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Dynamic and Static Marxian Values
A Partial Rejoinder To A Rejoinder

by
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Introduction

In their recent criticism of the new Temporal Single System (TSS) approach in value and price theory, Gerard Duménil and Dominique Lévy (D&L) maintain that, contrary to the standard simultaneous methodology (SSM), the sequential formalism in the determination of the marxian value magnitudes gives raise at the least to two important paradoxes:[1]

- A *falling productivity in spite of decreasing input-output coefficients;* something that would make technical change wholly irrational within the TSS framework.[2]
- *Explosive oscillations* (and *negative magnitudes*) *of TSS values in joint production systems;* which would make TSS inconsistent in the most general form of production and in systems with fixed capital.

Nevertheless, D&L's claims are not wholly justified on both points, and depend on some hidden assumptions that they choose not to make open. Rather, it is D&L's standard treatment of values which is indeed revealing of some strong weaknesses of the SSM; weaknesses that have been not tackled in the literature only because of the sacred-made nature of the linearly simultaneous tradition of von Bortkiewicz, Dmitriev and Sraffa-Marx as a respectable, and even nice, form of academic opposition.

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1. See Gérard Duménil and Dominique Lévy, *The Conservation of Value. A Rejoinder to Alan Freeman,* Paris, April 1997. In this paper, Duménil and Lévy also raise at least three other important points: about the treatment of fixed capital, the relationship between so-called historical and reproductive cost, and the notion of equilibrium. We leave these for future work.
2. The present paper only deals with value magnitudes and not with price magnitudes, topic which can be left for a subsequent more general treatment, and only to the extent touched upon by the two alleged paradoxes discovered by D&L.

First Paradox

D&L choose the simplest equation of a one-sector system of commodity production without fixed capital, where the input and the output are one and the same produced good. Writing λ for the unit value, A for the changing input-output coefficient, L for the changing coefficient of direct labour time, and t for the time subscript, the very well known SSM value equation reads

$$\lambda(t) = A(t)\,\lambda(t) + L(t) \qquad (1)$$

whereas the TSS value equation is

$$\lambda_{t+1} = A_t\lambda_t + L_t\,. \qquad (2)$$

(1) is a nonhomogeneous algebraic equation; while (2) is a nonhomogeneous linear difference equation with varying coefficients.[3]

Solution of linear equation (1) is straightforward

$$\lambda(t) = \frac{L(t)}{1-A(t)}\,; \qquad (3)$$

provided that $A(t) < 1$, (3) obviously yields a positive unit value magnitude.

With A(t) and L(t) posited as constant magnitudes (A and L respectively), the solution of (2) would be

$$\lambda_t = \frac{A^t[\lambda_0(1-A)-L]+L}{1-A}\,. \qquad (4)$$

But, since we are now having coefficients that change over time, solution of (2) is in fact considerably more complicated, that is

$$\lambda_t = \left(\prod_{i=0}^{t-1} A_i\right)\lambda_0 + \sum_{r=0}^{t-1}\left(\prod_{i=r+1}^{t-1} A_i\right)L_r \qquad \text{(4bis)}$$

From (4) it is obvious that, with constant i-o coefficients, in order to have constantly increasing unit values $\lambda_t > \lambda_{t-1} > \ldots > \lambda_0$ – i.e. a constantly decreasing labour productivity– it is necessary and sufficient to set $\lambda_0 < \frac{L}{1-A}$ for $\lim_{t\to\infty}\lambda_t < \frac{L}{1-A}$. But, this is an absolutely banal and, I would add, meaningless case.

3. The time variable, (t), placed within parentheses indicates that we are dealing with a static algebraic system; t as a subscript means that we have a dynamic system instead. $A(t) \equiv A_t$ and $L(t) \equiv L_t$ are undefined functions of time; in practice they must of course be known in advance.

