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ABSTRACT

This paper, presented at the 1998 conference of the European Association for Evolutionary Political Economy in Lisbon, shows how variations in the value of money, and in the exchange rate between different moneys of account, lead to transfers of value on the one hand between national or continental monetary blocs and on the other, between the financial and productive sectors of a single national economy.

It discusses how these transfers may serve as the mechanism underlying the business cycle and suggests that they may also account for the phenomenon of liquidity preference. It suggests that the concept of liquidity preference constitutes a potential common ground between value-theoretic and post-Keynesian schools of thought.

It is set against the background of the 1997 Asian crisis and reflects on the role and reliability of the economics profession.

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PREAMBLE

Being in Switzerland during the August 1998 financial disturbances, I got access to most of the European-language press. It made for an interesting read; I hope the reader will indulge me digressing by beginning with it.

I think *Le Monde* for 1 September best summarised the current state of economic knowledge. Its front-page cartoon featured an editor waving a manuscript headed 'The World Crash, explained for my daughter'; "Great title," sighs the despairing author, "but I'm buggered if I can write the first two lines."

The economists seem to concur. "The great truth of the stock market," says the *Washington Post's* Tim Smart,[1] "is that no-one knows what will happen Monday." So much for forecasting. "The reason this is potentially calamitous," says Jeffrey Garten, dean of the Yale School of Management,[2] "is that no one is in charge." So much for the hidden hand. "We are already in the so-called capitulation stage," records Christine Callies of Credit Suisse Boston,[3] "the point where people are really throwing in the towel." So much for incisive scientific analysis. "What is happening in Russia and the Pacific Rim is unprecedented," says Alan Sinai, chief economist of Primark Decision economics, "and the policy-makers in the United States do not know what to do."[4] So much for the end of history.

While we're on the end of history, Francis Fukuyama muses "The past few months have been really the first time since the beginning of the decade that I felt that I could really be proven wrong."[5] Thanks a bundle, Francis; don't bother calling.

More considered analyses were to hand: *Die Zeit*'s 27 August front page led off the Doom and Gloom pack. Headlined 'Die Grosse Unordnung' (a citation from Mao Tse-Tung) it explained that "The world economy is upside-down. No trace is left of Creative Chaos: Asian misery, Russian disaster, and Latin American malaise have wrought a global crisis. It is up to the USA and Europe to confront the danger, but where has crisis-management fled? Who, really, concerns themselves with ordering the world anew? All year the economists told us 'a lot more has to happen before we have need worry'. Well, it's happened."

The 'world has ended' theme echoed in the *Financial Times* 28th August LEX column ('Das Kapital revisited') which opens "From the triumph of global capitalism to its crisis in barely a decade?" though it stoutly, if comprehensively concludes that "Capitalism itself, warts and all, is still better than any alternative." Hey guys, be happy: think how much worse it could be.

Though the more panic-ridden judgements receded, the *Independent*[6] offered a sober and enlightening balance sheet under the headline 'The Day capitalism died in Russia' where, it says, a 'bastard version of capitalism, implanted at Western urging and largely on the basis of Western money, is in its death throes."

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[1] Tim Smart, 'Dow's Saw-Toothed Descent Stirs Fears: Is the Bull Market at an End', *New York International Herald Tribune* 31st August 1998

[2] Nicholas Kristof, 'A Scramble for Response to Crisis: weakness at the Top Clouds World's Search for Solutions', *New York International Herald Tribune* 31st August 1998

[3] Margaret Doyle and Andrew Cave, 'Market fall brings fears of 1929-style recession', *Daily Telegraph* September 1st 1998

[4] *op cit*

[5] Nicholas Kristof, 'It's a bad time for weak leadership', *New York Times* 30th August 1998

[6] "Markets hit the Russian Buffers", *Independent* 28 August 1998

> [T]his may be a defining moment. The steady advance of American style capitalism, led from the front by the shock troops of its capital markets and supported by the prop of the IMF, seems suddenly and decisively to have been brought to a grinding halt. All over the City and Wall Street, investment bankers are saying Russia has had it, it's on its own and we'll never touch the place again…as fast as Russia and others can impose exchange controls, its only realistic option given the scale of the flight of money, the international capital markets are in any case packing up their stall and sticking their money into Western bonds. And there appears nothing the IMF or anyone else can do about it.
>
> What we may be witnessing is the end of globalisation, or at least a severe setback in the process, lasting possibly many years. Globalisation is all about the free movement of capital; that's its big driving force, and over the last ten years, financial markets have pushed out the boundaries as never before, feeding the great US bull market on a wave of American triumphalism in the process.
>
> Is this now all coming to an end? That's the real significance of Russia. We must all pray that this alarmist take on events turns out to be wrong or exaggerated. But it's the reason why equities are plunging, bonds are soaring and the pound is once more climbing back to the tree D-Mark level. These are frightening times we live in and the end game is still a long way off. No wonder there's such a flight to safety.

Prayer is an unusual policy recommendation for a respectable Western newspaper. It isn't exactly clear how it will help – let alone who we should pray to, what we should pray for, or who should be doing the praying. The 'frightening times' arose precisely when and because the world followed the IMF and American style capitalism, more scrupulously and completely than at any time this century. The most obvious cause-and-effect response is to stop following them; this needs neither God nor Economist.

