1948, p. 59) in his 1940s methodological writings developed the distinction between the social and natural sciences on the nature of empirical element. Social science deals with essentially subjective facts. At the same time, Hayek ([1942-4] 1952, p. 49-50) puts as a founding element of the social sciences analysis and investigation the fallible character of an intrinsically subjective, dispersed, and incomplete knowledge.

Hutchison's methodological thinking is much more diverse and heterogeneous than the complete passive acceptance of Popperian falsificationism. Hutchison is very close to a British skeptical inductive-empiricist tradition, his intellectual pluralism obscures and confuses his interpretation at first. Hutchison, for example, has a complete and deep aversion to the hypothetico-deductive or

deductive mode of theorizing, even in Popper. He associated this notion necessarily with the anti-inductive nature of knowledge and therefore to the anti-fallible character of economics and social sciences. Hutchison identified in Hayek's proto-vision of a definitive hypothetico-deductive view such a symptom *pari passu* with the Misesian-Wieserian apriorism (see Hart 2002, pp. 366-8; Hutchison 1992b, pp. 57, 192). What Hutchison ignores in his interpretation is that Popper also shared the hypothetico-deductive method. The association between hypothetical-deductive method and apriorism in the context of his interpretation of Hayek is logically incompatible with his own thesis *stricto sensu*. There is a confusion of feelings and impressions in Hutchison's argument, one that naturally associates the fallibility of knowledge with inductivist testability (Hart, 2002, p. 368). Hayek's extensive methodological writings in the 1940s also invalidate Hutchison's supposed U-turn. Hayek deepens the same particular methodological notions that Hutchison thinks are elements of his apriorism. Thus, if Hutchison is right, it would be a U-turn of U-turn? The reconstruction thesis advanced by Hutchison seems to have been misguided in all-encompassing ways. How could Hutchison be so mistaken about Hayek's methodological position?

The primacy of empiricism and falsificationism in Hutchison's thinking is tied to empirical testing and validation of falsifiable propositions as the best (and perhaps the only) way to internalize the fallibility of human knowledge. If a scientific theory does not prohibit any event, then there is no testable empirical content. Therefore, it is not fallible and has little or no practical applicability in the real world. Moreover, if it is not fallible it can only be dogmatic. According to Hutchison, the relationship between falseability and empirical content is *the* central message of Popper. It is in these terms that his thesis on Hayek's U-turn must be appreciated (Hutchison 1937b, p. 651, f.n. 1; 1988; Hart 2002, p. 366). Hutchison associated Hayek's (1937) epistemic postulation of fallible knowledge as necessarily a Popperian falsificationist turn because he understood falsificationism as a synonymous to fallibilism. Hutchison understands fallibilism as necessarily embedded in the search for greater empirical falsifying content.

In this essay, we argue that Hayek and Hutchison essentially share the same central epistemic position of fallible knowledge. In consequence, both men end in similar methodological conclusions that emphasize the limitation of knowledge in the realm of explanation, prevision, and control in social phenomena. However, fallibilism is interpreted by Hutchison as inseparable from the inductive falsifying empirical confrontation. This is not entirely shared by Hayek in his methodological writings about complex phenomena.

Although Hayek and Hutchison ended with similar conclusions of knowledge limitation and the leading role of ignorance and uncertainty in economic science, both explore different trajectories and methodological justifications for their mature positions. Hayek's path comes from the epistemic postulation of fallible knowledge in "Economics and Knowledge" (1937), which will mark the core of his research program based on the coordination problem and his particular development in the methodology of complex phenomena. The path that Hutchison traced is marked by an aversion to apodictic aprioristic knowledge and the deductive method, which he regarded as a dogmatic, theoretical and practical limiter, and anti-fallible by definition. He placed at the center of his methodological concerns the inductivist-empiricist emphasis, understood almost as synonymous with knowledge fallibility. For Hutchison, empiricism and inductivism in the dynamics of Popperian falsificationism seem to be a natural main embodiment of knowledge fallibilism in economic science.

II. HAYEK ON THE EPISTEMIC NOTION OF FALLIBLE KNOWLEDGE, EQUILIBRIUM, AND THE COORDINATION PROBLEM

The epistemic notion of fallible knowledge is central in the extensive and wide intellectual research program of Hayek. It is the introduction of the notion of subjective, tacit, and disperse knowledge (i.e., fallible) by Hayek ([1937] 1948, p. 36, 50; [1945] 1948, pp. 77-9, 83) in the analysis of the concept of neoclassical equilibrium that allows the emergence and intelligibility of the so-called knowledge problem. The knowledge problem reports to which are the best institutional mechanisms that best create, transmit, and store relevant knowledge for the coordination of inter-individual plans. It is in the mechanisms of creation, gain, and transmission of knowledge that there is the introduction of the empirical domain of economic theory, that is, "the empirical element in economic theory — the only part which is concerned, not merely with implications but with causes and effects, and which leads therefore to conclusions which, at any rate in principle, are capable of verification — consists of propositions about the acquisition of knowledge" (Hayek [1937] 1948, p. 33). The problem arises insofar as Hayek perceives an illegitimate logical transposition of equilibrium theory between individual tautological equilibrium and societal causal genetic equilibrium.

An individual is said to be in equilibrium when his action plan is logically ordered in a relation of means and ends, i.e., when the actions of the agent are consistent with other means regarding the same desired end. As the knowledge of reality by the individual is not available in a given and objective way because knowledge is subjective, in equilibrium the individual action plan will be coordinated internally insofar as the mutual consistency of his actions. These actions are based on the individual's subjective interpretation of reality. In a situational individual logic of action, if the actions taken are subjectively rational these are *a priori* consistent with the external data as perceived by the individual. Individual equilibrium is defined in minimum subjective rationality because of the subjective interpretation of reality. If the subjective interpretations are not compatible with the external reality, the actions cannot be carried out and the equilibrium is undone. However, until the operational checking with external reality, the individual equilibrium can be tautologically defined because the mutual consistency of actions and expectations is subjectively interpreted.

In the case of inter-individual or societal equilibrium, by analogy the equilibrium can also be defined as being the consistency between the various individual action plans. Hayek identifies two problems in the transition from individual to societal equilibrium. The first problem is that different agents will have different subjective expectations of the external world, so different agents will have conflicting interpretations regarding external reality. Hence, there must be compatibility of individuals' subjective expectations into a coherent intra-plans. In addition, there must be a coordination of the aggregate intra-coordinated set of plans with the objective external reality. Each individual agent interprets the subjective expectation of other agents in relation to the world as being itself an objective knowledge of the external world. The inter-individual equilibrium needs intra-plans coordination (coordination of divergent subjective expectations) and coordination of the cohesive aggregate intra-plans with objective external reality to carry out the planned actions successfully.

The neoclassical theory of general equilibrium defines collective equilibrium as nothing more than the horizontal sum of all individual equilibria. There is an unjustified extrapolation of the qualitative conditions that defines individual equilibrium for the analysis of collective equilibrium. For Hayek, the crucial hypothesis that underlies this state of things in general equilibrium theory is the perfect objective knowledge given to all agents. With perfect knowledge of the subjective expectations of other agents and external reality, the notion of equilibrium as the compatibility of

different plans and their problems are solved *ex hypothesi*. The aspects of individual tautological equilibrium returns. The notion of social equilibrium can then be understood as where there is perfect foresight (or knowledge) of the subjective expectations of other agents. This introduces the empirical element of tendency or not to the equilibrium that is capable in principle of verification or falsification.

In other words, "[t]he statement that, if people know everything, they are in equilibrium is true simply because that is how we define equilibrium. [...] It is clear that if we want to make the assertion that under certain conditions people will approach that state we must explain by what process they will acquire the necessary knowledge" (Hayek, [1937] 1948, pp. 45-6). Neoclassical equilibrium has by implicit definition the *ex ante* elimination of the two levels of coordination problems of inter-individual plans. It assumes as a hypothesis the own definition of the resolution of the "real problem of the philosophical approach to the social sciences" (Hayek, 1983, p. 423). That is, if and how ignorant agents can via institutional mechanisms of discovery, communication, and storage of knowledge have the correspondence of their subjective expectations with the objective facts of the external world (i.e., tendency or not to equilibrium).

Hutchison (2009, pp. 307-8) accused Hayek of the same *petitio principii* that Hayek himself denounced as being of the internal logic of neoclassical equilibrium. In Hutchison's view, "[r]egarding the investment decisions of private entrepreneurs, he [Hayek] straight away, like Mises, assumed what he had to prove, namely that private decision makers were perfectly informed. [...] Hayek was simply following Mises in tacitly postulating the relevance of the fundamental assumption of perfect knowledge that he later described as 'customary' and which has, quite recently, been described as 'standard.'" The departure of the pure logic of choice sphere with its tautological variations to the realm of social equilibrium leads to the introduction of the empirical element that form the comparative institutional frameworks of learning to coordination. The general character of *a priori* category is necessarily modified by supplementary hypotheses of greater specificity of the particular conditions of time and place in relation to the contextual needs of relevant knowledge to each situation under analysis. Division of knowledge in society further deepens the idiosyncratic relevant knowledge notion for each type of situation in a certain condition of time and space context.

Nevertheless, Hayek warned that from the transformation of tautologies in which consist the propositions of individual equilibrium into structures of causal conditions and processes of learning

does not necessarily follow that a turn to an empiricist research program must be conducted - as Hutchison (1938) will later defend. In Hutchison's (2009, pp. 307-8) view, the transformation of the empirical element in equilibrium theory is *the* transformation or U-turn of Hayek in 1937. Hayek would henceforth abandon his Misesian-Wieserian apriorism to a fallible understanding of knowledge Contrary to Hutchison, however, Hayek ([1937] 1948, p. 55) is skeptical on the possibilities of a "wide field for empirical research" to advance in the discovery of new *theoretical* knowledge no longer widespread, seeing with limitations the space of empirical agenda in economic *theory*.

The important point is if in principle the argument of tendency or not to equilibrium could be able to verification when reporting to the real-world conditions. Hayek finds insurmountable difficulties in pursuing the knowledge problem in aprioristic rationalistic analysis, as well as he is skeptical and pessimistic about the capacity of discovering new theoretical knowledge through empiricism and inductivist sensitive experience. Learning and discovering mechanisms are not the result of absolute and immutable methods of analysis, but it is fallible and contingent. It serves immediate purposes in certain particular situations and even so not suiting others, knowledge is often tacit, contradictory, and essentially limited (Hayek [1945] 1948, pp. 77-9; Andrade 2004, p. 130).