With varying i-o coefficients, from (4bis) one can see that in order to have rising unit values over a certain interval of t it is strictly necessary to set as initial condition

$$\lambda_0 < \lambda(0) = \frac{L(0)}{1 - A(0)}$$

If A(t) and L(t) are assumed to steadily decrease, then with all other possible choices of the initial condition (i.e., with $\lambda_0 \geq \lambda(0)$) the unit value λ_t will monotonically fall following the downward trend of both A(t) and L(t). Henceforth, the possibility of displaying a falling productivity in the solution of the TSS value equation entirely depends on the choice of the initial condition and nothing has to do with the intrinsic dynamics of sequential value magnitudes as different from the dynamics of SSM value magnitudes.[4]

Initial Condition and Subsequent Trends

The choice amongst the infinitely many possible levels of the initial condition λ_0 is not arbitrary. Since the sequential formalism in value and price theory has been introduced not for reasons belonging to aesthetics but in order to mirror the circuit of capital –which thing the simultaneous approach can't achieve– one should wonder what the setting of an *initial* value would mean in such a context. It can mean only one thing: the existence of something which becomes a commodity *without prior circulation;* what leads to the conclusion that the only rational choice for the initial condition of the dynamic value equation is the solution of the simultaneous system for t = 0, precisely because it is the simultaneous approach which prevents commodity circulation (and thence the circuit of capital) from occurring.

In their *Rejoinder to Alan Freeman,* D&L are able to show that in the TSS framework one can get a steadily decreasing productivity whereas with the same data in the SSM one has a steadily increasing productivity. This does not only depends on the choice for the initial value magnitude or condition in the sequential equation, but on another (hidden) assumption that is obscured rather than made clear by D&L, i.e. by their idea that increases in productivity mean decreases in the technical i-o coefficients, i.e. a continuous downward trend of $A(t) \equiv A_t$ ($A(t) \equiv A_t \to 0$). In fact, D&L forget to notice that in their own example both TSS and SSM productivities tend towards the *same positive*

4. In their rejoinder to Alan Freeman D&L do not mention this crucial circumstance.

limit: due to the initial condition chosen by D&L, TSS productivity tends to it *from above,* while SSM productivity tends to it *from below.* Apart from an *ad hoc* choice of the initial condition –something that is anyway necessary to show a TSS declining productivity– this effect is made possible only through postulating that the only varying factor is A, while the coefficient of direct labour, L, remains constant over time. This implies that SSM productivity can rise steadily only if the i-o technical coefficient A monotonically tends towards the null value, which will make $\lambda_t \to L$ as $t \to \infty$.[5] This appears rather absurd since in this conception technical change is bound to be made equal to production carried on *by means of no input other than human labour.*

Nonetheless, to a certain extent D&L are forced to postulate a changing technical coefficient along with a fixed labour coefficient as a form of technical change, since it is the only assumption that (combined with the usual choice of an initial value lower than the fixed point of the TSS equation for t = 0) is able to yield an apparently decreasing TSS labour productivity. By adding the function of a monotonically falling direct labour coefficient ($L_t \equiv L(t) \to 0$ as $t \to \infty$) the TSS equation would produce a boundless growth of labour productivity, independently of both the initial condition λ_0 and the long-term behaviour of A_t.[6] With a continuously diminishing amount of direct labour time per unit of output all possible increases of the unit value magnitudes –that are anyway exclusively caused by the choice of an initial value condition lower than the simultaneous solution for t = 0 as explained in the above– will necessary be confined within a more or less initial limited interval of t.

The Meaning of A

Since one of the D&L criticisms is based upon a paradox of the TSS approach which is produced by a changing input-output coefficient, one has to wonder about the real content of A when it is conceived of as a time function. My suspicion is that in the Sraffian tradition A is conceived of as such only

5. It is trivial that if one sets $\lambda_0 > L$, the TSS productivity too will tend *from below* towards the limit $1/L$, with $A_t \to 0$ (and $t \to \infty$).
6. Assume $A_t = H^{-1/t}$, where H is any constant scalar > 0, and $L_t = L_0(1 + gL)^t$, where $gL < 0$; then $A_t \to 1$ and $L_t \to 0$ as $t \to \infty$. According to (4bis), even in this case, where the i-o coefficient tends towards its sup limit, the unit value magnitude $\lambda_t \to 0$, regardless the rising movement of the i-o coefficient, since the influence exerted by the direct labour time coefficient is the dominant one within the value equations (both TSS and SSM).

because the SSM formalism force people to do so or else the formalism itself would vanish.

If technical change is modelled as a pure quantitative change in A then technical change becomes only a matter of using more or, preferably, less of the *same* type of input, as the only problem of technical change were to reduce the amount of rejects, that is, as if the actually transformed input were a *potential reject* that should be simply pushed towards zero. In reality A as an index of a given amount of a certain input –i.e. a good or use-value productively used up as input– is function of a collection of various determinants. When not only the quantity but the number and type of these determinants change, A itself must change into something *different*. If we wish to make of A a function that should mirror not only quantities but at the same time the variations in the total amount of use-value productively working as input, then when a certain type of A is newly produced its scalar value must *rise ceteris paribus,* and not fall, in relation to the old type of A since we are presuming that the new type of input is *more* advanced than the old one. If, on the contrary, we do not wish A to be an index for the input's use-value but only a neutral designation for a certain type of input, then when a new type of input is first produced it must be treated as a nonbasic output, and, if technical change (new outputs → new inputs) is assumed to be continuous in all spheres then all sectors must become nonbasic sectors, which circumstance obviously wipes out all kinds of simultaneous formalism.

