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WHAT HAPPENS IN RECESSIONS? A VALUE- THEORETIC APPROACH TO LIQUIDITY PREFERENCE

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ABSTRACT

This paper develops the paper entitled ‘‘Time, the Value of Money and the Quantification of Value’ which was presented at the conference of the Middle East Technical University in September 1998. It presents the case for a value-theoretic treatment of liquidity preference in axiomatic form, based on a temporal analysis.

It discusses why temporal analysis is universally excluded from economic discourse. It argues that economic thought is divided not by the schism between classical and marginal, but the chasm between time and equilibrium. This divide is found in more or less every branch and every period in the history of economic thought; the classical variant of equilibrium appeared as Say’s Law, while the Austrians tried to become the temporal variant of marginalism. It suggests that the ‘Weintraub-Davidson-Eichner’ project is an attempt to identify what ‘temporalist’ approaches have in common. It argues there is a new element to this project, namely the growing body of evidence that Marx, too, was a temporalist, and that the temporal interpretation of Marx has more in common with Post-Keynesianism than it has with the rest of Marxism.

Keywords: Liquidity, Value, Quantification, MELT, MEL, Money, Labour, Marx, TSSI, Temporalism

WHAT HAPPENS IN RECESSIONS? A VALUE-THEORETIC APPROACH TO LIQUIDITY PREFERENCE

Introduction

The sharpest way to present the purpose of this paper is to restate a remark I made at the last conference: in my view, the temporal interpretation of Marx has more in common with Post-Keynesianism than it has with the rest of Marxism. An encounter between Post-Keynesianism and the temporal approach to Marx can only benefit both.

I argued elsewhere¹ that economic thought is divided not by the schism between classical and marginal, but the chasm between time and equilibrium. This divide is found in more or less every branch and every period in the history of economic thought; the classical variant of equilibrium appeared as Say's Law, while the Austrians tried to become the temporal variant of marginalism. If I have rightly understood what Balinky calls the 'Weintraub-Davidson-Eichner' project, it is an attempt to identify what 'temporalist' approaches have in common. I want to put the case that there is a new element to this project, namely the growing body of evidence that Marx, too, was a temporalist.

Why do the good guys always lose? The equilibrium view generally dominates, because as Eichner notes, economics is not a science. It spontaneously promotes an equilibrium variant of everything in it no matter how dissident or heterodox – whether this be ISLM Keynesianism, dualist Marxism, or Walrasian marginalism. This is because only the equilibrium paradigm provides a theoretical apparatus which guarantee conclusions to which its funders are amenable. A Gresham's Law of theoretical selection operates to promote it. In particular, in any rigorous analysis, equilibrium turns out to be an indispensable support for the neoclassical 'real-nominal' distinction.

The core of this paper is the argument that the real-nominal distinction is a disguised theory of value; it operationalises the idea that real assets are measured by the use-value, or 'quantity of things' which they contain. This concept, I argued last year,² underlies both marginal and Sraffian general equilibrium; indeed the apparently rival concepts of utility and 'physical quantity' emerge on closer study as two different aspects of the same actually-existing thing – use-value.

The balance of evidence in my opinion shows that this 'use-value' concept of value has been mistakenly attributed to Marx by most of economics. Not surprisingly, it does not exhibit the behaviour which a genuinely temporal approach reveals, such as a rate of profit which falls as accumulation proceeds.

Two strongly disputed assertions have thus been discounted by the mainstream on the selfsame grounds. The Post-Keynesian insistence that money matters, and the Marxist insistence that accumulation begets a falling profit rate, are both discounted on the basis of two linked postulates: equilibrium, and the pre-pubescent notion that the size of a thing reveals its value.

The time is propitious for a rigorous alternative foundation. It would be vain to imagine this could gain the affections of our funders, but it could provide a more solid bulwark against their prejudices. Since equilibrium provides a false foundation, we must ourselves ask without prejudice 'what can we assume that we know, if we deny equilibrium?' This is the approach of this paper.