In Hutchison's view, the introduction of the verifiable empirical element is the admission of fallible knowledge by Hayek. Hutchison intrinsically linked the epistemic notion of fallible knowledge and aversion to the perfect knowledge hypothesis with the potential and progressive capacity to increase the empirical falsifier content. *Au contraire* of Hutchison, we understand that the epistemic postulation of fallible knowledge by Hayek is not *essentially* and *only* on the possibilities of an empirical investigation, but in the earlier conception of knowledge itself as being subjective, tacit, and dispersed that makes the problem to be intelligible in the first place. The fallible aspect in which the empirical experience can demonstrate a tendency or not to equilibrium is the result of the fallibility of the economic agents in the process of (*dis*)coordination of plans.

III. THE ROAD TO METHODOLOGY AND THE CONSTITUTION OF IGNORANCE IN ECONOMIC SCIENCE

Hayek ([1945] 1948, p. 91) attributes the impossibility of his neoclassical audience in the economic calculation debate on recognizing the nature of the knowledge problem as being

methodological in nature. The real economic problem, i.e. “the unavoidable imperfection of man’s knowledge and the consequent need for a process by which knowledge is constantly communicated and acquired,” was suppressed and relegated to indifference. The profession methodological failure regarding the centrality of perfect knowledge hypothesis in the concept of equilibrium led Hayek to engage in the Abuse of Reason Project. This was a historical-methodological project of reconstructing the roots of methodological *hybris* that dominated the discipline and prevented its peers from seeing beyond the formal propositions of maximization. Moreover, at the political level it also entails nefarious social consequences. The *hybris* is the progressive abuse of reason, understood as the builder, modeler, and architect itself of the main institutions of civilization.

In what would be the first planned part of the project, Hayek ([1946] 1948) makes a substantial distinction between two types of so-called individualist traditions in the course of Enlightenment. The true individualism inherited from the Scottish Enlightenment and the false individualism inherited from the French and Continental Enlightenment. The primary difference among them is that in general levels of analysis one tradition regarded as “rather low the place which reason plays in human affairs, which contends that man has achieved what he has in spite of the fact that he is only partly guided by reason, and that his individual reason is very limited and imperfect, and a view which assumes that Reason, with a capital R, is always fully and equally available to all humans and that everything which man achieves is the direct result of, and therefore subject to, the control of individual reason” (Hayek [1946] 1948, p. 8)

The singular edifying role of Reason given by false individualism helped in the philosophical defense of unrealistic assumptions that assumed the necessary relevant knowledge as simply given to agents, as in the case of perfect knowledge in equilibrium theory. The Cartesian rationalism of false individualism prevented the appreciation of coordination processes created by human action but not by *total* rational human design. True individualism is humble because it internalizes the uncertainty, fallibility, and limitation of human knowledge, being able to recognize that many of the defining institutions of society and civilization are not the result of a single individual mind or a group of individuals (Hayek, 2013). Hayek claims to be an heir of true individualism, and indeed his fundamental epistemological conception of fallible knowledge in equilibrium analysis that gives rise to the problem of knowledge can be understood primarily as a philosophical divergence between the traditions of true and false individualism.

Hutchison (2009, p. 313; 1996, 1997, p. 206) comments that "Individualism: True and False" ([1946] 1948) "has long been unduly neglected," and seems to agree with the philosophical difference between the two types of individualism that Hayek traced. Hutchison, however, puts more emphasis on the British inductivist and empiricist tradition in general as essentially fallible and not only in the intellectual tradition that refers to the Scottish Enlightenment (cf. Hayek, [1941] 1952a, p. 360; Hutchison, 1953). For Hutchison (2009, p. 313), "Hayek almost turns a vital philosophical or ideological distinction into a national issue between British inductivist, fallibilist doctrines, and French rationalist deductivism. 'True' individualism lies with the British tradition, with its more gradualist, tolerant politics. The French tradition leads to a much stronger confidence in the role of government. Not that the British tradition has remained untainted by over-confident rationalist notions. As Hayek observed, in the nineteenth century, some of the English classicals, perhaps even J.S. Mill, became dangerously infected."

We can see here the difference in the understanding of fallibilism genealogy between Hayek and Hutchison. Hayek understands the fallibilism of true individualism as contained in the humble posture of the Scottish tradition that is able to appreciate the limited role of reason as an architect and builder of the institutions of the modern Great Society. Fallibilism results largely (but not only) in the appreciation and cultivation of emergent spontaneous order (Hayek [1946] 1948, p. 32). In Hutchison's view, fallibilism is substantially part of the British skeptical tradition of inductivism and empiricism, it is born insofar there is a confrontation of knowledge with the empirical reality. Anti-fallibilism is by definition trapped in the trenches of aprioristic deductive rationalism.

In what would be the second part of the Abuse of Reason Project, Hayek ([1941] 1952a, [1942-4] 1952a, [1951] 1952a) systematically deepens his hitherto not fully articulated methodological position. The main enemy that Hayek wanted to fight is scientism, defined as the illegitimate transposition of methods of scientific investigation from the natural sciences into the social sciences without the previous consideration of the object of study (Hayek, [1942-44] 1952a, p. 24). The main philosophical movements embedded in the scientism that Hayek identifies are historicism, collectivism, and physicalism. It is clear the analogy with the illegitimate transposition of the individual to societal equilibrium. Scientism is part of the meta-theoretical and methodological justification that validated the *non-sequitur* in the equilibrium theory. Like the tradition of false-individualism, Reason, with a capital R, and its abuse gives life to Science, with a capital S. The overwhelming merit and success of Science was the reclassification of mental

categories and their connections that until then were dominated by subjective sensory perceptions. Natural sciences have reshaped our perception of the world based on the objective character of its object and its relations.

The scope of social sciences is the subjective structures of man and his relations, which are intelligible only because we shared the same universal mental classifier apparatus of stimuli and sensations. Its objective is the explanation of the unintentional consequences of the individuals' actions. The imperfection of the human mental structure and its limited ability to directly observe the subjective social facts implies its inability to explain and predict in detail the changes in the phenomena analyzed. There is an intrinsic limitation of the brain classificatory apparatus, which is itself. A structure of decoding, classification, and interpretation can only explain in detail lesser complex phenomena. Therefore, the classification system (the brain) cannot fully explain in detail its own functioning. It follows from this premise that the classification brain structure will also not be able to fully explain in detail any kind of greater complexity phenomenon than our own brain. It can explain only in principle (Hayek [1942-44] 1952a, p. 86).

Hayek reached his mature methodological stature in the second half of the 1950s. Hayek ([1974] 1978, pp. 31-2) continues with his notion that the hypothetico-deductive method is the only way of thinking science. He accepts the Popperian falsifiability demarcation criterion between science and non-science and that scientific prediction are mostly of prohibitive nature. Hayek also abandons the qualitative distinction between natural and social sciences based on objective or subjective object and begins to think in complexity degrees of each phenomenon. Hayek ([1964b] 1967, p. 25) defines the phenomenon complexity or explanatory pattern as being "[t]he minimum number of elements of which an instance of the pattern must consist in order to exhibit all the characteristic attributes of the class of patterns in question." In this way, higher complexity phenomena are usually associated with social or biological phenomena with multiple minimum qualitative variables that characterize the phenomenon itself. Phenomena of lower complexity degree are usually associated with natural and physical phenomena having few fundamental dependent variables that determine the qualitative characteristic of phenomena (e.g., mechanical physics).

Phenomena that are more complex are less likely to fit into the dynamics of conjectures and refutations by their high number of interdependent variables. Thus being more difficult to prove false certain specific variables of the multiple sets of interconnected chains of causality. There is

no crucial experiment in falsifying complex theories. Complex phenomena have less falsifiable empirical content, therefore the explanatory and predictive power are limited revealing itself fragile the falsificationist position. The complexity of the object limits the scientist to only explanations of principle and pattern predictions with less exposure to falsifiability but still in principle falsifiable. There is a trade-off on pursuing greater empirical falsifying content and theoretical advancement. Theory advances diminishes the falsifiability degree in theories of complex phenomena (Hayek [1964b] 1967, p. 29). Nevertheless, explanations of principle and pattern predictions are falsifiable and must be confronted with the empirical facts. According to Hayek, to accept the prevalence of ignorance and the limitation of knowledge in complex phenomena is to have the truly scientific attitude of humility and fallibility in choosing a limited but true knowledge, as opposed to the scientistic attitude where there is the pretension of knowledge of something that the "man of science" does not really possess.

Hutchison (2009, p. 308) accused Hayek I (in 1928) and Mises of committing the same intellectual crime that Hayek (1988) denounces when defending "the fatal conceit" of infallible perfect knowledge typical of false individualism. It is at least strange this accusation when considering the elements of continuity in Hayek's methodological development. This, of course, is not to deny the changes in his position, such as the abandonment of the division between natural and social sciences for one of the phenomena with more or less complexity degree. The core of his methodological singular position of explanation and prediction limitation in complex phenomena makes itself present, as Hayek in a letter to Hutchison recalls (May 15, 1983, Hayek to Hutchison, reprinted in Caldwell 2009, p. 323-4). The interpretation by Hutchison can only be understood when we take into account his indissociation between fallibility of knowledge and the British empiricist tradition.

IV. THE YEARS OF HIGH THEORY AND METHOD

In the 1930s, the greater professionalization and formalization of economic theory - understood in *lato sensu* as modern microeconomics - in axiomatic and rigorous bases cohabited at the same time a scenario marked by industrial fluctuations and macroeconomic instability with extensive impacts on real variables as income and unemployment. While in the early decades of the twentieth century "economic theory assumed that the world was tranquil and orderly," industrialized economies were

experiencing significant political and economic problems. The various exogenous shocks in the state of the profession had a significant effect in the way of thinking and doing theory, they "had brought economic theorists face to face with reality," as in George L. S. Shackle's (1967) expression.

Great divergences and contradictory opinions in the context of a renewed interest in economic policy and business cycles also led to inquiries of methodological order, which was largely the center of controversy. The drastic changes driven by these shocks and the subsequent repositioning of the profession made Shackle name the 1930s as *The Years of High Theory* (1967). Hayek and Hutchison were inserted in this intellectual environment led by economists based in England, in particular, from Cambridge and LSE. Hutchison (2009, p. 297) quotes the perception by Hayek about these years of high theory as the synthesis of the spirit of time in the 1930s: "When I [Hayek] look back to the early 1930s, they appear to me much the most exciting period in the development of economic theory during this century. [...] [T]o me one of the main results of most of the discussions of the 1930s was to create an interest and an awareness of the methodological problems of our science which I had not had before" (Hayek, 1995, p. 49, 61). And not only for Hayek that interest in methodological problems arose.