A and L as Functions of a Scalar Variable

In relation to the new TSS approach, which seems to have very disturbing effects upon many people in the Sraffa-Marx tradition, sometimes the claim is made that the Sraffian theory and static (or algebraic) formalism simply capture the notion of (long-run) equilibrium values or prices, which is thought of as essential to any conceivable kind of more concrete price theory. As far as the value magnitudes this would be a wholly unjustified claim since once one assumes changing A and L there is no apparent relation between the set of algebraic solution $\lambda(t)$ for $t = 0, 1, 2, ..., n, ...$, and the solution function λ_t.

With $\lambda_{t+1} = A_t\lambda_t + L_t$ it is obvious that there is a fixed point if and only if

$\lambda_t = \frac{L_t}{1-A_t} = \frac{L}{1-A}$, that is if both the i-o and the direct labour coefficient are assumed as constant; in all other cases the difference equation (2) no longer possesses fixed points, and since the algebraic equation (3), $\lambda(t)=\frac{L(t)}{1-A(t)}$, is nothing but the collection of all fixed points of $\lambda_{t+1} = A\lambda_t + L$ for different constant values of A and L as calculated by making A and L functions of t = 0,1,2,...,n,..., there can be no relation at all between the difference equation (2) and the algebraic equation (3),[7] exception made for the circumstance that both equations tend towards the same limit as t grows limitlessly. By no means the functional equation (3) could be considered as some kind of inner long run law governing (2) as the latter does not need any such device.[8]

A as a Random Function

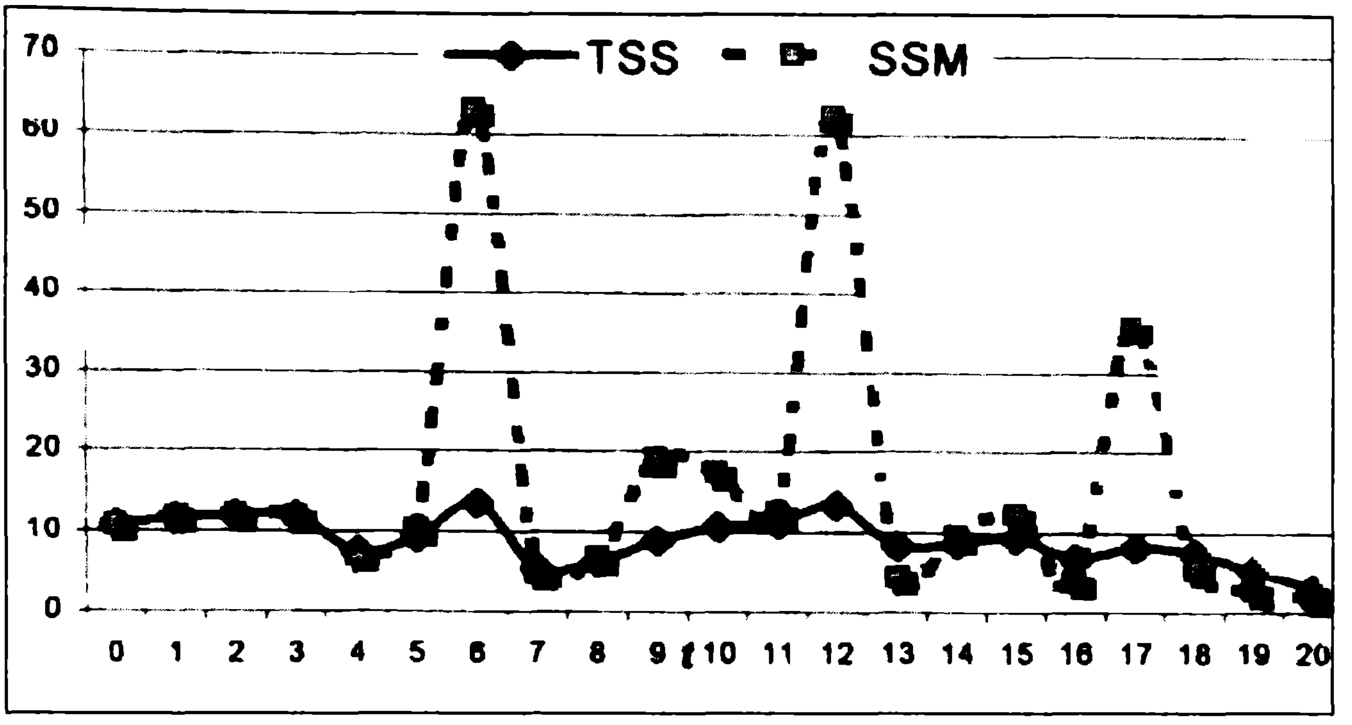
Since the real content of A is all but clear, and since the boundless increase in productivity depends not so much on the behaviour of A but on that of L, we can perform the experiment of considering A as a random function whose value must lie within the interval (0,1) in order to observe its influence upon the paths of λ_t and $\lambda(t)$ with a steadily decreasing L ($L_t \equiv L(t) = L_0 (1+gL)^t \to 0$ with $gL < 0$). By writing $A_t \equiv A(t)$ = Random A(0,1)(t) = $\Psi A(0,1)$,[9] equations (2) and (3) become respectively