I show that on extremely simple assumptions, we can demonstrate temporal phenomena with no counterpart in comparative statics. In particular, the notion of liquidity preference can be deduced from simple temporal identities; the quantity theory of money, and the notion that money is a veil, can also be refuted. Finally by connecting these dynamic equations to an evident relation between accumulation and the rate of profit, we can show that simple temporal explanations are available,

¹ *Mr Marx and the Neoclassics*; presented to the 1996 conference of the History of Economics Society, Vancouver

² *If they're so rich, why ain't they smart?* Presented at the 1997 conference of the IWGVT

though inaccessible to any equilibrium account, for both the cyclical movement of the economy and its 'catastrophic' phase of a sudden sharp decline in asset prices followed by a relatively rapid fall in the pace of accumulation.

Preamble

I begin with two fundamental absences from General Equilibrium which all temporal thinkers acknowledge: time, and ignorance. The purpose of this paper is to investigate the connection between the two. We hope also thus to broach value in a way that other temporal thinkers will find congenial.

I begin by noting that though ignorance is a fruit of time, time is not a joint product of ignorance. The future is unknown precisely because it *is* the future, and I know no economist who complains the past is unpredictable. Since the forces of ignorance stem from the darker forces of time, I shall in this paper confine myself to the latter.

Rates of return under more than one money

Suppose an asset K grows, for any reason. The money profit on it over any period is the change in its price: if we start with £10 and end up with £11, our profit is £1, the growth in the asset measured in money. If the asset grows continuously at a rate K' , the money rate of return on this asset at any given time is

$$\frac{K'}{K}, \quad (1)$$

the 'proportionate rate of change' of K . This crops up so often that we will use a special notation for it:

for any x , define
$$x^+ = \frac{x'}{x}$$

Now suppose K can be priced in two different moneys, m and l . We use these like conventional money signs, so that just as \$12 is 12 dollars, m14 is 14 units of m . Our asset measured in m is mK , and lK when measured in l . If the notation gets difficult, write \$ instead of m and £ instead of l (for now). We can now write the return on K when designated in money m as

$$\frac{{}^mK'}{{}^mK} \quad (2)$$

or just

$${}^mK^+ \quad (3)$$

This depends on the money of account. If I hold an asset which is constant in dollars, and the dollar price of the pound falls, the asset will rise when measured in pounds. Only if the change rate is constant will the rates be the same.

We will call the exchange rate of m for l (' m per l ') m_l ; evidently ${}^l_m = 1/{}^m_l$.

Clearly
$${}^mK = {}^m_l \times {}^lK \quad (4)$$

In words: the price in dollars is equal to the price in pounds times 'dollars per pound'. The notation may seem idiosyncratic but it makes it easier to follow exchange relations: superscripts 'cancel' dimensionally with subscripts.

What is the relation between the two rates? Suppose m_l fluctuates. Differentiate (4) using the product rule:

$${}^mK' = ({}^m_l \times {}^lK)' = {}^m_l \times {}^lK' + {}^m_l' \times {}^lK \quad (5)$$

Divide through by capital stock mK , giving after a small amount of manipulation

$${}^m K^+ = \frac{{}^l K'}{{}^l K} + \frac{{}^m l'}{{}^m l} \quad (6)$$

$$= {}^l K^+ + {}^m l^+ \quad (7)$$

In words: the dollar rate on any asset is equal to the pound rate on the same asset plus the proportional rate of change in the exchange rate.

Theorem 1: Money is only a veil if all prices are constant

The statement ‘money is a veil’ is equivalent to the following proposition: the behaviour of the economy cannot be affected by changing the money of account.