There is a renewed interest in the nature and significance of economic theory with Lionel Robbins (1932), after 40 years of calmness in the methodological seas established by the synthesis and middle-ground of John Neville Keynes (1891), at least within the scope of British academia. Hutchison (2009, pp. 300-3) directly associates the understanding of the postulates of economic theory as being deductive by Robbins as a methodological justification for the indiscriminate use of perfect knowledge hypothesis as a legitimate approximation of economic reality. Hutchison sees in methodological deductivism a necessary condition for the infallibility of knowledge and the impotence of theory against the minimum conditions required for scientific practice such as predictions and empirical confrontation. An interesting turn of economic theory for an encounter with such reality of ignorance and uncertainty is temporally localized in 1937, with the introduction of radical uncertainty and the consequent attack on the postulate of perfect knowledge by Hayek (1937), Ronald Coase (1937) and John Maynard Keynes (1937) (see Telles, 2019).

V. HUTCHISON'S FIRST REACTIONS ON TAUTOLOGIES, THE NATURE OF ECONOMIC THEORY, PLANNING, AND UNCERTAINTY.

In his first publication in a professional journal, Hutchison (1935, p. 159) already demonstrates his dissatisfaction with the tautological use of the propositions of economic theory, often used as a rhetorical device to justify "unpopular theories." Hutchison also has his first reactions to what he saw as the apodictic deductive character of the nature of economic theory made by Robbins (1932) (Hart, 2002, p. 363). Tautologies are nothing more than *a priori* true analytic propositions that are derived from premises somewhat arbitrarily chosen as common and evident to all rational analysis of the problem in question. The infallibility of tautologies is found in the rational deductive process logically consistent with initial definitions. Thus not reporting to any real-world element for its truth or falsity but only reporting to the world for its applicability. Hutchison criticizes the emphasis on tautological use in economic theory instead of investigating other sources and ways by which such propositions could be validated "or why there is any particular reason for believing the propositions of economic theory at all."

Another methodological *malaise* for Hutchison (1935, p. 161) is illustrated by Robbins (1932, p. 111) which confuses the tautological formal implications of definitions of economic theory, by definition without empirical element, with causal inferences that relate to empirical conclusions about the real world. Tautological implications cannot have predictive value nor be filled with inferences about the world that is no contained in their own definitions, the implications can "no more prognosticate anything than can the multiplication table." *Au contraire*, inferences necessarily demand data of the initial conditions to establish the causal empirical nexus since-therefore. The formal propositions and their empirical sterility prove that some prognostic value is normally reached by inductively formed hypotheses. Hutchison gives the example of the quantity theory of money and its application to inflation cases in the post-First World War period.

The inductive hypothesis occurs within the framework of the *ceteris paribus* clause, thereby opening spaces of fallibility of the theory previously non-existent in its tautological form, e.g., sudden movements both in the velocity of circulation of money and in the volume of transactions could show the fallibility of the quantity theory in the explanation of the inflation of the post-war period. Hutchison (1935, p. 161) dismisses the deductive attack on empirical research that argued that it does not successfully introduce hypotheses about the theory corroboration to a particular case. On the contrary, in his view, it is the formulation of inductive hypotheses and its consequent

confrontation with the empirical facts that characterize the scientific *modus operandi* as in the most prestigious of the sciences, physics.

Two years later, Hutchison (1937a) enters into the controversy on the economic calculation debate under socialism reacting mainly to Hayek (1935a), the work that initiates the debate in the English language. Hutchison reverses the Mises-Hayek-Robbins' argument for the dysfunctionality of the central planning system in the face of uncertainty and ignorance. Hutchison seems to ignore the economic calculation and knowledge coordination argument in a system of private property, relative prices, and profit and loss accounting that would allow some mechanism of learning and feedback of individual plans. Hutchison introduces uncertainty and ignorance to the formal similarity argument.

Hutchison reaffirms the formal similarity thesis made by early neoclassical economists like Wieser (1893), Vilfredo Pareto (1897, [1909] 1927), and Enrico Barone (1908) in regard to the marginal preconditions of maximization in general equilibrium theory. However, he makes this argument in relation to the drastic aspect of uncertainty and ignorance that inhabits individual decisions. Both systems of economic organization have to deal with uncertainty and radical ignorance of the world regarding their decisions, either in a central planning committee or in individual decentralized decisions. Hutchison (1937a), like Hayek, seems to have as epistemic postulation fallible knowledge, understood as imperfect foresight and radical state of uncertainty. For Hutchison (1937a, p. 72), the more we consider uncertainty in economic decisions, the more it seems that the argument of freedom and sovereignty in individual decisions is flawed. And that, the freedom of decentralized individual decisions, would be the main thesis of "anti-planners."

By not appreciating the underlying institutional aspect in Hayek's argument, Hutchison (1937a, p. 73) understands that the anti-planners tacitly assume that all individual choices are optimal, or close to optimal, approaching the ideal type of choice "absolutely certain." This presupposes, of course, perfect foresight, i.e., given objective knowledge and absolute absence of any kind of radical uncertainty. This posture, Hutchison argues, logically discredits any kind of freedom in choice. The freedom of choice that anti-planners defend in the calculation debate could only occur "in that static world devoid of uncertainty and imperfect foresight with which the central bulk of economic theory down to recent times has mainly been concerned" (Hutchison 1937a, p. 72). Hutchison associated the defense of anti-planners with the unrealistic assumption of the static and tautological conditions of equilibrium theory for the real world, with the illegitimate transposition

of assuming in the real world the hypotheses of the theoretical model. Precisely the opposite posture of seeking to confront the hypotheses and conclusions of the model to the real world empirical facts. For Hutchison, the *non-sequitur* of Mises and Hayek (1935a, p. 110) is essentially the result of the apriorism of formal definitions in economic theory. Hutchison (1937a, p. 73) criticizes the dubious application of the knowledge problem to central planning while "assume that such decisions can be and are made by some easy, automatic, and almost infallible process in a capitalist economy."

The institutional argument in favor of a decentralized system is seen by Hutchison (1937a, p. 74) as "tacitly assuming a static world of perfect foresight where no entrepreneuring (in the sense of adaptation to unforeseen and unforeseeable change, as against organisation) is necessary, and where therefore the task (since there is none) must be perfectly carried out." In Hutchison's interpretation , as a consequence of the formal similarity between systems of decentralized and centralized organization and no illegitimate logical leaps for the static world of perfect knowledge, there is no reason that would make a central planning system face more difficulties in dealing with ignorance and uncertainty than a decentralized system. We may consider this formal similarity in relation to ignorance and uncertainty as a proto-development of the knowledge problem formally developed a year earlier in 1936 by Hayek. The not so clear exposition of Hayek's (1935a) argument and Hutchison's impotence in seeing the institutional character of the argument against planning seems to have prevented him from a further appreciation of the economic calculation controversy. Thus, it also prevented him from further appreciation of Hayek's subsequent research program on the knowledge problem and to the extent that this problem necessarily demands institutional responses.

Similar to Hayek, Hutchison attributes the intellectual problem of his intellectual opponents - in this case, the anti-planners - to the methodological background. In Hutchison's view, Mises and Hayek have fallen into the use of unreal assumptions of the equilibrium model as a justification for the allocative superiority of a decentralized system because of the deductivist emphasis on the formal theoretical propositions. "It seemed at first", Hutchison (1937a, p. 74) writes, "that Professor Mises and his followers were attempting by purely theoretical arguments to prove some 'impossibility' or 'inner contradiction' in collectivist planning and their methodological views would apparently support the feasibility of such an attempt." This is exactly the *same* methodological critique that Hayek ([1940] 1948, p. 188) accused the general equilibrium theorists

in the attempt to prove the *practical* viability of a central planning system. Both men share a profound methodological dissatisfaction with the state and course of economic theory and its focus on the tautological theory of equilibrium. The similarity of the rhetorical-argumentative structure is remarkable.

The "Note on Uncertainty and Planning" (1937a) was later reprinted as part of the appendix "Some Postulates of Economic Liberalism" in *The Significance and Basic Postulates of Economic Theory* (1938). According to Hutchison (1938, p. 177), "economic liberalism" - the idea that a "Liberal, capitalist, *laissez-faire* economic policy leads to a maximum returns for the community or to a greater returns than any collectively planned economic policy" - is essentially a tautological point of view, assuming what it should explain. Hence, economic liberalism is always trying to prove by purely theoretical, deductive, and aprioristic arguments an inner contraction in collectivist planning while assuming that "if people knew how to achieve maximum returns, wanted to do so, and were free from obstruction, the would in fact maximise their returns" (p. 183). The maximum expression of this kind of posture is, for Hutchison (1938, p. 184), "the writings of the leader of contemporary Economic Liberalism, L. von Mises."

VI. HUTCHISON ON THE SIGNIFICANCE AND BASIC POSTULATES OF ECONOMIC THEORY

Hutchison (1937b) develops the ideas of his "Note on Uncertainty and Planning" (1937a), absorbing somehow Hayek's early response in "Economics and Knowledge" (1937) to his initial impressions of the calculation debate. This essay, "Expectation and Rational Conduct" (1937b), was also one year later reprinted in Hutchison (1938) as "The Basic Postulates of Pure Theory: Expectation, Rational Conduct, and Equilibrium." Following the order in *Significance*, we will present first the discussion before the "Expectation."

It is explicit in Hutchison (1938, p. 3) the methodological disputes of economics on its role and scope as a scientific theory, disputes derived from the great disruptions and theoretical consolidation involved in the years of high theory. The aim of Hutchison's book is to state what makes economic science a singular and independent branch of scientific inquiry. For this objective, the book is concerned "to arrive at a clear definition of 'pure theory' enabling one to mark off clearly propositions which belong to 'pure theory' from those that do not, to investigate the source

of the validity of these propositions," and "to clarify their relation to the assumptions or postulates on which they rest." In particular the *ceteris paribus* clause and the main tautological analytical concepts of economic theory as equilibrium, rational conduct, expectations, and perfect competition.

According to Hutchison, there is a fundamental difference in the nature of scientific and philosophical problems. Scientific *praxis* is in a certain degree cumulative in a pre-established apparatus, problems, and results of predecessors that are the first approximation to scientific questioning. That, with improvements of new tests rejecting or endorsing the previous knowledge according to the agreed criteria, is passed to the successors. In this sense, Hutchison believes that is reasonable to speak of advances in science due "to the possibility of taking some results as, at any rate temporarily, agreed upon and settled, and of then proceeding to new problems and solutions" (ibid., p. 6). The same is not true for strict philosophical issues,. It is very difficult to speak in advance of philosophical knowledge through time. The reason for such is that scientists have a "definite, agreed, and conclusive criteria for testing of propositions, solutions and theories which 'philosophers' do not accept" (p. 7).

