

Paolo Giussani's Defense of Sequential Values

by

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Paolo Giussani's comment on our rejoinder to Alan Freeman¹, does not discuss the two main criticisms that we made to the sequential-value approach: 1) the combination of market prices and labor in the determination of sequential values, and 2) the inappropriate treatment of the devaluation of capital when technical change occurs or disequilibrium prevails, what we call the «value conservation principle». Giussani only considers the two *paradoxes* concerning the progress of labor productivity, the productivity paradox, and the treatment of fixed capital (that Giussani denotes as joint products), the capital-value paradox.

It is appropriate to begin by explaining the actual purpose of the investigation of such paradoxes. Their existence reveals serious weaknesses in the theory. The identification of these difficulties may lead either to the rejection of the analytical framework or to its correction, for example adding new assumptions. It should go without saying that the degree of realism of the cases considered in the identification of these paradoxes, or the probability of their occurrence are not at issue. Giussani compares these paradoxes to Steedman's negative values. This comparison is quite relevant: These negative values were an indicator that values were not appropriately defined in joint production. The paradoxes in the sequential-value approach must indicate a similar deficiency in this framework of analysis.

1. *The Productivity Paradox*

Giussani, first, confirms our finding that economizing on labor or material inputs can lead, in the sequential-value approach, to a *rise* in the value of the

1. P.Giussani, 1998, «Dynamic and Static Marxian Values. A Partial Rejoinder to a Rejoinder», *Political Economy*; Issue 3; G. Duménil, D. Lévy, 1998, «The Conservation of Value, A Rejoinder to Alan Freeman», forthcoming in *Review of Radical Political Economics*.

good produced. As we wrote, in concluding section 1 of our paper, this results depends entirely on the price of the commodity in period 0:

The origin of the productivity paradox lies in the fact that this approach is not a pure labor theory of value, but rather a *labor-market price* theory of value. When the outcome of the market in period $t = 0$ is modified (when p^0 is changed), the entire sequence of values over time is altered².

Giussani discusses the conditions on initial values and on the forms of technical change to which the productivity paradox is subject. he does not question the existence of this paradox, which is obviously only observed in particular cases. Giussani's discussion could be helpful to Freeman, if it led to new assumptions that prevent the productivity paradox. Giussani suggests one such condition: «[...] that the only rational choice for the initial condition of the dynamic value equation is the solution of the simultaneous system for $t = 0$ », i.e., traditional values. Will Freeman adopt it? This would be equivalent to saying that the relevance of the sequential-value approach is limited to the vicinity of the traditional solution.

2. *The Meaning of A*

In the presentation of the productivity paradox, we consider the simplest model possible, in which only one good exists. The technical coefficient diminishes over time, as well as the quantity of labor used. We do not contend that this is the most realistic description of production and technical progress within capitalism: It is simply a case in which the determination of value the embodiment of labor should unquestionably lead to the decline of the value of the output. In other words, if value is determined by the amount of social labor directly and indirectly required by its production, a decrease of labor and material inputs must translate into a diminished value. It is simply a test of a labor theory of value. If a framework of analysis does not preserve this property, it is not possible to claim that it is faithful to a more difficult one? Accordingly, in the present state of the debate the discussions concerning the introduction of new goods is totally irrelevant.

2. G. Duménil, D. Lévy, *ibid*, p. 7.

3. *A and L as Functions of a Scalar Variable*

Giussani refers, in this section, to «the claim [...] that the Sraffian theory and static (or algebraic) formalism simply capture the notion of (long run) equilibrium values or prices». This is probably the case. As far as we are concerned, we make a clear distinction between the analysis of the gravitation of market prices around prices of production, as analyzed in Volume III of *Capital*, and the theory of value. The investigations of the effects of technical change in these two frameworks must be different. The gravitation of prices under the assumption of technical change is an interesting but difficult problem³. However, concerning values, no gravitation is at issue. At a given point in time, values only depend on the average technology during the period. They obviously change with the technology.

4. *A as a Random Function*

Giussani performs some econometrics to illustrate the fact that values in the traditional definition may vary as a function of technology. Indeed, if technology is modified randomly in period $t + 1$ with no relationship to its features in t , values vary considerably, (In a one-good model, if the quantity of the good required for the production of 1 unit varies between 0 and 1, the value of the good varies between the labor coefficient and infinity). The consequences of Giussani's exercise are unclear.

5. *Continuous Values*

The standard modeling of technology assumes that inputs are advances for a certain period of time different from 0, the production period. Most formalisms, add simplifying assumptions. For example: 1) all production periods have the same duration; 2) they are all synchronized; 3) the circulation period is null... The relaxation of these simplifying assumptions requires the simultaneous consideration of differential and difference equations⁴.

Contrary to what Giussani contends, a pure system of differential equations is not more general than the standard formalism but, instead, is a particular case of this model: Differential equations assume not only that all production periods are equal, but that they are null.

3. To which we devoted one paper, G. Duménil, D. Lévy, «Structural change and prices of production», *Structural Change and Economic Dynamics*, VI (1995), p. 397-434.

4. Difference equations can also be denoted as *relations of recursion* in discrete time.

6. *What is static and what is dynamic?*

Giussani's discussion in this section refers to the relationships between values, prices of production, and market prices. We explained repeatedly our views in this respect in several works⁵. Marx considers two types of laws of exchange in which: 1) market prices gravitate around prices proportional to values; 2) market prices gravitate around prices of production. In each case, market prices have similar dynamical properties, although the centres of gravitation are distinct. Both values and prices of production must be determined by valuing inputs and outputs with the same vector of values or prices of production respectively. If a dynamic variable is a variable whose movement is represented by a difference equation, only market prices are dynamic.

7. *The capital-value paradox*

The two frameworks of *joint production* and *fixed capital* must be distinguished. The latter is a simpler particular case of the former. As we described in the appendix of our paper, there is no basic difference between Freeman's approach of joint production and ours⁶.

In our section III, we only discuss fixed capital. Apart from any definition of value two alternative formalisms of fixed capital can be used. The most complex models consider the components of fixed capital (machines) of different ages as distinct goods. A simpler formalism assumes that a certain percentage of productive power is lost at each period.

The point in the present discussion is not to determine which model is best, but whether the new definition of value can be used in each model (as is the case for the traditional definition). Freeman uses only the second formalism. In our paper, we discuss whether sequential values are compatible with the first model. We have not been able to do this successfully. As summarized in the comment of figure 3 of our paper:

5. G. Duménil, *De la valeur aux prix de production*, Paris: Économica, 1980; G. Duménil, D. Lévy, *The Economics of the Profit Rate: Competition, Crises, and Historical Tendencies in Capitalism*, Aldershot: Edward Elgar, 1993.

6. G. Duménil, D. Lévy, «Labor Values and the Imputation of Labor Contents», *Metroeconomica*, XL (1989) p. 159-178. In this paper, we show that the problem of negative values disappears when values are defined properly.

The determination of sequential value in the fixed capital framework raises considerable problems. In the example in this figure, the sequential values of a new machine and a one-period old machine fluctuate over time. Two puzzling properties are observed. The value of the older machine becomes recurrently larger than that of the new machine, and sometimes negative⁷.

These two «puzzling properties», the possible rise of the value of the machine in one period and its possible negative value, correspond to what Giussani calls second paradox. No answer to these puzzles has been proposed.

7. G. Duménil, D. Lévy, «The Conservation of Value», op. cit. note 1, p. 14.