Proof of the theorem: Suppose first that any price varies. Since any commodity may be used as money of account, by equation (7) the rate of return will differ if the varying commodity is used as money of account. But the rate of return on assets affects behaviour. Therefore, if the price of anything varies, the behaviour of the economy can be altered by using it as money of account. ■

Speculative profits, liquidity preference, and the need for a concept of value

The rate of return ${}^m K$ of any asset depends on the money of account m . Changes in price therefore offer a rational basis for holding an asset of constant size measured in itself – such as liquid money. Suppose for example the price of silver is rising:

$${}^m_s^+ > 0 \quad (9)$$

Since any commodity including silver may be conceived as a money of account, the rate of return on an asset consisting of silver can be written

$${}^m S^+ = {}^s S^+ + {}^m_s^+ \quad (10)$$

that is to say, the rate of return on silver, measured in money, is greater than the rate at which the silver grows when measured in itself. In fact, even a silver hoard which does not grow at all will show a positive profit rate if its price is rising and the faster it rises, the greater the profit. This is valid for any asset and hence extends to any money as soon as it is used as means of payment.

Two conclusions follow. First, the need arises to distinguish purely *speculative* profits, which result from changes in price, from ‘real’ profits, arising from something else, whatever that something may be. That is, the need arises to distinguish the real value of a thing from its nominal value. Though taken for granted in almost all of economics, it is far from clear what this distinction means. One purpose of this paper is to establish that it contains a dormant but inescapable concept of value.

Second, equation (10) establishes a rational basis for liquidity preference, that is, for holding a money asset. This we will express as a theorem.

Theorem 2: holding liquid money is a rational profit-maximising behaviour if prices are falling fast enough

If we have an asset M which is itself money, equation (10) appears as

$${}^m M^+ = {}^s M^+ + {}^m_s^+ \quad (11)$$

that is
$${}^s M^+ = {}^m M^+ - {}^m_s^+ \quad (12)$$

and since ${}^m M^+$ for liquid money is zero, this becomes

$${}^s M^+ = - {}^m_s^+ \quad (13)$$

that is, the own-rate of money, measured in terms of some other commodity, is minus the rate at which the money price of this commodity is rising. Consequently if the price is falling, there will be a positive own-rate of money, measured in the other commodity. If moreover

$${}^m_s^+ > {}^s S^+$$

then real wealth, in the form of a usable commodity, may be acquired faster by holding money and using it to buy this commodity, than by deploying the commodity itself to increase its own magnitude. There is no necessary upper limit on m_s^+ and, therefore, in a sufficiently deflationary atmosphere money will be preferable to every other asset.■

The rationality of liquidity preference

Liquidity preference in the literature often seems to me to be presented as a kind of psychologically deviant behaviour as if it contrasted with rational profit-maximising. But if in consequence of holding liquid money one may increase one's ownership of usable things faster than by holding the things themselves then by any standard it is a rational, profit-maximising behaviour. Moreover as far as rational expectations are concerned, it does not seem to me reasonable to assert that if prices are falling, a rational agent might expect them to go on falling. So it seems to me that liquidity preference, far from being in conflict with the assumptions of mainstream economics, is a conclusion from these assumptions which arises when one examines prices that are changing. If any contradictions arise – and we shall try to show they do – then the fault lies, not with the idea of liquidity preference but with the ideas of mainstream economics. We think it is worth making this idea rigorous.

There is a connection between this goal and the requirement of a rigorous value theory and in this sense I wholly concur with Randall Wray's judgement that Keynes needs or 'should have adopted' a labour theory of value. The central idea that we have, is that in order to make the idea of liquidity preference rigorous, we must at the same time make the idea of value rigorous. We can then clarify that liquidity preference arises quite naturally when money rates of return exceed value rates of return, that is, when the monetary expression of value is rising.

However, first we have to establish why this cannot be done on the basis of the neoclassical distinction between real and nominal.

Origin of the real-nominal distinction in neoclassical economics

We used the cumbersome term 'proportionate rate of change' instead of Keynes' (1977:223)³ term 'own-rate'. We decided against this because the name suggests an intrinsic property of the asset; but as Keynes noted (1977:224) and as just established, if prices are changing then this rate depends on the unit of account.