The source of progress of scientific knowledge is, thus, the common acceptance by the scientific community of an interpersonal and objective criteria of testing propositions, which lead to the "steady secular piecemeal agreement and advance" in scientific disciplines. Hutchison (1938, p. 9), in the spirit of his logical positivist influences, is very inflexible in this point, saying that if "such intersubjective tests could not satisfactorily be made, there could be no science." In Hutchison's view, the scientific *modus operandi* has two interconnected levels of analysis, the empirical investigations and logical analysis. The first is concerned with the actual behavior in a certain time and place of the factual phenomena or reality. The second is concerned with the language or the means within the discussion takes place. This is the logical positivist distinction of synthetic (falsifiable by empirical confrontation) and analytical (tautologies) propositions. It is this second level of analysis inserted in economic science that is Hutchison's purpose to analyze and criticize. It is important to notice that Hutchison is not worried about the general philosophical issues that have been in controversy in the history of ideas so long, but in the particular scientific problems that constitute a more pragmatic, skeptic, and practical view about the state of the art of economic theory in the 1930s. Thus, "[t]he discussion of 'methodological' questions - for the scientist at any rate - only has sense in connection with the practical problems of science" (p. 17).

Hutchison addresses the book to the economists that already broadly accepted in some sense the criterion of testability that he will elaborate and further expose the logical consequences when this criterion is applied "rigidly and unwaveringly to the particular concepts and postulates of theoretical economics." He wants to demonstrate that when this principle is applied to the economic theory of his time it will clarify the methodological failures that constitute the empirically emptiness of much of the central basic concepts of economics. It is this methodological failure that is responsible in part for the then current state of affairs in the 1930s. That is, "the unsatisfactory state of the foundation beneath the common-sense surface which is the most serious and crippling deficiency of contemporary economic science" (p. 18).

For this, it is necessary to reinforce the highly practical and pragmatic view that separate science and pseudo-science, that "aimed at developing political economy as an empirical discipline, directed primarily at producing less unreliable policy-guidance, based on less inaccurate predictions than would be forthcoming without some kind of disciplined, or 'scientific,' effort" (Hutchison 1996, p. 189). It is this pragmatic view that Hutchison traces influences of the empiricist, inductivist, and "matter-of-fact" British tradition. In particular, John Locke, George Berkeley, David Hume, Adam Smith, Thomas R. Malthus, Jeremy Bentham, William S. Jevons, Alfred Marshall, and John Maynard Keynes. In opposition to the classical branch of the tradition of James Mill, David Ricardo, John Stuart Mill, Nassau Senior and John E. Cairnes (e.g., Hutchison, 1938, pp. 14, 174, 179; 1941, pp. 735; 1977, pp. 90-91; 1984, p. 23; 1997; 1998, pp. 44-53, 56-60).

In such a context, Hutchison introduces his principle of testability that will demarcate the line between science and pseudo-science, i.e., which differentiates a scientific activity from the mere "comprehensive cloak" and "expressions of ethical or political passion, poetic emotion or metaphysical speculation." The principle says that propositions of a sciences

> "must *conceivably* be capable of empirical testing *or to be reducible to such propositions* by logical or mathematical deduction. They need not, that is, actually be tested or even be practically capable of testing under conditions of statistical investigation, nor is there any sense in talking of some kind of 'absolute' test which will 'finally' decide whether a proposition is true or false. But it must be possible to indicate intersubjectively what is the case if they are true or false" (1938, pp. 9-10, italics in original).

Hutchison (1938, p. 19, f.n. 6) sum up the principle as "that a scientific proposition may not itself be empirically testable directly, but may be reducible by direct deduction to an empirically testable proposition or propositions." The principle did not seem to fit very well in the label of "ultra-empiricist" by Fritz Machlup (1955, p. 7). Machlup defines it as a methodology that requires an independent test or verification for every logical step, analytical statement, or assumption. Since the principle says that a scientific proposition must be *conceivably* testable by reduction into these propositions via deduction and not that all levels of the analytical process are practical or *de facto* testable, Machlup's label is fragilized (see Machlup 1956; Hutchison 1956; Hart 2009). The main argument of Hutchison (1938, p. 18) is that the scientific reasoning demands previous agreed intersubjective criteria that establish the rules of the scientific game, including the rules that compare and judge between different and contrary theories. His main concern is "to seek solutions of certain basic problems of economic science in accordance" with the principle of testability, and not to pursue or urge an ultimate absoluteness about the criteria.

Hutchison then defines a taxonomy of the scope and range of propositions of pure theory in terms of logical symbols, "if p then q" or "p ⊃ q." For example, if there occurs an increase in the quantity of money supply (M), with both constant velocity of circulation (V) and the quantity of transactions or the income (T), then the general prices (P) rise. This characterization is different from, first, actually state that the marginal auxiliary and necessary conditions of the propositions of pure theory actually holds in an empirical specific situation of reality. That, e.g., the conditions of perfect competition *de facto* holds in a market or that the actually V and T remained constant in determined space-time case. Hutchison distinguishes this latter kind of proposition as propositions of applied theory (synthetic), that is represented by the logical structure "since p therefore q." The peculiarity of the applied theory is that the premise p is actually asserted in a particular case, while in pure theory (analytical) no empirical statement of the truth or applicability of p or q is made. Implicitly in the empirical propositions of the applied theory is that (i) the proposition of pure theory is logically valid or consistent and (ii) that the empirical synthetic proposition conditional to the applicability of the statement of the pure theory is present in that specific case. That is, the necessary condition p is true, valid, and it is applied in a particular situation of reality.

It follows from this taxonomy that the truth, validity, or consistency of propositions of pure theory "is quite independent of the question of fact as to whether the premise is empirically true or not."

Although it is on these questions of fact that empirical applicability rests on. Thus, it is on what the propositions of applied theory fundamentally depend. It is in this empirically ground that propositions of pure theory are remarkable "independent of all facts, which can be of any conceivable kind without their *consistency* being affected." A comparative example of these two different domains of propositions is exemplified in pure geometry and applied geometry. In this sense, Hutchison differentiates deductive inference represented by p ⊃ q from an inductive inference p s q. The second not being confined in any logical consistent relation in a chain of reasoning but a really "conceivably falsifiable, even if fact not falsified inductive generalisation" (Hutchison, 1938, pp. 24-3l).

For Hutchison (1938, p. 38), the hypothetical-deductive method confuses propositions p ⊃ q with propositions p s q, i.e., confuses propositions of pure theory with applied theory. Hutchison also suggests that the *ceteris paribus* clause is only valid used where there is empirical generalization firmly established that guarantee a high probability that the expected result of applied theory will be confirmed. In possession of this exhaustive classification of all propositions called scientific, Hutchison proposes this as a scientific characteristic division where all scientific propositions are either able to falsification by empirical confrontation or not, being a mutually exclusive dichotomy. "If it is not thus falsifiable it does not, if true, *forbid* any conceivable occurrence, but only a contradiction in terms. Propositions obtain their empirical content simply in so far as, if true, they *exclude*, *restrict*, or *forbid* something" (Hutchison, 1938, p. 26).

The price for *a priori* certainty of pure theory is the complete lack of empirical and practical sense. By the nature of pure theory and process of reasoning, the assumptions and definitions which the scientist usually start the model are already implicit assumed in the logical conclusions derived from the definitions. This is the profound symptom of assuming what one wants or requires to prove. Besides this limitation of pure theory that is somehow sterile in saying something about the world, Hutchison sees a necessity of assigning definitions for the key role of clearing the chains of reasoning and better structure the logical causal effects in question. In this sense, the propositions of pure theory can "reveal unexpected relations between our definitions which are thus explained

and clarified." If the human brain and reason were all-powerful then "we would need no pure theory to work out the relations and implications of our definitions or empirical premises" (pp. 34-5).

Hutchison (1938, pp. 27-8, 55-8; 1996, pp. 190-1) associates the posture of assuming what one should explain in the history of economic thought first with the Physiocrats influenced by French and German rationalists and idealists. "If the subject matter of Economics," writes Hutchison (1938, pp. 55-6), "is defined in a way that excludes all propositions that are not analytical-tautological and 'circular' in form, it is hardly surprising that every single central proposition and system of economic theory since the Physiocrats has, at some time or other, been criticised as circular, or as 'assuming what it required to prove'." The prevailing tendency that confuses the meaning of a scientific law as being a proposition of pure theory instead of a proposition of applied theory (that is falsifiable) is traced by Hutchison as a "survival from eighteenth-century rationalist philosophy and theology" (p. 63). A scientific law can only be an empirical generalization if it is grounded in the empirical work of applied theory. The examples given by Hutchison are the Gresham's law and the law of diminishing returns. The aim of science is producing empirical laws to prognoses or foresight (p. 65; see also 1992b).

According to Hutchison, there is a connection between the Austrian School founded by Carl Menger and his methodological writings as being led by this branch of German rationalist and idealist mentality. This has been passed on to the new generations of the school, notably criticized by Hutchison, such as Wieser, Mises, Hans Mayer, Hayek, and in certain way Robbins (e.g., Hutchison. 1938, pp. 59, 71-2, 76, 131-7; 1996, p. 190). Hutchison had seen in first hand the intellectual environment in Germany in the late 1930s, he had a deep feeling that the German idealistic philosophy paved the intellectual road to the rise of fascism and totalitarian regimes. Science, properly understood and as a practical domain, is a means to repudiate this kind of dogmatic and anti-liberal position.

Hutchison critique of rationalist deductivism emerges directly as a reflection of the nefarious political and economic consequences of the dogmatic position that arise in this kind of intellectual posture. Another event is, of course, the Great Depression. Indeed, Hayek made a similar argument in the Abuse of Reason Project. Robbins (1952) is also a critic of the characteristic posture of the Physiocrat French and rationalist liberalism, which seems to assume *ex ante* coordination of plans and a social harmonization *in vacuo,* in a kind of law of nature. Interestingly, Robbins contrasts

this kind of philosophical view with the English liberal tradition, much more conscious of the limits and fallibility of human interaction and interests. And also more regardful to the institutional framework in which human exchange takes place. This is exactly the argument that Hayek developed in his distinction between the two types of individualism.

Hayek, Robbins, and Hutchison seems to agree with the fundamental philosophical distinction between a rationalist Cartesian liberalism and a broadly kind of fallible empiricism of the British-Scottish liberalism. The three seem to appreciate the British tradition in a greater sense. Each one of them, however, takes as foundation different intellectual parts of this broadly and sometimes conflicting tradition. Hutchison (1998) emphasizes the balanced, inductivist, and empiricist aspect of Smith, Jevons, Marshall, and Keynes. Robbins (1952, 1976) seems to be more indebted to the English branch of classical economists as a kind of unit. Especially with Ricardo, the Mills, Senior, and Cairnes, names that Hutchison wanted to make a methodological opposition. Hayek distinguishes himself for the primacy of the Scottish Enlightenment as the main expression of human fallibility and emergent spontaneous order, the true individualism. Hutchison accuses his intellectual opponents, including Hayek and Robbins, of urging or promoting this Physiocratic thinking based on rationalist intellectual reasoning. At least in an unconscious form. However, Hayek also accuses his intellectual opponents of being taken by the use and abuse of reason, an impetus that has blinded the economic profession from the true fundamental economic problem. And Hutchison probably could be, or indeed, is in the list of Hayek's professional adversaries in the mid-1930s.