$$\lambda_{t+1}=\lambda_t\Psi A(0{,}1) + L_0(1+gL)^t \qquad (5)$$

$$\lambda(t)=\frac{L_0(1+gL)^t}{1-\Psi A(0{,}1)} \qquad (6)$$

We use the following values to produce a numerical example: $L_0 = 10$ and $gL = -0.1$. With the same $\Psi(0,1)$ –set for both (5) and (6)– we get the picture below.

7. The supporters of the SSM methodology have still to respond the nearly trivial remark that within the framework of the Sraffian (or Surplus) Theory the functional equation (3) is *not* the argument of a function –that is a quantity varying in relation to variations in time– but a mere collection of single isolated points for it is still to be disclosed the mechanism through which the transition from one value or price magnitude to another is made possible when A and/or L change.
8. We have already seen that this is true only if A and L are set as *constant,* in which case the algebraic solution $\lambda(t)$ is the fixed point solution of equation (2); but everybody will agree that this is a wholly uninteresting and unimportant case.
9. The random values of A(t) are uniformly distributed within the interval (0,1).



Graphic 1. Random TSS and SSM values

From Graphic 1 it is rather evident that the response of SSM value magnitudes to random shocks in the i-o coefficient, A, is much stronger than that acted by TSS value magnitudes. The result is a much more erratic behaviour of SSM magnitudes. The following Table 1 gives a summary of the differences in the main descriptive statistics relative to TSS and SSM value variables of Graphic 1.

Statistics	TSS	SSM	TSS/SSM
Coeff. of Variation %	31.32324	111.5033	0.280918
Average	8.977639	15.61463	0.57495
Standard Error	0.613648	3.799354	0.161514
Median	8.868042	10.81315	0.820116
Standard Deviation	2.812088	17.41083	0.161514
Variance	7.907837	303.1369	0.026087
Kurtosis	-0.48787	4.145489	-0.11769
Asimmetry	-0.17595	2.198409	-0.08004
Interval	10.5771	61.37895	0.172325
Min	3.071105	1.887836	1.626786
Max	13.64821	63.26679	0.215725
Sum	188.5304	327.9073	0.57495

Table 1. Summary of Descriptive Statistics of TSS and SSM Variables as in Graphic 1

The overall picture one gets from the descriptive analysis collected in Table 1 is, of course, not that of a paradox similar to the one discovered by D&L, rather that of an unlikely high sensitivity[10] of SSM magnitudes with respect to changes in the i-o coefficient, simply owing to the elementary circumstance that SSM magnitudes at time t do not bear any relation whatsoever to SSM magnitudes at time t-1 for in the static/algebraic formalism there is no circulation of commodities taking place over time.

