Between Two World Systems: A Response to David Laibman

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BETWEEN TWO WORLD SYSTEMS: A RESPONSE TO DAVID LAIBMAN

David Laibman sets out to show that *Temporal Single-System* (TSS) results arise, not from a different value-concept, but from a special value calculation – in effect, a trick. To prove this he adopts the ingenious device of supposing pure fixed capital. He applies an alternative valuation procedure which, though temporal, produces a rising profit rate where TSS finds a falling one; he concludes that temporalism cannot be responsible for TSS results.

His construction proves few things he intends and many that he does not.

The TSS interpretation of Marx's value theory exhibits a profit rate that falls when official theory says it cannot. Mathematically, the difference arises from dynamic terms that appear when value is defined temporally, and which are proscribed by the official, static definition. Economically, the significance of this difference is enormous and can be summarised as follows:

(1) The Orthodox edifice rests on a single fallacy: that the static value-concept must be valid because there is no other. But there *is* another value-concept: temporal values are positive, defined for all known economic circumstances, and logically coherent. No economist can now legitimately assert the reality of any result in official theory on the strength of a mathematical proof. It is utterly unscientific to assert that 'the' profit rate rises when there are two coherent definitions of what this rate actually is; instead, it must first be established which definition is appropriate to the world we live in.

(2) The Orthodox Fallacy, that there is only one coherent value concept, is sustained by 'proving' the incoherence of the principal alternative – Marx's – on the assumption that Marx's values presuppose equilibrium. Such proofs now collapse. They make no more sense than 'refuting' Einstein's relativity by supposing a fixed frame of reference. Whether or not Einstein was wrong, his theory cannot be assessed by attributing to it a presupposition it does not make. Nor can Marx's value theory.

(3) If Marx's concept is in fact temporal, official economics must abandon all claim to scientificity, since this would mean that, for ninety years, it has systematically ignored and indeed suppressed a coherent and potentially superior theoretical way of studying the world, on a logically false basis.

Orthodoxy has enormous difficulty with these simple ideas because temporal approaches demand a *paradigm shift*. They oblige us to rethink the meanings of all our concepts and look at the world differently. Those trained in equilibrium categories can rarely think without them, falling back on claims that temporal results are based on simple fallacy or mathematical skullduggery. Laibman's construction falls between such claims and a genuine temporal exploration: he sustains the ambiguity by confining himself to pure fixed capital.

1 On reality

Every theory stands or falls on its fidelity to what we observe. Every judgement on another theory stands or falls on its fidelity to what we read. Laibman has an uphill struggle in both departments. Bluntly, the words don't go with the tune: his math does not support the conclusions he draws.

(1) What actually *is* Okishio's conclusion? He himself writes (1961:95): 'our conclusions are negative to Marxian *Gesetz des tendenziellen Falls der Profitrate*'. A theorem is not just a mathematical result but an interpretation of its meaning; all economic discourse, including Okishio's own, takes his theorem to show that (a) the *actual* profit rate necessarily rises with cost-reducing technical progress unless the real wage increases and (b) *Marx's* profit rate cannot behave otherwise. TSS refutes both: its profit rate rises when Okishio says it falls, changing *nothing* else in his theorem. I call that a refutation, and I think Laibman should stop beating about the bush and admit it.

(2) What actually *are* TSS values? Laibman claims they track a 'marginal firm tending to bankruptcy' but on p14 concedes the precise opposite: like Marx's values, they are a 'social average'.

(3) What actually *are* Laibman's values? He, not TSS, substitutes marginal quantities for averages. He takes the things normally called output, capital and labour – Y_t, K_t, L_t – and puts a superscript *s* on them, as if something were being added up, obscuring his real construction which use the symbols Y_t, K_t and L_t for marginal differences, where all others write ΔY_t, ΔK_t and ΔL_t.

(4) Nothing tends to bankruptcy and there is no scrapping. No increment to capital ever ceases producing; everything lasts forever. A different model might change this – but a different model is

not on offer. It is bad practice, in rigorous demonstrations, to substitute aery hopes for proven theorems.

(5) There are likewise no vintages. Suppose at the start of period t the output of all firms is increased by some fixed proportion. Laibman's Y_t, being the difference between the total output of this period and of period $t-1$, likewise increases. But the change bears no relation to the productivity of the capital added in period t; it is the outcome of a general change affecting all of society. The word 'vintage' is just a synonym for marginal product.

(6) Unlike TSS values which are always defined and positive, Laibman's

$$\lambda_t = \frac{\Delta L_t}{\Delta Y_t} \tag{1}$$

are negative if living labour is expelled ($\Delta L_t < 1$) and infinite if growth stops ($\Delta Y_t = 1$). The applicability of such an idea to reality is, to say the least, moot.

(7) He says 'nothing seems to depend on material input flows' (p6). But his own profit rate must be lowered by introducing them. Suppose, with no change in K_t, a_t is additionally consumed in each period per unit of output. Let $f(a_t)$ be any measure you like of a_t's contribution to value. Values would then be given by

$$\lambda_{t+1} = f(a_t)\lambda_t + \frac{\Delta L_t}{\Delta Y_t} \tag{2}$$

These must be larger than without the a_t unless f is negative, in which case all pretension to reality is severed. The denominator in the profit rate must therefore get larger, and the profit rate lower: the more circulating capital, the lower the profit rate.