VII. A SPECIAL REFERENCE TO EXPECTATION, RATIONAL CONDUCT, EQUILIBRIUM, AND KNOWLEDGE

Finally, we will pass to the main essay in *Significance* (1938), chapter IV on "Expectation, Rational Conduct and Equilibrium" (1937b). Hutchison (1937b, p. 636) begins by discussing the permanence throughout the history of economic thought of some "fundamental assumption" or "economic principle" about human behavior on which the basis of economic theory was to be derived or deduced, "from the profit-seeking Ricardian business-man down to the 'rational' consumer balancing marginal utilities." Hutchison points out the variation of emphasis between hypothetico-deductive aspects and their theoretical consistency in one hand and empirical validity

of generalizations made from the fundamental assumption in another hand. Despite the different initial postulations of economic theory, there is a common thread of perfect expectations as an instrument of deductive operationalization of initial hypotheses. Therefore assuming tacitly a world without the possibility of imperfect foresight and genuine uncertainty. It is not shown *how* economic agents maximize their utility functions but rather *assumed* mathematically that they act rationally given all relevant objective knowledge to the maximization problem – as if they knew the correct path of actions to maximize.

Hutchison (1937b, p. 637) indirectly touches on the central point of Hayek's knowledge problem, of what are the institutional mechanisms that make the coordination process of individuals' plans to be consummated. The problem of knowledge is about the institutional (dis)coordinating process of plans, of the *how* (*ex post)* that Hutchison refers to. It is not about the *ex ante* hypothesis that they actually maximize. It is about the (dis)equilibrium *process* and not the final state of equilibrium. Assuming the simple maximization of some utility function can only logically be carried forward in a world with perfect foresight, the terms "rational" or "sensible" only make sense in terms of comparison to other non-optimal action plans, specifically expectations or the process of arriving at expectations from other non-optimal action plans. Expectations are only different when there are different interpretations of the same objective facts, to consider different expectations is necessary to consider subjective knowledge to some degree.

The choice will only be automatic, mechanical, and totally rational-sensitive between a course of action with a payoff greater than another action definitely with a smaller payoff in a world where expectations about the payoffs are confirmed correct. In this scenario "the assumption that people *expect* to maximise their returns and the assumption that they *actually* do maximise them come to the same thing." When we introduce the notion of uncertainty and imperfect expectations, however, the maximization expectation will not be the same as the maximization *de facto* since with Knightian uncertainty "people cannot conceivably *know* or *calculate* but can only more or less vaguely *guess*, which out of many possible lines of conduct will lead to the fulfillment of the principle" (Hutchison, 1937b, p. 638).

For Hutchison, a real-world analysis cannot begin with a rational or sensible postulate, as defined above, since this would by definition be uncertainty absent. It would be a world without the real economic problem, a world, quoting Frank Knight (1921, p. 268), mechanic and automaton. This is similar to Hayek's argument. Indeed, Hayek (1937) quotes Knight (1921) as an initial

development of the expectations problem. As perfect expectations are in relation to the actions of other agents, the maximization of one agent in relation to the expectations of the other agents and vice versa cannot occur in a context in which maximizing actions influence external decisions of the system and of other agents that expectations themselves try to predict. An environment of perfect expectations is incompatible with an economic system of interdependent agents characterized by situations of oligopoly. Hence, perfect expectations are only compatible with a state of perfect competition, i.e., where the conditions of an agent's actions cannot influence the general conditions of the system and of other agents. What would remain then would be an empirical emphasis on how the expectational process actually takes place in these oligopoly contexts, "if one wants to find out how, or on what expectations, oligopolists in fact behave, the only way is to 'look and see'" (Hutchison, 1937b, p. 644).

Hutchison goes on to discuss the exact role of perfect expectations for equilibrium. Individual or collective equilibrium can be defined in many ways. Hutchison agrees that a *sine qua non* condition for equilibrium involves perfect expectations. But following Oskar Morgenstern (1935) on the logical inconsistency between perfect foresight and the equilibrium concept of the Walrasian *tâtonnement,* which is a critique of Hayek's ([1935c] 1939) Copenhagen lecture, Hutchison denies that this is the characteristic definition itself of equilibrium as, he argues, Hayek ([1937] 1948, p. 42) defines it. Hutchison (1937b, p. 645) points out that the use of perfect, correct, and undisappointed expectations "appear often to have been used more or less interchangeably as a quality or even defining characteristic of equilibrium," which would not be precisely the case. Perfect expectations relates to a quasi-practical omniscience condition about the future, undisappointed expectations may still be sub-optimal from the expectational initial continued plan, and correct expectations may be correct from a subjective point of view of the decision-maker but may not consider other Pareto-improving action paths.

For Hutchison, the best definition for the equilibrium state seems to be reserved to the optimal point of an objective, available, and definitive set of competing actions options. Therefore, the concept of equilibrium "is best reserved for the 'optimum maximum' condition whether or not the individual or community has been led to it by perfect expectation" (p. 646). What Hutchison ignores is that the particular use that Hayek ([1937] 1948, p. 42) assumes as a defining feature of equilibrium is strictly the condition of correct foresight with the subjective expectations and the external world. This means that the Hayekian equilibrium definition can be exactly the neoclassical

equilibrium (with the perfect foresight condition in relation to aggregate intra-plans and external world) and can be the somewhat more mathematical definition as Hutchison puts it since there is only one point of optimum equilibrium maximum in this context. This distinction in "Economics and Knowledge" was just a response to Morgenstern's criticism as well. It is after this criticism that Hayek introduced the concept of correct foresight of action plans of other individuals and external reality (Foss 1995, pp. 350-4, 359-60; Hayek 1983, p. 383; Caldwell 2004, pp. 209-20).

As Hayek ([1937] 1948, p. 45) reminds, the equilibrium construct only has so much appeal and theoretical force because we suppose some tendency to equilibrium, which would be an empirical domain. Hutchison (1937b, pp. 646-7) does not seem to appreciate and internalize this passage of Hayek, focusing instead only on the supposed assumption of equilibrium. As a solution, Hutchison proposes an empirical emphasis as Hayek, since the special concern with equilibrium can only find solid theoretical foundations from the need for verification or empirical testability of its theoretical assumption of convergence or equilibrium tendency. Nevertheless, even with the tendency towards equilibrium in the economic system having empirical corroboration supported or not by *ceteris paribus* clauses, it should be noted that can exist other permanent endogenous tendencies to the system that can be disequilibrating and counterbalance the tendency to theoretical equilibrium with the *ceteris paribus* clause.

The compositional effect of the coordinating and unbalancing forces may not be favorable to the equilibrium concept. The assumption of a tendency toward equilibrium *per se* is not sufficient to justify the use of the equilibrium concept since other qualitative effects can counterbalance this tendency. There is no assumption that the tendency toward equilibrium is actually predominant to disequilibrium tendencies. Hence, in Hutchison's (1937b, p. 648) opinion, the empirical emphasis on the equilibrium must be in the significant sense of predominant tendency, "that is, it must be the case that we are always in equilibrium or fairly often approximating to it to make a special study of it of particular interest." Hutchison understands Hayek's position to be that there is a tendency of being always near or in the equilibrium state. This is, in our view, precisely the opposite of Hayek's central message.

According to Hutchison, macroeconomic theory in general is a more open and realistic subject than microeconomics. Macroeconomics was born in open opposition to the perfect knowledge postulation in the axiomatic and methodologically individualist microeconomics. The existence of economic cycles and discoordination processes in aggregates fluctuation are excluded by principle

in the realm of economic theory if perfect knowledge is to be taken rigorously. Expectational problems in over-optimist or over-pessimist periods, cumulative and mass-psychological irrationalities are by definition excluded. The same with any discoordination between savings and investment in a monetary production economy. In this sense, Hutchison divided the branches of economic theory between micro and macro in terms of the epistemic approach in each one. Microeconomics is as all about perfect knowledge and virtually certainty. On the contrary, macroeconomics in the most profound and deep problems deals with extensive ignorance, uncertainty, and irrational opinion. It is not surprising that in macro-theory the inductive forces are stronger than in microeconomics.

Hutchison (1998, p. 63) alerts to the dangers of disseminating and emulating the qualitative (wrong) epistemic grounds of microeconomics as being adequate to macroeconomics, or for the subject of a whole. “The consequences were to be disastrous when attempts were made to apply 'macro' conclusions, tacitly based on the perfect-knowledge assumption of 'micro' theory, to policy problems in the great depression.” One major example, Hutchison argues, for this posture of indiscriminate application of microeconomic theory epistemic bases to the macroeconomic problems were the disastrous policy recommendations of the Austrian Business Cycle Theory proponents like Mises, Hayek, and Robbins in the 1930s. The application of full perfect knowledge postulates of microeconomics to macroeconomic problems that deals with ignorance, uncertainty, and macro-coordination failures meant very real social costs not only in the economic sphere but also in the liberal political democratic basis of a modern open society.

The other example given by Hutchison was the attempts to mimic the market institutional process of coordination throughout a market socialism general equilibrium model in the socialist calculation debate, originally drawn by Barone and especially taken by Oskar Lange. Of course, market socialists proponents were drawing their conclusions using the general equilibrium theory based on perfect knowledge postulate. “In fact, just as an easily equilibrating model encouraged some of the believers in free markets to entertain quite excessive hopes regarding the flexibility and self-equilibrating properties of the British economy of the early 1930s, so, over the decades, the same kind of ‘theory,’ or ‘model,’ encouraged disastrous over-confidence on the part of socialist planners” (Hutchison, 1998, p. 67). For Hutchison, both protagonists in the two examples lacked Knight’s “insistence on the ‘empirical correction’ of the unrealistic postulates of equilibrium theories, before these theories were applied to policy” (p. 65).