Continuous Values

In any given sector of production, while a fraction of the total sectoral capital is lying in the form of money capital (M), another one performes its function as commodity capital (C), a third one is productively engaged (P), and so forth, as shown in Table 2. This implies that the mutation of value form (M→C→M→...→C→...) is continuous and that the time interval between input value/price and output value/price is tendentially null since the change from the value/price of input to the value/price of output is equally continuous. This type of dynamics necessarily requires that the simple difference equation framework to be replaced with a *differential equation system.*

Capital	*Time* *I*	*II*	*III*	*IV*	*V*
1.	M	C	P	C	M
2.	C	P	C	M	C
3.	P	C	M	C	P
4.	C	M	C	P	C
5.	M	C	P	C	M
n.	M	C	P	C	M

Table 2. Circuits of Individual Capitals

In continuous form equation (2) thus becomes

$$\lambda'(t) = [A(t) - 1]\,\lambda(t) + L(t) \qquad (7)$$

where $\lambda'(t)$ is the time derivative of $\lambda(t)$. Once we have set the initial condition

10. The linear trend of TSS and SSM values is the same –apart from a displacement on the vertical axis– since it is entirely determined by the behaviour of L.

$\lambda(0)$ and have specified the time functions A(t) and L(t), the behaviour exhibited by the solution function of (7), $\lambda(t)$, is not basically different from the behaviour of the solution of equation (2).[11]

What is static and what is dynamic?

Rather strangely indeed, D&L assert -yet without providing any kind of proof whatsoever- that the marxian values are to be considered as static magnitudes whereas the (sraffian or neoricardian) prices are of dynamic nature.[12] D&L maintain that prices are dynamic (i.e. input and output prices

11. (7) is a linear differential equation with variable coefficients. The condition for a continous fall of the unit value $\lambda(t)$ is now $\frac{L(t)}{1-A(t)} < \lambda(t)$, i.e. $\lambda(0) > \frac{L(0)}{1-A(0)}$.
12. Although this type of procedure is always a bit boring, for which thing I apologize, it is here necessary to quote D&L's passage (on p.15 of their *Rejoinder*) at length:
«For Freeman, the traditional (i.e. SSM, P.G.) interpretation is not compatible with technical change. Similarly, the use of simultaneous equations, still following Freeman, means that equilibrium prevails.
Freeman would be right if values were equivalent to prices. A commodity cannot have a price as output of one production period, and another as an input of the next period since there is only one transaction. Similarly, if equation 1 were a price equation, it would express an equilibrium, a fixed point in relation to a recursion. But Freeman is wrong, values are not prices.
A commodity can have a value, when considered in relation to the conditions of production in one period, and another one, when considered in relation to the conditions of production in the next period. Semantically, the expression "the value of a commodity" is an abbreviation for "the value of a commodity in the conditions of production prevailing at this particular, present or past, instant". In other words, the reference to values independently of specific conditions is undefined, and a commodity as many distinct individual values as conditions of productions.» (p.15 of D&L's paper).
This piece hosts a clear non sequitur. From the obviously strict relationship between values and conditions of production in no ways it must follow that the value magnitudes are to be calculated via the simultaneous formalism. Exactly as the traditional values, the TSS value magnitudes are determined by the conditions of production "prevailing at a given time" too, but in a way that is different with respect to SSM values. Individual values -which summed up to make intrasectoral weighted averages give (social) values (quantities of socially necessary labour time)- have nothing to do with the difference between sequential and simultaneous approaches. Even more surprising is D&L's assertion about prices. If prices are dynamic magnitudes by their inner nature, then they must be calculated through a dynamic formalism. Only after, and *not before,* having tried this type of formalism one can (mathematically) deduce that the Sraffa-type (static) systems are its equilibrium correspondent. So far this does not appear to be an easy task.

belonging to the *same* production period are in general different in order to be identical when they refer to *subsequent* periods) since these magnitudes belong to *circulation* while values are static (i.e. determined through SSM) since they only pertain to *production*. This distinction does not make sense. Exactly as prices, (marxian) values are also attributes of the commodity and not of the physical object; as such they play a rôle only because use values are produced in the view of being sold (being exchanged = going through circulation) in both circuits C-M-C and M-C-M and not simply because in society it happens that use-values get produced.

Since prices are not the results of capital but of the more general, more abstract and more primitive *commodity* relationships, how would then one determine prices (or exchange values) of produced commodities in the (hypotethical or not: it does not matter at all) case of noncapitalist commodity production (and circulation)? Eigenvalues and eigenvectors could not be of any help here, and the only resort would be to employ a *pure* labour theory of value according to which prices are proportional to values; yet, over time, dynamic magnitudes are of course *not* proportional to static magnitudes if not by mere chance. It is rather obvious that the D&L's assertion about the statics and dynamics of values and prices is just an external excuse to justify the SSM.

Joint Production

The second paradox discovered by D&L in the TSS approach to value determination arises in joint production. Through using a numerical example D&L assert that TSS joint production value systems may easily produce unstable recursions and negative values. Nonetheless, strangely enough, D&L call the joint values they calculate «individual values» although they use a standard *system* of equations.