(8) A highly significant TSS result is that the rate of profit falls with *no* fixed capital, that is, under Okishio's original supposition. This generalises to fixed capital, but Laibman's result does not generalise to circulating capital. Indeed, it is hard to see how it tests Okishio's values at all, since these are only defined in the presence of circulating capital.

2 What is a general result?

All these irritations only manifest a central oversight which economics promotes as best practice, but I consider bad mathematics: Laibman derives general results from limited assumptions without first asking what the general rule is.

Before claiming anything about any result, we must find out what it depends on. In Freeman (1996) I showed that TSS results apply completely generally, abstracting from the very assumptions on which Laibman says we are 'fixated'. Laibman makes many sweeping statements without, however, dropping any assumptions. Under what conditions do his statements remain valid?

(1) First, they depends on his initial condition. If in his p13 numerical example we diminish λ_0 at all, the maximum profit rate falls continuously as does his own r_t after an initial rise;

(2) Second, they depend on particular growth assumptions. He never asks what happens if the economy follows a different growth path, nor establishes the general condition for his own profit rate to fall or rise.

If we relax either assumption, his profit rate no long bears any necessary relation to the material profit rate and may either fall where previously it rose, or rise where previously it fell. This raises the question: what is the *general* condition for a falling profit rate? The math is less arcane, and greater insight arises, if we suppose a *general* sequence of magnitudes:

$K_0, K_1, \ldots K_t Y_0, Y_1, \ldots Y_t L_0, L_1, \ldots L_t$

The maximum profit rate

$$R_t = \frac{L_t}{VK_t} \tag{3}$$

falls in any period[1] iff $R_{t+1} < R_t$,

[1] and hence continuously as long as this condition holds

that is iff $$\frac{L_{t+1}}{VK_{t+1}} < \frac{L_t}{VK_t} \tag{4}$$

that is iff $$\frac{L_t + \Delta L_t}{VK_t + \Delta VK_t} < \frac{L_t}{VK_t}. \tag{5}$$

Cross-multiplying and simplifying, this holds iff

$$\frac{\Delta L_t}{\Delta VK_t} < \frac{L_t}{VK_t} \tag{6}$$

and a little thought shows the new rate is *between* R_t and $\Delta L_t/\Delta VK_t$ so that, unless the latter changes, the profit rate will continuously move in the same direction.

VK_t is[2] $$\sum_{\tau=0}^{t-1} \lambda_\tau \Delta K_\tau \tag{7}$$

whence $$\Delta VK_t = \lambda_t \Delta K_t, \tag{8}$$

the individual term in this series. Substituting this into (6) using Laibman's value definition (1) yields

$$\frac{\Delta Y_t}{\Delta K_t} < \frac{L_t}{VK_t} \tag{9}$$

We can now see how Laibman's result arises. Under exponential growth the left-hand side is constant. A special initial condition now enters: Laibman's general rule $$\lambda_t = \alpha\lambda_t^{\,s} \tag{10}$$

(where $\lambda_t^{\,s}$ are TSS values), is not applied for $t = 0$. Instead he chooses

$$\lambda_0 = \lambda_0^{\,s} = \frac{L_0}{Y_0} \tag{11}$$

which since $VK_0 = \lambda_0 K_0$ yields

$$R_0 = \frac{Y_0}{K_0} \tag{12}$$

By his choice of growth path and initial condition, $\Delta Y/\Delta K$ is constant and greater than R_0 so that $R_0 < R_1 < R_2\ldots$ If instead $R_0 > \Delta Y/\Delta K$, the profit rate falls indefinitely.

3 Accumulation: the missing dimension

Initial condition dependency,[3] a characteristic confusion, arises in exponential growth models which do not constrain the capitalists to invest unconsumed output ($\Delta K \neq Y - wL$). We cannot then tell whether the profit rate rises because capital has gotten cheaper, or because the product is not being re-invested. *Accumulation* is the missing dimension.

Very few people seriously claim the profit rate falls for ever. The real issue is the mechanism offered to explain the falls and rises that anyone can see.

TSS values do not show that the profit rate falls whenever productivity rises. They show it falls as long as accumulation proceeds, which is a different thing. That is, they show that technical change contradicts accumulation. This contradiction is the true internal mechanism of slumps, which are precisely a cyclical suspension of accumulation that reconstitutes the profit rate.

This mechanism operates *in value terms*. A core TSS result is that value moves independent of use-value; the official Marxist catechism holds this to be impossible, a belief which Laibman triumphantly reproduces as if it were a scientific advance. But by throwing away the decisive distinction between value and use-value he deprives himself of the very concepts which explain what crisis even consists of, never mind how it works.

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[2] This differs slightly from Laibman who sums τ from 0 to t, erroneously including output of the current period in the capital of the current period. The substantive conclusions are unaltered.