Hutchison (1937b, p. 648) sees in economic science itself an important instrument in the convergence of expectations based on its desired predictive and empirical capacity. This is one of the reasons of his emphatically importance in the predictive potential of economic theory as being its main objective or aim (Hart 2002, p. 361). After his methodological attack concerning the way economic theory and the concept of equilibrium were conducted in the 1930s, Hutchison introduces his positive methodological view. Hutchison argues that the "Law of Motivation" or the principle of subjective rationality is undoubtedly the empirical core of the behavioral postulates that based the tautological deductions of economic theory. As such, it has empirical content regardless of how minor it is, so it could be more precisely formulated and tested. The same occurs with the derived propositions arising out of this behavioral principle, thus asserting as hypothesis conditions about perfect expectations and equilibrium would be like assuming what should be explained. Any attempt to have a relevant theory from the practical and pragmatic point of view of change reality must report to the empirical and testable adherence of its prepositions.

Hutchison, as well as Hayek, accused neoclassical theory of the same methodological error of *petitio principii*. According to Hutchison (1937b, p. 650), the final domain of economic theory would reside in the investigation and inductive-empirical test of its propositions, hence

> "[t]o make assumptions as to expectations and therefore as to conduct, unless these assumptions are empirically confirmed is, in dealing with economic problems, fundamentally to beg the question and assume what one wants to find. [...] Although in some cases rough *a priori* reasoning may yield results which turn out accurately, *ultimately* all such questions as these can only be decided by extensive empirical investigation of each question individually."

Hutchison advocates the removal of the scope of pure definitions and innocuous tautologies from the true explanation and prediction in economics. He quotes Popper ([1935] 1959) on the relation between empirical content and falsifiability regarding the primary function of the theory or scientific law to prohibit certain phenomena capable of empirical refutation. On Hayek's skepticism with the outcome of an eventual empirical-turn of economic theory, Hutchison (1937b, p. 653) replies: "The answer to such an objection is quite simple. If, as one [Hayek] is perfectly free to do, one considers that the results obtainable by the only possible scientific method open to

one are not of sufficient interest to reward the effort of investigation, then one must give up the scientific handling of these problems altogether and leave them to others of different intellectual taste."

For Hayek, when introducing subjective, disperse, and tacit knowledge, equilibrium theory is filled with its empirical element by the knowledge problem. The methodological disruption of the profession in the 1930s concerns the epistemic notion of abuse of reason and the influence of scientism in social sciences. Hutchison gives weight and importance to the inseparable character of perfect knowledge and the tautological deductive methodological position. The former lacks empirical contact with the world reality that economics as a practical discipline, policy-oriented and in search of predictions, should turn to. Both Hayek and Hutchison have epistemic problems with perfect knowledge and the inappropriate use of tautologies in the equilibrium theory to justify such epistemic position. In Hayek's view, the solution is to internalize the epistemic postulate of fallible knowledge at the heart of the equilibrium theory, giving life to the problem of knowledge and later turning to the methodological failure of the profession embedded in scientism and abuse of reason, the Abuse of Reason Project. In Hutchison's case, the solution necessarily demand an empiric-oriented turn of hypotheses and fundamental postulates of economic theory for better prediction aiming at its practical significance of economic cycle instability mitigation (e.g., see Hutchison 1938, pp. 166-174; 1997, p. 135; Hart 2002, pp. 369, 373).

In this sense that it can be understood Hutchison's profoundly anti-deductivism, his complete aversion to the hypothetico-deductive method and what he called the "hypothetical experiment" associated with the "optimistic view" of decreasing abstraction. His aversion to the hypothetical method and embrace of inductivism as the only way to find scientific empirical regularities is an symptomatic difference with the Popperian falsificationism philosophy (e.g., Hutchison 1938, pp. 113-4, 119-20, 163-4). Popper was totally against the illogical inductivist leap from many particular observations to the formulation of general scientific laws, i.e., David Hume's problem of induction. The Popperian principle of falsifiability is justified in these terms of work around the inductivist fallacy. The embrace of the hypothetico-deductive method and testing of theories are not via verifiability in an *ad nauseam* inductive way, in some search for valid empirical generalizations.

Instead, the demarcation line between science and non-science is the falsifiability of a system of conjectures that have been made via hypotheses and derived deductively in an empirical prediction

that is falsifiable and testable. Both Popper's falsificationism and critical rationalist philosophy are worried about establishing a general philosophical system or scientific institutional structure that better guide the players of the scientific game to the search for truth. For this the fallibility of knowledge and criticism are necessary, thus a theory can never be confirmed or verified as true but it can only be demonstrated false. It is only by an evolutionary process of elimination and correction of errors that science advances. Hutchison is not worried about the philosophical and methodological foundations of an absolute criterion in the abstract but instead with the pragmatic, policy-oriented systematic effort of an intersubjective agreed position that focuses on predictions. Hutchison is not worried about the philosophical-scientific truth, but with concrete applications of science (e.g., Hart 2002, pp. 361, 369; 2003; cf. Knight 1940 and Hutchison 1941). Hutchison denied the logical positivist vision and emphasis on the method for undercover the universal truth via science. He undoubtedly was influenced by (logical) positivism, but positivism is not the dominant or determinant influence in his methodology (Hart 2010, pp. 364-5).

There are many and surprising differences in the view of science between Hutchison and Popper. Hutchison did not embrace or understand the falsificationist dynamics of conjectures and refutations as Popper did. Hutchison (1996, p. 211) did not passively agree with the Popperian spelling book. He internalizes only some of the themes and positions of Popper, notably his positivist emphasis in the demarcation between science and pseudo-science and the framework of falsificationist dynamics as an empirical oriented process of testing the various different positions of applied theory that have an empirical meaning. The commentary of Klappholz and Agassi (1959, p. 63; 1960) that Hutchison has introduced the Popperian falsifiability criterion into economics is not very accurate, as Hart (2011) shows (v. Hutchison 1960). In introducing his principle of testability, Hutchison (1938) did not quote or make references to Popper. The main influence of Popper in Hutchison's methodological position is on the close association of empirical propositions to forbid some events and the notion that science requires a confrontation test regarding the external world. Science can only be scientifically meaningful and do its job (predictions) when there are fallible propositions capable of empirical (dis)corroboration. Popper is one of the many influences of the original methodological work of Hutchison.

The same is true for Hayek concerning Popper. Popper is only one of many influences of Hayek *sui generis* methodology. These not so clear intellectual differences are one of the reasons that explain the confusion of positions in Hutchison's U-turn interpretation of Hayek. This confusion

is evidence that Hutchison (1988) associates the empirical element subject to test with the importance of fallible knowledge in scientific practice. In Hutchison's view, the epistemic postulate of fallible knowledge made by Hayek could only be possible with an empirical turn in economic theory. That is, an embrace of falsificationism and empiricism understood broadly as an inductive dynamics of conjectures and refutations. Hutchison was not capable of understanding Hayek totally. There was always certain methodological incommensurability between the approaches of both men, especially in the 1930s. However, there is also a profound common methodological appreciation of fallible knowledge, ignorance, and radical uncertainty.

VIII. KNOWLEDGE AND IGNORANCE IN ECONOMICS

Knowledge and Ignorance in Economics is the title of a Hutchison's book in the late 1970s. The book is divided into two main parts; the first part is a theoretical, methodological, and epistemological discussion of the economics of knowledge and ignorance. The second part, an appendix, is a case study of knowledge and ignorance on the predictions of the economic profession about the devaluation and Britain joining the European Economic Community. In the first footnote of the third chapter, "On the History and Philosophy of Science and Economics," Hutchison discusses his new impressions of his young work in *The Significance and Basic Postulates*. Hutchison is very critical on his then certain positivist, optimistic naturalism (or monist) position in relation to the natural and social sciences.

> "Regarding the views expressed in that earlier essay (*The Significance and Basic Postulates of Economic Theory,* 1938 and 1960), I would still support for economics the criteria of testability and falsifiability. However, though this early essay could be claimed to have been, in many ways, a sceptical work by the standards of 1938, its optimistic 'naturalism' seems now indefensible: that is, its suggestions that the 'social sciences' could and would develop in the same manner as physics and the natural sciences. This is certainly not now to assert that economists and 'social scientists' *should not try* to follow natural scientific methods, and the 'mature' sciences, *as far they can, while respecting the nature of their material*. In fact economists have achieved *some* degree of success along these lines. But it should not be imagined or suggested that they can 'succeed' - and, above all, not be

> pretended that they have 'succeeded' - in anything approaching the same manner as has been achieved in physics and other natural sciences. Whether these differences between economics and physics are regarded as a matter of degree or a matter of principle does not seem to be very important as long as their full significance is understood. However, it seems highly misleading to insist on certain general similarities between the natural and social sciences (although such general similarities certainly exist) *without* making it clear how important in practice these differences are." (Hutchison 1977, p. 151)

Hutchison seems to recognize the long-standing arguments about the "full significance" differences of prediction, explanation, and control in natural and social sciences made by Hayek in his extensive methodological writings in the 1940s, later sophisticated in the structure of the theory of complex phenomena in the 1950s. In this sense, it is explicit the central message of Hayek's particular and singular methodological notion that marks his epistemic position on different grounds of natural and social sciences. It is transparent a certain Hayekian epistemic spirit. Note the difference between the social and natural sciences being of a dycothomic notion of natural sciences with an objective object of study and social sciences with a subjective object of study in Hayek's methodological approach in the Abuse of Reason Project (a matter of principle), or in his mature position of a continuum line that mark the relatively simpler phenomena (with few dependent explanatory variables, like mechanical physics) and relatively complex phenomena where the differences are regarded as a matter of complexity degree of the object in analysis. Being the difference a matter of degree (theory of complex phenomena) or a matter of principle (Abuse of Reason Project), the epistemic notion of ignorance is present as a significant understanding of the limitations of human knowledge in areas concerning social-economic aspects.

The epistemic understanding of limitation of knowledge and the role of ignorance in the study of society are the central theme of the theoretical and methodological part in Hutchison's book. Indeed, strangely, there is no direct citation to Hayek in the book, but the Hayekian influence is present on every page. The whole book seems to be a study and particular interpretation of the theme of Hayek's Nobel Memorial Prize Lecture, "Pretence of Knowledge" (1974). There is some evidence that Hutchison wrote the book under the influence of Hayek's Nobel Memorial Prize in 1974.

First, the language that Hutchison utilizes in the book is by far more similar to Hayek's language of complex phenomena, with explanations of principle and pattern predictions. This contrasts with Hutchison's positivist language in the 1930s. Second, the common language is also noted in the extremely similar arguments criticizing the Popperian system in relation to the applicability of the naturalist-falsificationist dynamics in social sciences. Hayek opens his mature methodological writings criticizing the excess, limits, and the inapplicability of Popper's philosophy in the social sciences and even in natural sciences. Hutchison (1977) is using exactly the same rhetorical-argumentative structure. The agreements between Hayek and Popper are also similar to the agreements between Hutchison and Popper with the exception of the hypothetico-deductive method. Hayek and Hutchison agreed that the main feature that demarcates the line between science and non-science is that the scientific propositions are falsifiable and subject to empirical test and refutation, i.e., the principle of testability or falsifiability. They also agree with Popper that the better institutional scientific framework is one of criticisms and primacy of ignorance and fallibility. This is the reason to adopt the falsificationist criteria because the falsification does not confirm any theory, only discards the uncorroborated. This is a statement of scientific ignorance.