In the standard linear systems of joint production individual and social marxian values are not consistently defined. Individual value magnitudes (either TSS or SSM) can not be calculated through system of equations since they are not solutions of systems unless *social* values are simultaneously calculated by means of the same systems, that is these systems are enlarged in such a way to comprehend the calculation of social values too. The reason for this is rather obvious. Since each individual value of a given commodity depends on the individual contribution to production by each single producer within a certain sector, in the input side of the equation for this individual producer there must be placed the sum of the social *values magnitudes* of the inputs s/he is using times the *individual amounts* of output used up plus the *individual amount of direct labour,* which sum yields the individual value placed in the output side. To complete the system and make it fully determined it is then necessary to add one equation for each single sector as having in the output side the *social value magnitude* (as weighted average) made up through aggregating all the individual productive contributions within each productive sector. It is rather trivial that if one wishes to calculate individual values in the very same way one calculates social values, very strange and absurd results will be produced, something which is well known since a long time ago from the analysis of SSM joint value systems and the related paradox of negative values with positive profits, firstly raised by Steedman.

In SSM the paradox of negative values arises if at least one process is not indispensable or, in other terms, all partial productivities for the same set of produced use values are different for different producers.[13] This implies we are using systems of equations to calculate *individual,* and not social, value magnitudes, or, put differently, that we are trying to calculate (false) social values prior to aggregation of individual values into social magnitudes or, what amounts to the same, prior to aggregation of individual expenditures of labour time into intrasectoral socially necessary quantities (values). It is absolutely necessary to remind that for all kinds of commodity price and/or value theory to make any sense whatsoever it is necessary that individual producers be not dealt with and, consequently, modelled as *independent producers (sectors)* since they *do not bear any commodity relationship to each other.* It is an extremely banal exercise to point out that relations amongst producers and sellers of *different* commodities (hence belonging to different sectors) are very different from those relations which exist amongst producers and sellers of the *same* commodity within a same sector.[14]

Since marxian (social) value magnitudes in systems of equations (algebraic and/or dynamical) of joint production *are not exactly defined,* the D&L paradox of explosive oscillations in TSS joint values may arise *with the same degree of*

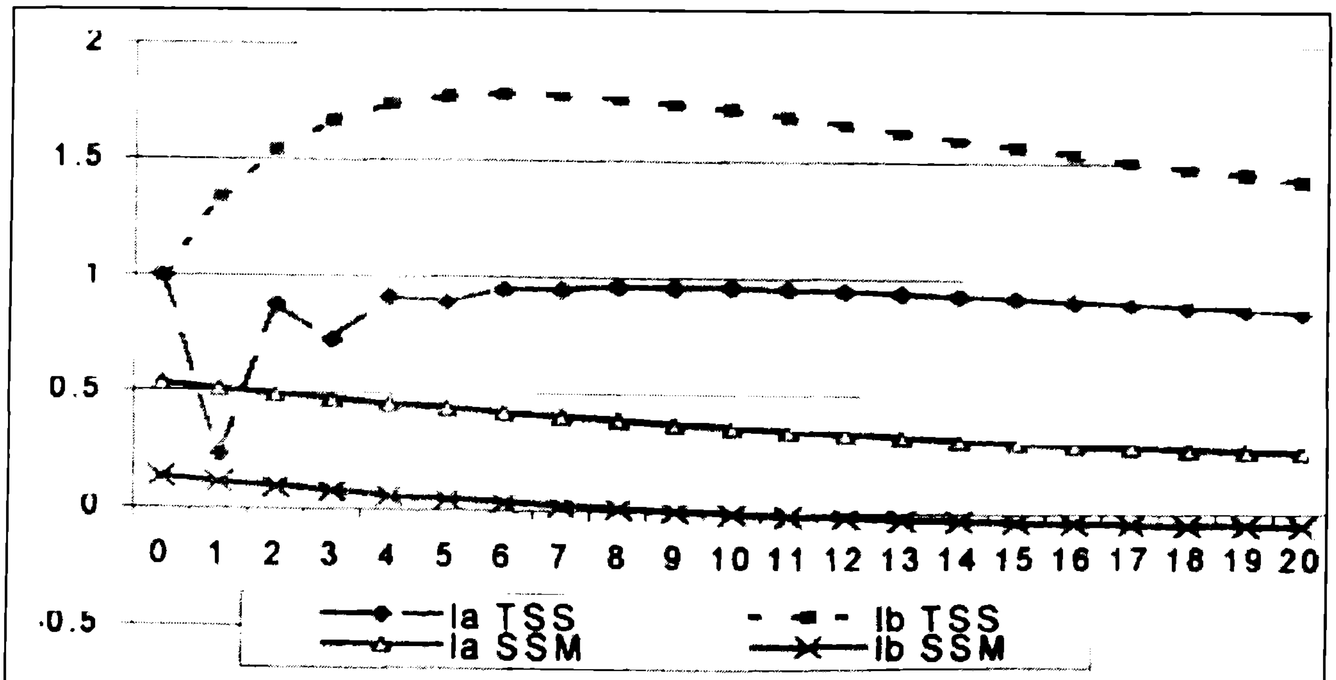
13. We can call this condition partial productivities condition (or indispensability condition). By partial productivity for a given use value with a single producer (or process) of multiple use values is meant the ratio of the produced output to the expenditure of direct labour time by the single producer. See B. Schefold (1978).
14. We thus call false o spurious values these magnitudes calculated with no prior definition of social (weighted averages) values in joint production systems.