Nevertheless, if the asset consists of a single commodity⁴ then one particular own-rate is intuitively 'proper' to it, namely, the increase of the asset measured in itself; thus if 10 corn becomes 15 corn in a year, its 'corn-own-rate' C^+ is 50%. To make this distinction clear, we will reserve the word 'own-rate' for this purpose. We will use 'rate of return' for the more general case, qualifying where necessary as the 'dollar rate', the 'pound rate' or where appropriate the 'corn rate'.

The difference between own-rate and rate of return appears, at first sight, to lay the basis for an adequate distinction between speculative and real profits. It appears intuitively reasonable to define real growth as an increase in size, and nominal growth as an increase in the price of use-values independent of an increase in size. Most economics blithely proceeds as if this intuitive idea gives rise to no contradiction, which is quite unscholarly given the attention it has given to the

³ "for every kind of capital-asset there must be an analogue of the rate of interest on money. For there is a definite quantity of (e.g.) wheat to be delivered a year hence which has the same exchange value to-day as 100 quarters of wheat for 'spot' delivery. If the former quantity is 105 quarters, we may say that the wheat-rate of interest is 5 per cent per annum; and if it is 95 quarters, that it is *minus* 5 per cent per annum. Thus for every durable commodity we have a rate of interest in terms of itself," Keynes (1977:222)

⁴ or, which is the same thing, a basket of constant proportions

contradictions in the alternative value-concept. To the extent that economics succeeds in both enterprises, as we shall show, it is because it has used equilibrium to abolish the contradictions of its own real-nominal distinction, and then foisted the results on Marx.. However, the price of this essentially ideological operation is a heavy one: it means that the resulting theory sacrifices all possibility of applying to the real world.

Rate of return, rate of growth, rate of profit, and rate of investment. Moral and material depreciation

We will later need to distinguish the rate of return from the rate of growth, which is the rate at which the asset actually accumulates due to investment. The difference between the two is thus the private income or consumption of the asset's owner.⁵ Implicitly, this constitutes a definition of investment; investment is the increase in the value of an asset due to accumulation, measured in money.

We want in passing to draw attention to a neglected point: the mass and rate of investment vary with the unit of account, and in a proportion that is different from the variation of the size of the asset. As an extreme example consider an asset S fixed in size but rising in its dollar price; ${}^sS'$ is zero but ${}^dS'$ is positive. Measured in dollars, the owner is investing. Consider also an asset S which is both physically accumulating and falling in price due to technical progress. In that case ${}^dS'$ will be less than ${}^sS'$ and we can separate the total ${}^dS'$ into two components, *material* and *moral* depreciation:

$$\begin{aligned} \text{Material depreciation} &= {}^sS' \\ \text{Moral depreciation} &= {}^dS' - {}^sS' \end{aligned}$$

Internal contradictions of the real-nominal distinction

Rates of return differ both from asset to asset and from money to money. There are hence two sources of variation; the intrinsic growth or own-rate of the asset as we have just defined it (a change in its size) and variations in its price. This distinction is the intuitive basis for the neoclassical distinction between real and nominal.

Though intuitively reasonable, the distinction produces a contradiction from within itself, precisely because own-rates differ. If the corn-rate differs from the bean-rate, on what basis can we say that corn is more real? And if the dollar-rate on corn differs from the pound-rate on corn, on what basis can we say that the dollar is more nominal? We have not one, but a multiplicity of real-nominal distinctions and the idea cannot be made rigorous. The introduction of indexation does not abolish this problem, as the controversy around the Boskin commission clearly indicates; indeed, it further complicates it since now we are facing not just a vast range of single commodities but a even vaster range of baskets formed of them.

