



Sraffa, Leontief, Lange: The political economy of input–output economics

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Received 29 August 2016; accepted 30 August 2016

Abstract

The fields of Political Economy and Input–Output economics are commonly unrelated due to the discrepancy between the qualitative and quantitative analysis in economic science. With the aim to overcome this separation, this paper relates the basic model of *Production of Commodities by Means of Commodities* to the paradigm of planning as the substitute for the market by sketching the historical development of Input–Output economics. The model of Sraffa, the Leontief matrices and the Political Economy of Marxist tradition, represented by Oskar Lange, are strongly associated so that the typical qualitative concepts of planning, law of value and historical development of the capitalist system can be connected to the quantitative framework of matrix, programming and mathematical formalization.

JEL classifications: B23; B24; P51

Keywords: Political economy; Value theory; History of economic thought; Sraffa; Leontief; Marx

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1. Introduction

Since the pioneer works of Leontief (1936, 1966) input–output economics became one of the most important branches in economic science. Along with this development, there was an impressive improvement of computers. On one side, this enabled the construction of extremely complex mathematical models. On the other side, it made the presentation of input–output economics and of economic planning very complicated for economists outside this tradition, who primarily dedicate their attention to the historical development of the social relations reflecting the technical base of production.¹

It does not mean that the mathematical formalization should be controlled or repressed. But we claim that it is essential to constantly give precise and meaningful explanations for the equations if we are interested in enlarging the number of scientists in conditions of communication. In a certain way, this is the same appeal made by Leontief (1964) to approximate ‘technical economists’ and ‘political economists’. Given that this union may be highly useful for

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¹ For an introduction to the input–output analysis in relation to economic planning from the traditional perspective, see Stone (1984). On the relationship between ideology and the economic structure, see Karl Marx’s major conclusions after studying political economy in the *Preface to the Critique of Political Economy* (Marx ([1859] 1977)).

31 dealing with practical topics of national economic policy, it is reasonable to affirm that Leontief’s appeal still applies
32 today.

33 Another problem is the following. From the historical-qualitative perspective, input–output economics traditionally
34 does not distinguish historical specific economic categories from categories embracing all modes of production. As
35 a consequence, many models of input–output begin with capitalist categories which should be understood as specific
36 forms of the general economic categories. Profits and interest rates are then explained before it is agreed that these
37 forms of income are only expressions of the existing economic surplus in society. If we want to talk about the interest
38 rate, it is necessary to previously develop the notion of profit, which, on its turn, can only be fully comprehended
39 after the concept of growth rate is entirely described. Economic growth, on its turn, gains a concrete meaning for the
40 economist only after the notion of surplus is discussed, and so on.

41 The monetary exchanges between sectors presented in the matrices of accountability usually introduce the general
42 economic model from the perspective of value. Now, if the reader is familiar to the Critique of Political Economy and
43 to “the pivot on which a clear comprehension of political economy turns” (Marx ([1867] 1887) chapter 1, section 2),
44 i.e., to the difference between use value and value (or concrete and abstract labour), this is not a structural problem.
45 Equipped with this instruments, one can certainly read and translate the input–output tables as to see whether the
46 material flow follows the demand of working people or not. However, this is not the normal case for most economists
47 initiating the studies on input–output economics. Most of them are trained as technicians or economist–engineer with
48 high qualifications for the quantitative methods, statistics and mathematics.² In order to comprehend the social utility
49 of input–output economics, it is necessary to add to the techniques of quantitative mapping of economic relations the
50 comprehension of the economy as a historical and social process. In that sense, to recover the fundamental theoretical
51 problems of Political Economy contributes to increase the overall level of development not only of input–output
52 economics but of economic science as a whole.

53 One of the most important achievements of Marx was his explanation that up until the rise of the capitalist society, all
54 economists confused the economy in general with the specific historical form of the economy under the rule of capital.
55 It means that capitalism is only one form of economic organization that exists due to the presence of certain historical,
56 social and technical conditions. Despite being frequently disregarded in many environments of economics teaching,
57 Marxist economics points out to an utmost important distinction that is also forgotten by many economic scientists.
58 The discovery of the historical specificity of capitalism indicates that all rules and patterns described by economic
59 theory up until the Critique of Political Economy refer exclusively to the capitalist economy, and not to the general
60 mode of production of distribution that can be used as an abstract frame to explain all modes of production in history.
61 It is imperative to differentiate the general laws of the economic system from those which prevail in the capitalist mode
62 of production not only to consolidate economics as a science, but also to correctly develop the instruments of economic
63 planning in order to overcome all problems created by capitalism. The distinction between historical-specific economic
64 categories from categories present in all forms of social organization of production and distribution is equivalent to the

² Input–output analysis is part of economists toolbox and it is nowadays taught within the framework of Neoclassical economics. This reinforces the mentioned distance between technical and political economists and indicates that there are two great traditions of the input–output perspective. One of them is the original formulation which goes back to the traditions of Phisocracy and Classical Political Economy. The other one is the input–output schemes as a part of general equilibrium analysis, which resembles the work of Walras ([1874] 1954). There are profound epistemological differences between the Classical and the Neoclassical approach to input–output analysis. While the Classical approach focus on transmission effects in the long run and relates them to the concept of technical coefficient due to its theory of objective value, the Neoclassical approach is concerned with the changes in the short run and relates them to the structure of preferences of consumers due to its theory of subjective value. The problem of aggregation is rapidly solved by the Neoclassical approach because it abstracts from the concrete movements necessary in production to perform the transformation of one use value into another. The ongoing question whether there exists an equilibrium for the whole system is another picture very present at the Neoclassical board which is not central in the Classical perspective. If equilibrium is considered in the Classical framework, it is dynamic rather than static, as it is usual in the Neoclassical models. Measurement of wealth (as a sum of different use values) is also a non-problem for the Neoclassical view, because it does not bother asking what capital is qualitatively made of. This last discrepancy is, by the way, linked to the Capital Controversy, a debate about the concept of capital that gained popularity during the 1960s and 1970s. Despite the divergences between the Classical and Neoclassical interpretations of input–output analysis being important to direct the reader to this controversy, we believe that both perspectives can be a starting point for becoming closer to the Critique of Political Economy of Karl Marx, a system under which all three authors here studied (Sraffa, Leontief and Lange) located themselves. In that sense, we agree with Akhbar and Lallement (2011), to whom both Neoclassical and Classical perspectives merge in the models of Leontief, who consciously used a rhetoric of consensus between Classical and Neoclassical economic thought in a way similar to Lange but differently from Sraffa and Samuelson. For a connection between Classical and Neoclassical input–output analysis, see Ten Raa and Mohnen (1994). On the present state of the capital controversy see Garegnani (2012).

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