

Historical Roots and Theoretical Background of Input-Output Analysis



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Summary of the Training Session:

The first session will introduce into the roots of input-output analysis around the statement of James Mill: "The agents of production are the commodities themselves ... They are the food of the labourer, the tools and the machines with which he works, and the raw materials which he works upon." This objectivist approach is in striking contrast to the later subjectivist one entertained by marginalist/neoclassical economists. In the second session central concepts of the analysis of systems of production, such as reproduction, viability, social surplus, vertical integration, wage frontier and so on will be explained first in a one-product model and then in a two-sector model. It will be shown how physical real costs translate into prices of commodities and the inverse relationship between wages and the general rate of profits. The argument will also briefly touch upon systems of production-cum-disposal, that is, systems that generate not only goods, but also bads that must be removed. The argument will then, in the third session, be generalized to include a discussion of the problem of the choice of technique in conditions of free competition, in which producers are bound to cost-minimize. It will extend the analysis also to cover durable instruments of production, or fixed capital, and the choice of the mode of operation of them. Session 4 will investigate the problem of technological change in an input-output framework, starting from Leontief's analysis in terms of shifts of the wage frontier in what has been called the "first machine age". The analysis will then be extended to the "second machine age", in which machines improve their capabilities in the course of their employment. It will be argued that processes of "creative destruction" (Schumpeter) raise serious problems about promoting the creative part of the story and containing the destructive one.

Outline:

First Session *Input-output analysis ante litteram: From the Physiocrats via the Classical political economists to Karl Marx*

Second Session *On the properties of systems of production (and disposal): consumption and growth; wages and profits*

Third Session *On the choice of technique in conditions of free competition; circulating and fixed capital*

Fourth Session *Input-output analysis and technological progress in the “first” and the “second machine age”*

Prerequisites:

It would be good if participants had a basic knowledge in economics and input-output analysis, but most important is their curiosity and a burning desire to learn and understand.

Suggested References:

Kurz, H.D. (2006) The agents of production are the commodities themselves. On the classical theory of production, distribution and value, *Structural Change and Economic Dynamics*, 17, pp. 1–26.

Kurz, H.D. (2022) On Machine Ages. Causes, forms and effects of technological changes. In: H.D. Kurz et al. (eds) *The Routledge Handbook of Smart Technologies* (London: Routledge), pp. 56–76.

Kurz, H.D. and Salvadori, N. (1995) *Theory of Production. A Long-period Analysis* (Cambridge: Cambridge University Press).

Kurz, H.D. and Salvadori, N. (2000) ‘Classical’ roots of input–output analysis: a short account of its long prehistory, *Economic Systems Research*, 12, pp. 153–179.

Kurz, H.D. and Salvadori, N. (2006) Input–Output Analysis from a Wider Perspective: a Comparison of the Early Works of Leontief and Sraffa, *Economic Systems Research*, 18:4, pp. 373–390.

Leontief, W. (1987) Input–output analysis, in: J. Eatwell, M. Milgate and P. Newman (Eds) *The New Palgrave. A Dictionary of Economics*, vol. 2, pp. 860–864 (London: Macmillan).

Leontief, W. (1991) The economy as a circular flow, *Structural Change and Economic Dynamics*, 2, pp. 177 – 212.

Leontief, W. (1985) The Choice of Technology, *Scientific American* 252(6), 25–33.

Leontief, W. and Duchin, F. (1986) *The Future Impact of Automation on Workers* (New York: Oxford University Press).

Samuelson, P.A. (1991) Leontief’s ‘the economy as a circular flow’: an introduction, *Structural Change and Economic Dynamics*, 2, pp. 177–179.