Moreover any commodity may itself form the basis of a money of account, so that we may equally speak of the corn-rate on dollars, as the dollar rate on corn. In summary, if any relative price changes, this introduces both a range of so-called real rates, and a range of so-called nominal rates, of return. In a régime of varying prices – that is, in the real world – there is no such thing as a single ‘real’ rate of return or a single ‘real’ measure of a commodity.

One theoretical presupposition, and only one, abolishes this contradiction; if all prices are constant, and all assets have the same intrinsic return, then all own-rates will be the same. Then, and only

⁵ My usage differs from Keynes in one further sense. Keynes defines own-rates in terms of the relation between spot and forward rates, the market's *ex ante* anticipation of return. I confine myself to the actual growth of the asset as observed *ex post*. When we speak of the behaviour of agents, this frees us of the need to make any assumptions concerning psychology or expectations, except to presume that the past influences them in some way. The mechanisms of this influence may require a more or less subtle theory as the reader desires, but since my results are true regardless of the mechanism, I hope even the subtlest of readers will be compelled to accept them.

then, it becomes theoretically rigorous to speak of ‘the’ real rate of return in the economy. This circumstance is that of an economy in a state of either complete rest, or balanced proportionate growth (a ‘von Neumann ray’). This in turn presupposes no imbalance between supply and demand, which would produce a change in price. Outside of this supposition – the assumption of competitive general equilibrium – there is in fact no coherent basis for selecting any particular commodity’s use-value as the ‘invariant measure’ of size.

Inflation and the Quantity Theory of Money

If the world was actually in equilibrium, the real-nominal distinction could not exist. True, we can define a money of account for an equilibrium economy, and even deduce theorems on the supposition that prices in this nominal money vary over time. But if we allow this money to become an actual means of payment – and if it isn’t, neither inflation nor the quantity theory can apply to it – then as Townsend (1937) points out, these price variations would themselves become a source of additional demand through the mechanism of speculative profits, and so prices could not actually be what is predicted by the original supposition of equilibrium. From this we can derive the following two corollaries of theorem 2:

Corollary 1: the quantity theory of money is false

Proof: By Theorem 2, for any definition of the price level and for any structure of rates of return, there always exists a rate of variation in the price level such that money is preferred to all other assets. In this situation there will be no trade and so the quantity of money must be independent of the volume of trade. ■

This extreme form of the proof may be rejected on the grounds that the quantity theory, like so many hand-waving theorems in economics, has a range of applicability. But the same method of proof shows that money will be held as soon as the rate of fall in the price level exceeds the profit on the asset with the lowest return, violating the quantity theory. Thus if there is a spread of returns, the impact of a falling price level will always be to divert a certain portion of money into hoards of liquid assets, and this portion will be the greater, the faster prices are falling.

Corollary 2: the general equilibrium determination of prices is false

Proof: since there is a motive to hold assets other than the demand requirements arising from the neoclassical demand schedule, actual effective demand will differ from that given by the demand schedule, being augmented by any speculative holding of assets. In particular if the money of payment is hoarded due to such dynamical effects, all prices will be affected and no price can be specified solely from the demand and supply schedules.

‘Real money’

Neither inflation, nor the Quantity Theory of Money, can be framed without a real-nominal distinction. Both contain a variable called ‘the price level’. A price level cannot exist, and has no meaning, except as a ratio between an actual price and some magnitude distinct from this actual price.

The concept of value thus arises implicitly in every theory that makes a real-nominal distinction, even though this is not usually admitted. But if the actual money-price of a thing is distinguished from something which is common to all commodities and which behaves like a price, but is not the actual money price, then this distinct thing is an alternative measure of the commodity, that is, an estimate of its value.

The notion that lies behind the idea of a ‘real’ economy underlying the nominal economy is the following: the real economy behaves *as if* goods were purchased and sold in this real money. All the principal quantities in the economy are talked about, in economics, as if this were true: thus economists speak of the real rate of return, of real output, of real wages, and so on. If these ideas corresponded to actual money transactions then nominal money would just be a sort of label

attached to them, and could make no difference to them. If, on the contrary, real transactions lacked any of the normal properties of money, then by virtue of the very fact that nominal money can be used to buy things, it would have to be preferred at some point.