Third, there are some similar points in the construction of a positive methodological response to the failure of Popperian methodology. For example, the preservation of a criterion of falsifiability or testability, the distrust and skepticism in detailed explanations and precise predictions, and the emphasis in patterns and trends in social sciences. The main difference remains in the inductive-empiricist view that Hutchison stressed. Hayek did not agree with this empiricist-inductivist turn. Hayek has a deeply practical skepticism with the empirical turn to increase the *theoretical* knowledge in economics and social sciences. In Hayek's view, ignorance and uncertainty undermines much of the empiricist-inductivist emphasis in complex phenomena, it would be a form of scientism like the historicism. In Hutchison's case, it is because the world is in a state of ignorance and uncertainty that an empirical turn is necessary.

Fourth, the book published in 1977 was probably written soon after Hayek's Nobel. Chapter 3, which we mentioned earlier, was first presented, "give at or emerged from," the Nafplion Colloquium of September 1974, in Greece, on Research Programmes in Physics and Economics organized by Spiro J. Latsis, before the Hayek's Nobel therefore. Hayek was awarded on October 9 (*v.* Caldwell 2017). However, the essay was only later reprinted in *Method and Appraisal in Economics* (1976). Hutchison (1977, p. vii) strongly suggests that the printed finished paper was

largely modified in 1974 and/or 1975 until the publication in 1976. Hutchison (1977, p. 58) in this chapter refers to the same obscurely and marvelous passage attributed to Marshall that Hayek (1975) quoted on December 10, 1974, finishing his Banquet Speech following the receipt of the Nobel Memorial Prize in Economic Science. The speech was on the dangers of scientism within the economic profession and scientific humility. Hayek finished with perhaps one of the central messages of his career: "I am therefore almost inclined to suggest that you require from your laureates an oath of humility, a sort of hippocratic oath, never to exceed in public pronouncements the limits of their competence. Or you ought at least, on conferring the prize, remind the recipient of the sage counsel of one of the great men in our subject, Alfred Marshall, who wrote: 'Students of social science, must fear popular approval: Evil is with them when all men speak well of them'."
Hutchison (1977, p. 58), in the same spirit, wrote:

> "For the kind of 'methodological' which many economists want and value is one that boosts up their prestige - vital for raising funds - as 'Scientists' with a capital 'S', while being flexibly permissive, barring no holds, or even letting 'anything go', when it comes to throwing one's weight around in the political arena as a professional 'expert' on behalf of one's particular favourite policies. Alfred Marshall said that economists ought to be suspicious of, and critically inclined towards, all policies popular with politicians and the public. Similarly, philosophers of science and methodological critics should be suspicious of methodological claims and prescriptions which are popular with economists."

Hayek and Hutchison referred to a comment by Marshall that has appeared in Arthur C. Pigou (1924), "In Memoriam: Alfred Marshall," reprinted in Pigou's edition *Memorials of Alfred Marshall* (1925). Pigou (1925, p. 89) says that he found the passage "among the manuscripts in which he [Marshall] defines the student's duty to the State." The complete passage is reproduced below.

> "Students of social science, must fear popular approval: Evil is with them when all men speak well of them. If there is any set of opinions by the advocacy of which a newspaper can increase its sales, then the student who wishes to leave the world in general and his country in particular better than it would have been if he had not been born, is bound to

> dwell on the limitations and defects and errors, if any, in that set of opinions: and never to advocate them unconditionally even in *ad hoc* discussion. It is almost impossible for a student to be a true patriot and to have the reputation of being one in his own time."

Compare Hutchison's passage with his early writings in the 1930s, the difference is considerable. Remind, for example, of the second paragraph of Knight's review of Hutchison (1938). Knight (1940, p. 1) quickly states that "[t]he author is a positivist, i.e., one of those who always think of 'science' with a capital S (if they do not always write it that way) and use it in a context which conveys instructions to pronounce in the awe-inspired tone chiefly familiar in public prayer." Note the similar arguments of Hayek and Knight on predictions on one side, and Hutchison on the other. For Hayek and Knight, uncertainty and ignorance forbid much of the aim of predictions and empirical orientation. For Hutchison is the contrary, it is because we live in the domain of uncertainty and ignorance that empirically oriented turn is necessary. In this sense, it can be said that Hutchison (1938, p. 65) understood Knight (1921) position wrongly when quoting his approach to uncertainty as a prelude to own empirical emphasis (Emmett 2009, p. 345). Indeed, Hutchison (1997, p. 147) sees Knight (1921) as "one of the most (or perhaps the most) important and valuable works of this century regarding the more profound, or methodological aspects of micro-economics. In fact, in Hutchison 1938, I think I probably drew more inspiration from this work than from any other work on economics (as my citations may suggest)."

Hutchison's passage is clearly influenced by Hayek, the notion of "Science" with a capital "S", the attack on scientistic pretense, and the call for methodological humility suggests that he had read and studied very carefully "The Pretence of Knowledge" as well as other Hayek's methodological writings. This interpretation is corroborated since a few years later Hutchison wrote *The Politics and Philosophy of Economics: Marxians, Keynesians and Austrians* (1981), in which he devoted to analyzing the Austrian methodology more closely and tried to differentiate Hayek from Mises and apriorism.

Hutchison was influenced by some Hayekian methodological themes and he could not reconcile this methodology posture with his extreme aversion to the deductivistic aprioristic methodology of Mises. Hutchison wanted to separate Hayek from the anti-fallibilism deductivist motto that Mises defended. Another reason, especially, is that Hutchison identified himself with the common epistemic notion of humility and fallible knowledge that Hayek emphasized. This is not a specific

or aleatory theme, rather it is a central contribution of Hayek to the social sciences and economic theory. It is the original scholarly advance of Hayek's research program based on the epistemic notion of fallible knowledge. It is remarkable that after so much disagreement and methodological incommensurability in the 1930s, Hayek and Hutchison end up in some aspects with similar and common methodological views of the limited role of economic science and social sciences in general.

IX. KINDS OF IGNORANCE

Different views on the role of economic theory and knowledge are directly connected with the expectations of the profession and policy-makers on what it is capable to achieve in terms of prediction and thus manipulation and control with policy instruments that derive from economics. In this context, the questions about the extent of knowledge and ignorance in economic science are of great social and political importance. An extreme and incompatibly high expectation with the prospects of economics in particular can lead to a generalized frustration with the profession. A robust expectation on what reasonably economic policies can be expected to do or achieve is to be grounded in a clear understanding and comprehension of the scope and limits of economic knowledge and the domain of ignorance.

The great scientistic expectation of the man of science regarding the progress of natural sciences as an inherent trend to mankind progress is a utopian and naively wishful thinking. Hutchison (1977, p. 4) believes that this broadly positivist view of the early twentieth century "regarding the blessing of mankind which would flow from the progress of the natural sciences have now long since faded away behind threatening mushroom-shaped clouds." Nevertheless, the equally or more utopian and naively scientistic notion that was introduced in social sciences concerning the capability of social architecture and engineering to improve the social-economic progress, development, and human welfare is quite widespread and alive. "The point," Hutchison (1977, pp. 4-5) writes, "is not simply that such expected blessings might well prove illusory, *even if some great leap forward in economic knowledge were to take place* (such as *has* taken place, for example, in the last half-century in physics). The point is that, in any case, no such great leap forward can reasonably be expected. Meanwhile, no kind of ignorance can be more dangerous than the ignorance regarding the limits and limitations of one's knowledge."

The ignorance of the limitations of human reason in general, and its consequences in social sciences and economics in particular, is the pretense of scientific knowledge that Hayek is so critical about. Knowledge derived from scientism is not real scientific knowledge because it is founded in the rejection of the particular status and characteristics of each scientific object in question, it is simply an illusion. Frequently, it is this intellectual background in which authoritarian governments are founded and that has so nefarious and perverse social consequences. For Hutchison, the student of the history of economic thought and methodology has an important social and political role that is to combat and reduce this kind of ignorance and pretense of knowledge. This is exactly the spirit of the great project of reconstruction in history of ideas and methodology that Hayek traced in the Abuse of Reason Project.

Hutchison (1977, p. 12) states that prediction is the central feature that includes, involves, and brings together the various main aspects that a scientific understanding should be able to answer. Prediction is still more important in a social discipline like economics, improving predictions "is, and should be, a main aim of economists and that is *to some limited extent* a feasible aim." The capability of predictions as a main character of scientific progress and economic knowledge is what delimits the numerous frontiers of what is expected to be reasonable and feasible and what is expected to be utopian, dangerous, and pretentious. It is clear that if the profession can identify, describe, and explain in a certain sense the social problems but it cannot do some kind of predictions, even as bad as it can be and has been made since Adam Smith times, then the practical contribution in promoting human welfare is damaged. And it does not correspond to expectations so long formed inside and outside the profession. Hutchison (1977, pp. 8-9, 33) takes the middle-ground position that refuses the over-optimist comparisons or some kind of "epistemological parity with the more mature sciences as the natural sciences in terms of prediction capacity" and at the same time avoid the simplistic nihilist anti-rational skepticism which maintains that prediction in economics is in some way impossible.

The demand for specific, detailed, and quantitative economic predictions were introduced in the post-First World War period, especially in the study of business cycles and industrial fluctuations. This was in replacement to prediction of long run tendencies typical in classical economics and the qualitative and pattern prediction that dominated the early neoclassical period at the beginning of the twentieth century. The quantitative tendency gained vigor in the 1930s with the formalistic revolution and the advances in statistical data and econometric techniques. Finally, in the 1940s,

during and post-Second World War, predictions became a central feature and policy-requirement within the profession, famously stated by Milton Friedman's (1953) instrumentalist methodology. The movement toward measurement and quantization of economic predictions is closely linked to the scientistic influence in which the social sciences tried to slavishly imitate the methods, language, and thus predictions of natural sciences. With some kind of self-validity, predictions attested the status of real science, like the natural hard sciences, to economics.

However, Hutchison (1977, p. 15) argues, the problem is that this vision neglected the object of social science itself. Both the degree of precision and testing of general laws and the initial marginal conditions are very different in natural and social phenomenon. This difference has extreme consequences in limiting the practical use of policy-forecasting and theory testing. These limits also are applied in the Popperian falsificationist dynamics, since in economics and other social sciences there are few or none scientific predictions in the sense that it is derived from totally generalized and well-tested laws, "conditional predictions are more or less useless unless the [initial] conditions themselves can be controlled or predicted" (p. 18).