[3] Some of Kliman's illustrations exhibit initial condition dependency; but his goal is to *refute* a general proposition (Okishio's), for which any counterexample suffices even if it depends on specific assumptions. Laibman's goal is to *establish* a general proposition so his argument must be independent of specific assumptions. He does not seem to grasp this methodological point.

Let us re-examine equation (6). As (8) indicates, ΔVK is simply $\lambda_t \Delta K_t$ and the dispute seems to turn on the calculation of λ. But things appears entirely different from the standpoint of accumulation: the increase in the value of capital is simply the unconsumed value of the previous period.[4] We can directly write

$$VK_t = \sum_{\tau=0}^{t-1} L_\tau \tag{14}$$

hence

$$\Delta VK_t = L_t \tag{15}$$

so our condition becomes

$$\frac{\Delta L_t}{L_t} < \frac{L_t}{\Sigma L_t} \tag{16}$$

This by no means simple expression has a vital characteristic: it involves no 'physical' variable whatsoever. That is, if the requirements of accumulation are observed, *the maximum rate of profit is independent of the use-value structure of the economy*. It has an independent law of motion which must be studied in its own right.

How is this altered by circulating capital? Here we encounter the paradigmatic nature of the clash. All output is either consumed or invested. Writing

$$\Delta VK_t = L_t(1 - \lambda_t w) \tag{16}$$

introduces w (the wage), an apparently 'physical' variable. But why make matters so difficult? $L_t \lambda_t w$ is the *value* consumed by the workers, which we will call W_t. The profit rate is then

$$r_t = \frac{L_t - W}{VK_t} = \frac{L_t - W_t}{\Sigma(L_t - W)} \tag{17}$$

and the condition for it to fall is

$$\frac{\Delta L_t}{L_t} < \frac{L_t - W_t}{\Sigma(L_t - W_t)} \tag{18}$$

or, in plain English

> *The maximum profit rate falls if the value invested, as a proportion of the value of accumulated capital, is greater than the rate of increase in living labour.*

This too is an expression in value terms. We may, if we choose, express it in 'physical' terms – just as we can speak of Oxygen as negative Phlogiston, or planetary movement as a tortuous combination of epicycles. The issue does not reduce to algebra: we must decide what explains reality better. As Keynes pointed out, workers do not bargain over physical quantities, and as Marx pointed out before him, they struggle over the *time that they must work* to acquire what they need. The *value* magnitude W, not its use-value equivalent, expresses the essence of the motion under study.

But the issue goes further: simultaneous values actually violate a decisive element of reality. TSS values respect the law of accumulation:[5]

$$VK_t = \sum_{\tau=0}^{t-1} (L_t - W_t) \tag{19}$$

The value of accumulated capital is the sum of output less the value of all expenditures out of it, a rule any accountant understands.

It was possible to reduce ΔVK_t to an expression which did not involve constant capital C_t precisely because it is evaluated *temporally*: at the time when it is consumed. Net *value* output is $L_t - W_t - C_t + C_t$ and the newly-produced output precisely replaces consumed inputs in value terms. That is the whole point of the temporal approach.

Equation (19), simple and obvious though it is, does not hold for simultaneist valuation. That is the sum and substance of the entire debate. For the official reading of Marx, C_t is deduced not from the value actually spent on it but from from the wholly ideal relation

$$\lambda_t Y_t = \lambda_t C_t + L_t$$

[4] The reader can verify that the TSS valuation $\lambda = L/Y$ yields this result. *Involuntary* investment, we note in passing, must still be paid for.

[5] Which may very simply be extended to include capitalist consumption

And hence, first, ΔVK_t becomes $L_t - W_t - C_t + C_{t-1}$, introducing a spurious source of variation; second, when λ rises or falls, K is revalued and the value in it either disappears without explanation or appears without cause.

4 Between two systems: the software-software economy

This finally obliges us to evaluate Laibman's construction as such. We did not call it 'ingenious' as a term of abuse: the extreme cases of every general result are the best test of its conclusions. The thought-experiment of pure fixed capital should be studied more. Interestingly the most 'realistic' analogy, contrary to the illusion that materiality incarnates permanence, is an economy making only software, in which any loss of value constitutes pure moral depreciation.

The result, however, is a hybrid. In general, simultaneism cannot square the circle: it cannot reconcile temporal accumulation with simultaneous value formation. By avoiding circulating capital, Laibman keeps the circle and the square in different playpens. His λ is 'atemporal' – the same in both simultaneous and temporal frameworks; and circulating capital does not inconveniently overturn his law of accumulation, which he expresses temporally.

We have shown that even so his *own* profit rate measure generates a falling rate of profit when the initial condition is changed, and that it does so precisely because it is temporal. Moreover this measure is not, in general, proportion to the material rate as he also claims.

Temporalism provides a far less rigid conceptual space than simultaneism; there is room for a greater plurality of value definitions within it. Laibman's valuation in general reproduces TSS results, departing qualitatively only in special cases. I think this is a striking vindication of the temporalist paradigm.

5 References

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