Among the most important of the properties of money is that it is *additive*, or linear. If one asset *A* costs £10 and another *B* costs £20, then the two sold together cost £30; in symbols

$$^{\pounds}A + ^{\pounds}B = ^{\pounds}(A+B).$$

Substantial theoretical problems arise if real prices do not behave like this. We can illustrate this in the following way. Suppose real prices are not additive and suppose that, for example

$${}^rA + {}^rB < {}^r(A+B).$$

In that case, I can increase my real wealth as follows: acquire some *A* for $^{\pounds}A$ and some *B* for $^{\pounds}B$. Combine them, sell them together, and I have more money than I started with: which, of course, I can convert into additional real wealth. Nor can we escape this conundrum by looking at society as a whole, for we simply find that the total wealth of society is *indeterminate*; depending on whether we count its *As* and *Bs* together, or separately, we get a different measure of its wealth. Indeed, the real value of any aggregate of goods becomes a function of how it is divided up.

If, therefore, the word ‘real’ is intended to represent something that actually influences behaviour and which agents attempt to increase – whether this be utility or physical quantity – then endless contradictions arise if it is not additive.⁶

To investigate both where these contradictions lead, and what the alternative is, we specify a money of account, which we will call ‘real money’, as follows: divide the nominal price by the price level, however this is calculated. This is simply the money of account which is used, for example, in the National Income statistics when these are reported in constant, instead of current prices. In symbols let us use m_r for the price level where *m* is nominal money. We can then define the ‘real price’ of *K* by the relation

$${}^rK = {}^mK / {}^m_r = {}^r_m \times {}^mK$$

The question ‘is real wealth additive’ then reduces to the following: can *r* function as a money of account?

what is a ‘temporal result’?

The above, very short, preamble, establishes, in my opinion, some of the key results which are required of a temporal critique of equilibrium theory. I’d like to rehearse the method I tried to use because of the way it relates to the need for dialogue.

I endeavoured to begin from a very simple supposition which could be endorsed by any temporalist and certainly by both Marx and Keynes⁷; that there may be more than one money of account, and that the relative valuation of goods in terms of different moneys of account may fluctuate in time.

⁶ Like many devices in mainstream economics, the concept of macroeconomic real magnitude is in *practice* a disguised reversion to cardinal utility. If I double all the use-values in a basket of goods, a quantity index records that I have doubled the real measure of this basket, that is, it is presumed to provide twice as much usefulness.

⁷ “On the world market a double standard prevails, both gold and silver. Hence the absurdity of all legislation laying down that the banks of a country should form reserves only of the particular precious metal circulating in the country as money” Marx 1976:241. “It may be added that, just as there are differing commodity-rates of interest at any time, so also exchange dealers are familiar with the fact that the rate of interest is not even the same in terms of two different moneys, eg sterling and dollars.” Keynes 1977:224

To put it another way, fixed exchange rates are an unacceptable presupposition for a general or even realistic analysis. From this simple supposition I deduced a series of decisive critical objections to the normally-accepted dogma of neoclassical economics. These objections are also, incidentally, shared by Marx and Keynes.

My point is the following: by adopting the minimum presuppositions, presuppositions common to both schools, I have produced results that must hold in either school. Of course, this result may appear differently for each school, and moreover each school will add to the results aspects of explanation and theory that are its own particular insight. For example, I think most Post-Keynesians would want to add in the question of ignorance. I think that Marx would have drawn back from ascribing causal or explanatory status to ignorance which he would hold (like myself) to be a consequence of other factors, such as the passage of time and above all, alienation.

But it is not necessary to the above results to take a position on ignorance. Like Laplace when asked about God, I had no need of this hypothesis; I therefore remained agnostic on it, in order to produce results of the greatest possible generality.