Since the character of non-trivial, genuine, and relevant scientific laws in the Popperian natural-scientific sense is virtually denied in the social sciences, economists have used for predictions and forecasting "*trends, tendencies, and patterns*, expressed in empirical historical generalisations of less than universal validity, restricted by temporal and local limits" (p. 20). As Popper reminds us, scientific laws and historical patterns are in different epistemic grounds and it is important to keep in mind this fundamental difference concerning the validity and application of trends and tendencies in explanations and predictions. These are much more a only poor tentative to see in the darkness of ignorance. Hence, such trends, tendencies, and patterns are far from any degree of consensus or objectivity, they are indeed vulnerable to the more diverse interpretations, misleading, and subjective uses. The enormous amount of economic prediction is made by the consistent use and pursuit of this kind of historical inductive patterns and such trends play a basic social role of guidance in all social-economic and econometric prediction. In Hutchison's view, this fact shows that this method is what the profession *can* do to fulfill society demand for forecasting and not what the profession thinks or wishes to do.

Scientific laws are necessarily accompanied by precise and checkable initial conditions in an independent form, thus the law implies a certain explanation and prediction and is applied as a form of deductive process. This is possible because the initial conditions are so precise and clearly

fulfilled that the law application is a quasi-closed system. But in social sciences this is not possible. An almost closed system with few dependent variables objectively measured and initial marginal conditions clearly applied that provide a deductive structure of applications of pure law into applied theory is a denied option. The inductivist notion of discovering empirical historical patterns, trends, and tendencies is the only legitimate exit for social sciences to have a scientific enterprise and practical relevance.

> "Extrapolation of trends by a kind of induction is a method which has obvious weaknesses. But beggars can't be choosers, and if, in some important branches of economic prediction, inductive extrapolation is an inevitable or demonstrably superior method, *because of the nature of the material*, then it must be recognised, and the best must be made of it; and, in fact, *quite naive* inductivist extrapolation *has been shown* in some cases in economics to score roughly as well as, or better than, in terms of predictive batting averages, the most elaborate, 'rigorous' deductive model-building." (Hutchison 1977, p. 23)

In the same manner that inductivist method gained more importance, the role of empirical judgment rather than deduction gains a more prominent role in economic predictions. The inductivist method opens in one way a discretionary and arbitrary subjective interpretation of the history and patterns that is said to be the right one, thus a possibility to infabillism if the epistemic difference about patterns is confused with scientific laws. Indeed, the subjective content of social phenomena is what Hayek (1943) differs as being the central object of social science. In Hutchison's (1977, p. 37) words, the "'theories,' predictions, 'laws' (if any), must depend on what 'the subject-matter' of different sciences 'admits of.'" The criticism of Popper (1945a, 1945b) about the general historical secular laws of the society from thinkers like Plato, Georg W. F. Hegel, and Karl Marx is one of his main arguments for the fallibility of knowledge and falsificationism.

Hutchison did not fall in these secular and inexorable historical laws, for him the inductivist historical method is about temporal and spatial patterns, trends, tendencies. This multiplicity of relations are essentially fallible in the sense that there is no law or inexorable trend that guarantee that in certain time and place this pattern will be valid. The emphasis in the inductive historical method by Hutchison could be seen as an approximation to the English and German historicist tradition and the American institutionalist school. Hutchison is very sympathetic to the empirical

and historical notions of Thorstein Veblen, Wesley Clair Mitchell, Cliffe Leslie, and Henry Phelps Brown, but he did not fully agree with these influences and neither views himself following this tradition (e.g., Hutchison 1977, pp. 90-91; 1984; 1998, p. 83; Hart 2002, pp. 367, 374).

What is common to Hutchison and these historicist traditions is the aversion to the deductivism, Hutchison is better understood as part of a line of British empiricist-inductivist tradition that emphasizes the role of fundamental ignorance. Ignorance is the justification for the historical inductive method in social sciences. In this sense, it differs from certain pretenses of knowledge in the original institutionalists and historicist traditions. According to Hutchison (1977, pp. 22-3), "to recognise that the main fruit-bear in of economists to policy-making must invariably come from *trend-spotting*, not by deduction from laws, is to recognise that the task is essentially one of the exercising of *judgment* in a world of uncertainty and ignorance."

As we realize the particular material of social scientific disciplines in general, and economic science in particular, the case for an empiricist and inductivist view is supported. Thus, the notion of Popper's hypothetico-deductive method is misleading in social sciences. In 1938 Hutchison was accused by Klappholz and Agassi (1959) of dismissing the central message of critical rationalism by Popper. However, this is seen in some degree in *Knowledge and Ignorance in Economics* when Hutchison criticizes Popper. According to Hutchison (1977, pp. 41, 61; see also pp. 96-7), what is essential to emphasize is that

> "misleading comparisons between economics and physics and the methods, tactics, and criteria appropriate to the two sciences, neglect vital differences in the nature of the basic materials that 'historicism,' 'essentialism,' 'verbalism,' 'fashion,' 'uncontrollable dogmas,' and all the other methodological monstrosities, discerned by Sir Karl in the social sciences, are so *much* more difficult, almost impossible, to root out, and will not give way very far to methodological prescriptions however trenchant, although significant improvements in this respect are not impossible to achieve, *if critical standards are constantly upheld, however unpopular this may be*. [...] All that can be set out are 'reasonable' principles, or maxims, for scientific decision-making and investments which will not yield any uniquely correct answers and will inevitably need interpretation and judgment for their practical application, The principle of falsifiability is linked with what Popper calls 'fallibilism' as the epistemological basis for a free, pluralist society. Watering

> down, disarming, or stifling this critical principle, by leaving the green light switched on permanently, signalling 'anything goes' for every kind of complacent, pretentious and noxious dogmatism would constitute a grand new '*trahison des clercs*.'"

Hayek in his later writings in methodology has a similar position. Theories of complex phenomena have a many different dependent variables and degrees of measurability, interdependence, and external influences that turn impossible to make detailed explanations and precise predictions. Hayek has a profound skepticism with an empirical turn in economics. For sure, Hayek has in the historical-inductivism a methodological enemy that he rejects for the roots in historicism, one of the main three intellectual traditions that are influenced by scientism. Both men, Hayek and Hutchison, perceive some intrinsic failures about the Popperian falsificationist in social sciences and both share Popper's epistemic dimension of fallible knowledge. The critiques that Hayek has to Popper are similar to the limitations that Hutchison pointed out. Nevertheless, each one internalizes these aspects in particular forms in a broad epistemic aspect of knowledge and ignorance.

X. CONCLUSION

Hayek and Hutchison had a deep methodological incommensurability in the 1930s caused by an optimist, naturalist, and broadly empirical-inductive positivist view that Hutchison introduced in economics. However, in their mature methodological writings both men have become remarkably similar in terms of general understanding of the limitations and the role of ignorance and uncertainty in explanation, prediction, and control of social-economic phenomenon. Nevertheless, the intellectual paths of both men were marked by a particular and singular methodological position in each case.

Hayek in developing the knowledge problem as a coordination process between ignorant agents in the context of the economic calculation debate perceives that his intellectual opponents were inebriated with a scientistic mentality that prevented an appreciation for the institutional roots of the real economic problem. Hayek starts a great project of reconstruction on the history of ideas and methodology that intended to search the intellectual roots of scientism, the Abuse of Reason Project. Finally, criticizing Popperian falsificationism and sophisticating his methodological

position in terms of modern complexity notions, Hayek deepens his methodological view of explanation of principle and pattern prevision. The essential epistemic position of fallible knowledge that gives life to the coordination problem is intrinsically present in all the scientific inquiry of complex phenomena and is the central element of appreciation of ignorance and humility that became the main practical message of his methodological views.

Hutchison traced a very different intellectual path. Initially, in the 1930s Hutchison felt a profound methodological disruption in the profession by the abuse and diffusion of the deductive method in economic theory as empty of empirical significance and meaning. The deductive method is logical propositions of language and tautological symbols in a manner not itself contradictory, thus these are essentially sterile about the real policy-oriented concerns and predictions. Prediction is the main aim of science. Tautologies are by definition infallible, hence they are dogmatic and unrealistic to the various historical-contextual empirical economic problems. Hutchison defines a criterion to differentiate a scientific proposition from pseudo-science, the principle of testability. The principle says that a scientific proposition must be conceivably empirically testable directly or be reducible by direct deduction to an empirically testable proposition. In this sense, propositions of science are divided into propositions of pure and applied theory. The first is only concerned with language, not falsifiable. The second is an empirical inference to the real conditions in analysis subject to testability. When applying the principle of testability to the body of economic theory and its main concepts, Hutchison perceives that much of these concepts are tautological and empirical empty. Such as the rational or sensible behavior postulate, equilibrium, and so forth. Economic theory was assuming what it had to explain. Later in his mature methodological writings, Hutchison abandons his young positivist and optimist naturalist view present also in Popper but maintains the principle of testability.

Hayek and Hutchison saw extreme difficulties in the *stricto sensu* application of the Popperian philosophy in social sciences. In this kind of phenomena, there are no closed systems and the application of hypothetico-deductive general laws in some marginal and initial conditions is very difficult. The natural consequence is the appreciation of a great portion of uncertainty and ignorance in much of economic science. Hutchison, differently from Hayek, embraces a more empiricist inductivist inclined view to fulfill the policy demand and the goal of science, predictions. Hayek did not fully support this inductivist turn and the empirical view of Hutchison. Hayek had a skepticism with the results of an empirically oriented work in economics because of the limits of

predictions and refutations inexorable in complex phenomena. If for Hayek the incurable ignorance and fallible knowledge is a limitation for social-economic explanations and predictions, Hutchison internalizes the ignorance and uncertainty as a justification for the empirical and inductivist oriented turn in economics.

Nevertheless, Hayek and Hutchison end up with a remarkably similar understanding of the limitation of knowledge and the role of ignorance in economics. The methodological mature differences between both can be understood as the different particular internalization of a common epistemic notion of fallible knowledge. Hayek internalizes this epistemic notion as a central aspect of his research program and Hutchison internalizes it as an interchangeably association with the empirical content subject to refutation. A scientific theory is one that predicts and forbids some kind of events, thus theory is by definition fallible. In this sense, Hutchison has a similar way to Popper in internalizing the epistemic notion of fallible knowledge in science,. The difference remains in the aversion to deductivism and the British empiricist and inductivist tradition. The difference between Hayek and Hutchison can also be set on the optimism or pessimism about the epistemic ground of fallible knowledge and ignorance, on the science capability to conduct society to a better place. Hutchison (1997, p. 192, 200) preserved his optimistic hope for improving social welfare through science via prediction, while Hayek is an epistemic pessimist.

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