frequency of the old Steedman paradox of –equally undefined– negative value magnitudes in the traditional SSM approach when applied onto joint production.[15]

D&L have chosen a particular example which yields *positive* SSM values and *increasingly unstable* TSS values in order to endorse the idea that the traditional static approach works better than TSS.[16] But this is not true at all. When you get into joint production nothing can any longer work since *any* kind of joint production systems –systems where in the output side one has got a matrix instead of a vector as in the happier single production systems– is bound to be undefined and undetermined.

Here it is in fact possible to present a different case providing a result that is the exact opposite of D&L's example. To make things clearer it has been chosen a dynamical example of a two-sector system with the two amounts of direct labour time falling at different time rates in the two sectors (-10% in sector 1 , -2% in sector 2):

$$\begin{aligned} &10\,\lambda a_t + L_t^1 = 20\,\lambda a_{t+1} + 20\,\lambda b_{t+1} \\ &20\,\lambda b_t + L_t^2 = 30\,\lambda a_{t+1} \\ &\lambda a_0 = \lambda b_0 = 1 \\ &L_t^1 = 12(1-0.1)^t \;;\; L_t^2 = 20(1-0.02)^t \end{aligned} \tag{8}$$



Graphic 2. TSS and SSM Joint Values as in System (8)

15. For the criticism of Steedman's paradox of negative (spurious) values see G.Stamatis (1979), (1983) and (1997).

It is apparent that after 12 periods the SSM unit value magnitude of good b becomes negative whereas both TSS magnitudes stay positive and converging towards the null vector, that is towards the limit points of L^1 and L^2.[17]

The behaviours of the TSS and SSM spurious joint value magnitudes depend on different factors. The dynamic path of the TSS spurious values strictly depends on the relationships between amounts of used up inputs and produced outputs, whereas the negativity of SSM magnitudes strictly depends on partial labour productivities which in turn have no influence upon the movement of the TSS spurious values.[18]

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16. It must be pointed out that the two phenomena of (i) instability (explosive oscillations) and (ii) negativity of TSS values in reality are the same. TSS values must sooner or later become negative only because the absolute values of their oscillations grows limitlessly over time.
17. The following one is the example chosen by D&L:

$$A\,\lambda a_t + L = B\,\lambda a_{t+1} + A\,\lambda b_{t+1}$$
$$A\,\lambda b_t + L = B\,\lambda a_{t+1}$$

Since the above system produces a net social output of good b equal to zero, it is mathematically fatal that its jacobian will not yield anything but explosive oscillations. If we allow for the production of a positive net output of b too, then one will get more easily than not a convergence of the (spurious) unit values towards the fixed point of the system. For instance, the following numerical example of a joint production system of the same type as D&L's (one single sector plus one joint sector) but yielding a net output of 10 units of good b gives a steady convergence of the vector of false values to its fixed points ($\lambda a = 0.4$, $\lambda b = 0.3$) independently of the chosen initial conditions:

$$10\,\lambda a_t + 10\,\lambda b_t + L^1 = 20\,\lambda a_{t+1} + 30\,\lambda b_{t+1}$$
$$10\,\lambda b_t + L^2 = 20\,\lambda a_{t+1}$$
$$L^1 = 10$$
$$L^2 = 5$$