But by this same token, this criticism has a force, it seems to me, which is hard for mainstream theory to find an answer to. Indeed, logically it can only maintain the Quantity Theory, and the thesis that money is a veil, if it denies that any price can change over time. It is for this reason that I consider the thesis of equilibrium to be an *implicit presupposition* of neoclassical theory. Even if this thesis is not stated, none of its key results remain true unless this supposition is adopted.

(section to be included on the necessity of a monetary value relation: the non-additivity of 'real money'; the source of value is displaced into circulation. This leads to contradiction since, if value is created in circulation, there is no necessity for production. We could augment wealth without limit through trade. The definition of a consistent, additive value measure in which value is added only in production. The definition of production constitutes the separation of purposeful human activity from the mere fructiferousness of nature (increment of use-value); the measure of production is human activity. The 'first equality' as the mathematical formalisation of the requirement that value cannot be created in circulation. Necessity that the first equality should include money itself)

(second section on circulation; it is a generally desired requirement of theory that it should explain distribution. But 'what' is distributed? Inadequacy of the use-value measure for assessment of distribution. Necessity of a divergence of value from price; if value does not diverge from price, the price mechanism does not alter its distribution and there is no source of economic movement. Value is *a* price, not *the* price; why it is a misconception to consider value theory as a means of predicting prices. Theorising transfers, unequal exchange; value as a money of account. As a money of account it has an intrinsic measure and since this measure is independent of its rate of exchange, it is given by its role in production)

Value, profit rate, and catastrophe

Profit rate fluctuations and the onset of crisis

We are now in a position to frame the 'solution' to the question implicit in the title of this paper: what is it that happens in a crisis? To do so, however, we must prejudge a result from later on. I'll do it this way round because it is sometimes helpful to know where things are leading, before setting out.

From the point of view of the value-concept implicit in the 'real-nominal' distinction, there is no sensible reason for a crisis to happen. By 'sensible' I mean something that arises out of the equations governing accumulation in themselves, as an endogenous process. The reason is that technical progress, with a use-value measure of value, inevitably increases the profit rate. This is because technical progress continuously increases the 'quantity of things' in the economy; indeed, that is what technical progress consists of, largely.

If we regard the profit rate as a principal determinant of investment behaviour, then, technical progress as such should always be an incentive to increase both output and the rate of technical progress. Accumulation should continue upwards, ever upwards. Indeed, there is a certain one-sidedness about the criticisms addressed to Marx's theory of the tendency of the rate of profit to fall: he is criticised because, it is argued, the theory of the falling rate of profit predicts inevitable collapse; but this doesn't happen. But the Okishio theorem equally predicts boundless accumulation, and that certainly doesn't happen either.

From a use-value standpoint, therefore, we require some external, exogenous reason for the onset of crisis: traditionally, either a profit squeeze, or a lack of entrepreneurial spirit, or something else that is not produced by the accumulation process itself. It is true that these can be endogenised, as Goodwin very successfully does with the profit-squeeze; nevertheless, it means that in order for accumulation to produce cyclic behaviour, intermediation is required.

One of the most important findings of the temporal interpretation of Marx is that it yields the following result: the profit rate is directly governed by the accumulation process. Take K , our asset, to be the whole sum of wealth in the economy on which the capitalists expect a return, that is, the total sum of productive goods, financial assets, commercial assets, and so on, advanced by private capitalists for the purpose of making a profit. If the rate at which profit is generated in the economy is S (being equal to the total rate at which labour works, less the value consumed by the workers) then the temporal view finds that the rate of return on this capital in terms of labour value is given without contradiction as Marx states, as

$$\frac{S}{K}$$

However, K is itself growing as a consequence of accumulation, according to the normal Harodian relation:

$$K' = I$$

where I is the rate of investment. Thus since S is governed by the size of the labour force, or at least has a maximum so governed, the accumulation process must lead to a fall in the return on capital overall, though this may be distributed unequally so that some capitals still maintain their return. In Keynes's terms, the schedule for the marginal efficiency of capital will fall.

However to express this result rigorously we have to define value; I want to show later that we can treat this as a 'labour money of account', being the labour value of K , expressed in a special money chosen such that £1 always represents 1 hour.⁸

Of course, this labour money of account is not the directly visible rate of exchange; but it is not particularly difficult to advance dynamic mechanisms through which it will impinge on actual prices, and indeed, in my opinion this is the true subject matter of macrodynamics properly conceived. At this point it isn't my intention to go very deeply into this, since all I want to do here is indicate the possibilities inherent in a temporal treatment. In particular, what I want to demonstrate is that the relation is almost certainly dynamic rather than static; hence, labour values impose themselves on observed prices on average and over the course of a cycle, but not at any given moment of time. On the contrary, the divergence of price from value is one of the principal motors of the macroeconomy and to seek, as many Marxists do, to establish an exact numerical

⁸ This choice corresponds very closely to what Marx himself frequently states when he asserts that the value of money remains constant. This is often taken as a statement about the conditions governing the production of the money commodity; it is logically more sensible to read it as a straightforward simplification required so that accumulation can first be studied independent of monetary fluctuations, which Marx intended to bring in at a later stage in discussing the credit mechanism

relation at every moment in time, is in my view quite forlorn and contrary to what is needed to conduct any serious macrodynamic enquiry.

Therefore, suppose for now that the rate of return in terms of labour money so defined, actually impacts real investment. In that case, we already have the germs of an account of the crisis, which I have presented in its simplest form in my second paper to this conference. As accumulation proceeds, the size of capital stock in labour-value terms will rise as a natural consequence of accumulation. But since the mass of profit is constrained from above by the size of the population and simple biology, the average return on capital will fall. At a certain point, this will choke off the demand for investment and indeed, if the process is cyclic – and my second paper sows this is a perfectly practical possibility – then at a certain point there will actually be disaccumulation in value terms. This may occur even though in physical terms, goods continue to accumulate, since as a consequence of technical progress the moral depreciation of these goods will result in a net loss of value (what marx terms the *release* of capital)

But why should this produce the characteristically asymmetric, sawtoothed movement of the business cycle with its sudden crashes and slow recoveries? In the explanation for liquidity preference outlined above, we have the basis for a simple and rational explanation.

The nominal profit rate ${}^m K^+$ can be expressed in terms of the labour value profit rate and the monetary expression of value:

$${}^m K^+ = {}^l K^+ + {}^m l^+ \quad (14)$$

Here ${}^l K^+$ is the value profit rate and ${}^m l^+$ is the monetary expression of labour, so that ${}^m l^+$ is the rate at which this MEL changes. The nominal profit rate is thus related to the underlying value rate by the addition of a dynamic magnitude which will raise the nominal rate when prices are rising relative to labour, and will decrease it when prices are falling relative to labour.

But during the boom phase of the cycle, precisely what we may observe is a systematic rise in all pices, caused by the fact that investment demand is increasing as capital is drawn into the productive sectors by the high average profit rates. We would expect, therefore, that the observed profit rate would be exaggerated in the boom phase.

If, however, the effect of the underlying decline in the value profit rate is that at some point the demand for investment goods slackens off, then we will see a reversal of this effect. ${}^m l^+$ would then become negative as prices start to fall relative to their labour values. This switch could moreover be quite sudden, because of the positive feedback from the demand for investment goods.

But how can the demand for investment goods slacken off? Why, just because the average profit rate is in decline, should capitalists not continue to invest as long as there is at least some profit there for the taking? It is at this point that the importance of a temporal account of liquidity preference can be seen, for under a regime of falling ${}^m l^+$, a *profit in value terms* can be achieved by merely holding onto money.

References

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