Taking into account the distinction between individual and social values, and writing λa1 for the individual value of the commodity a produced in sector 1, λa2 for the individual value of the commodity a in sector 2, the D&L above system should be rearranged as follows to become an *undetermined* system:

$$A\,\lambda a_t + L = B\,\lambda a^1_{t+1} + A\,\lambda b_{t+1}$$
$$A\,\lambda b_t + L = B\,\lambda a^2_{t+1}$$
$$\lambda a_{t+1} = \frac{\lambda a^1_{t+1} + \lambda a^2_{t+1}}{2}$$

18. This circumstance entails the consequence that, if we conceive of technical change as something fundamentally being determined by the declining trend of direct labour time per

Conclusion. A Bit of Psyco-Sociology

As in Ibsen's *A Doll's House,* where only at the end of the story it comes up what was evident from the very beginning –that the two were not really married– in the Sraffian tradition too there is no justification of its own formalism in relation to reality and/or logic. The reason for that appears now rather clearcut. Since the eigenvector/eigenvalue formalism of the Surplus-Sraffian school can not be rejected as such from the neo-classical mainstream, it is useful and necessary to the aim of carrying on polemiques which be respectable within the academic milieu.

Mathematical proof of the above proposition: the sraffian formalism by no means works in the case of single production with nonbasic inputs and/or joint production where negative prices are virtually unavoidable at any moment; nonetheless the Sraffa-Marx tradition has never address its criticism of this extreme weakness preferring to strongly fight all efforts whatsoever to build a theory of prices upon the marxian value theory. Very revealing is the attitude that is being exhibited with respect to the new TSS approach by the Marx-Sraffa stream. Academically speaking, i.e. within the limits admitted by the official "economic" ideology, the maximum one can get is that Marx was a nice –and even great– fellow but almost totally wrong: no possible "theory" or "science" can be constructed from his work, just irrelevant literature and/or philosophy.

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unit of output and not by changes in the input-output coefficients, starting from a TSS joint production system with a jacobian yielding a stable convergence of labour (spurious) values towards their fixed points, one is going to remain within this type of dynamics when the amounts of direct labour times will be supposed to decrease. On the contrary, if, starting from a SSM joint production system giving positive spurious values, we keep moving towards different systems by altering the structure of partial productivities, then we shall fatally encounter the trouble of negative spurious values.

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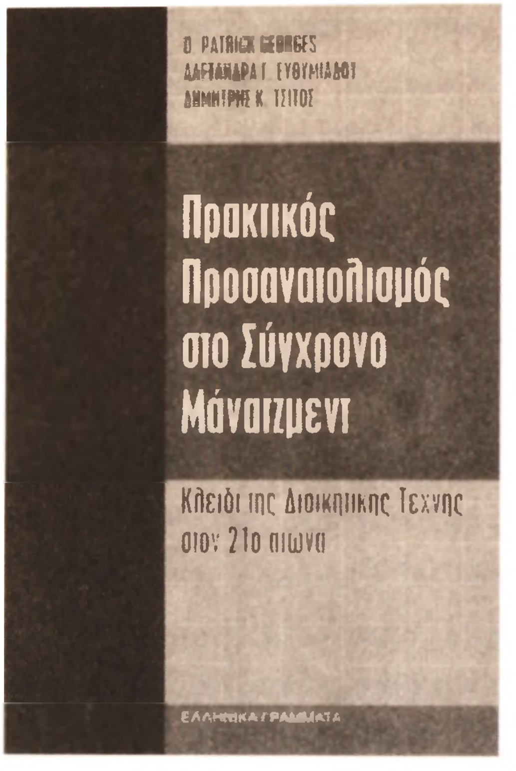
ΕΚΔΟΣΕΙΣ ΕΛΛΗΝΙΚΑ ΓΡΑΜΜΑΤΑ

Δύναμη στη γνώση

Το βιβλίο πραγματεύεται ορισμένα θεμελιώδη προβλήματα της μαρξικής θεωρίας της αξίας και του κέρδους. Συγχρόνως αποτελεί, από ούτως ειπείν τεχνική άποψη, και μια εισαγωγή στα γραμμικά συστήματα παραγωγής.



Ένα πρακτικό και χρήσιμο βοήθημα, τόσο για έμπειρα στελέχη όσο και για νέους που επιδιώκουν να σταδιοδρομήσουν ως επαγγελματικά στελέχη επιχειρήσεων και να επιτύχουν υψηλούς επιχειρηματικούς στόχους στην Ελλάδα που έρχεται.

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