This brings me to my basic point, namely, what is the use-value of an economist? We do not employ weather-forecasters to tell us it's raining. If the best advice on offer is collective prayer, we can get a priest. And if economists can neither predict nor advise, what exactly are they for, and why should the public pay any attention to them?

In this respect, any unlobotomised observer will notice a slight discrepancy. Just one week before *International Business Week* offered a supplement on 'the 20th Century Economy'. "For two months," it explained, "a team of *Business Week* reporters and editors has examined every aspect of the economy from technology to politics to higher education."

> Our findings? The 90s are no fluke. Despite Asia's woes, all the ingredients are in place for a surge of innovation that could rival any in history. Over the next decade or so, the New Economy – so far propelled mainly by information technology – may turn out to be only the initial stage of a much broader flow of technological, business and financial creativity that will sweep across the world.
>
> Call it the 21st Century Economy – an economy that, driven by technological progress, can grow at a 3% pace for years to come…what's more, the US economy seems to be undergoing a wholesale rejuvenation. Businesses, financial service firms, and universities are re-inventing themselves. Even politicians and policymakers are starting to grasp the new technological and economic realities.

Indeed.

The *Independent* for 28th August and *Business Week* for 24th August can't both be right. The entire world can't be swept by creativity at 3% per annum while it goes to hell on a bicycle.

We don't need Harvard Graduates to tell us that technology makes social progress possible: what we need to know is whether a market society can deliver this progress to the end-user. If the answer is 'it depends how hard we pray' then the locker-room pep-talks from team IBW, with all its collective expertise, amount to little more than gee-whiz teenage tech-dreams, addressing none of the real practical problems facing the world in the next century. Yet world economic policy, affecting the lives of thousands of millions of people, has been informed and set precisely by such locker-room pep-talks.

Whether or not this is a defining moment for capitalism, it certainly is for its prophets. The conclusion which ordinary people may well draw from the collective output of the economics profession, with all its prizes and professorships, its learned journals, graduate schools and business analysts, is that in the hour of a crisis which flatly refuted the received wisdom it had offered for the last two decades of the century, it was lost at sea without a compass.

INTRODUCTION

The purpose of this paper is to propose an alliance between Post-Keynesian and temporal (non-equilibrium) Marxist approaches to political economy, to strengthen temporalist paradigms within economics whilst deepening our mutual understanding of each other's insights into the fundamentals of economics. Such an idea is possible because of the recent emergence of the *Temporal Single System* (TSS) approach to value (Freeman and Carchedi 1995), a radical break with the official version of Marx.

It is necessary for a different reason: to rise to the level of thinking demanded by what happened this August.

I think the tone of the *Independent* article cited above signals a sea change in what governments, spin-doctors and the public are prepared to stomach from economists. I am not sure it is possible to be so wrong about so much, affecting so many, for so long, and get away with it. No other profession could. An architect, a doctor, an engineer, a chemist, an accountant or even a lawyer or weather forecaster whose predictions and results were so disastrous as those of the economists, would not survive.

I think we may be moving into a period like that in which Marx's ideas spread in the 1870s, or Keynes's in the 1940s; when ordinary people expect something different to what the economists offer, and will not take no for an answer: when the opportunity exists to present an account of the world economy as it actually is, which is both accessible to the normal public and at the same time rigorously and scientifically founded. Experience tells us that such opportunities are rare, and do not last long. I think we must seize it.

There is little prospect of internal reform. Economics is by its very nature immune to that. The issue is, rather, how much longer its product will sell. The *Washington Post*[7] sounds a bell we will hear more of: "We are now back to the times John Maynard Keynes originally wrote about. Supply is greater than demand in the world and the only way to counter that is to step on the fiscal gas around the developing world."

There is a need for a new foundation. Though this should have a voice in the internal structures of the economics profession, it should not depend on them for survival or intellectual nourishment. The extent to which the August crash took the profession off balance shows yet again that it is has long ceased to function as a science. It is a religion, with the market as God and equilibrium as gospel. Equilibrium is more than a technical device: it is an ontological proposition. It defines what *is* − as that which cannot change. *By definition*, such an ontology cannot contain August's events because, in the ideal static economy it refers to, they are impossible. Real world objects, whether employment, investment, profits, money or prices, no longer bear any meaningful relation to the ideal entities of official doctrine.

Scientific advance has been driven out by a Gresham's Law of theoretical selection: economics has become an ingenious social mechanism for suppressing reality in favour of the equilibrium variant of everything, whether ISLM Keynesianism, dualist Marxism, or Walrasian marginalism.

If equilibrium provides a false foundation, we must ask without prejudice 'what can we assume if we deny equilibrium?' We cannot just introduce economic movement, without reflection, using categories which were themselves derived by supposing nothing moves.

A genuine non-equilibrium economics therefore imposes an ontological imperative. It is insufficient merely to criticise existing thinking; it must be supplanted with something superior. But no science can have a secure foundation unless it at least says what it is talking about. We cannot merely use, but must *define*, the concepts of price, profit, productivity, employment, and capital. In a word, we must define value.

Value is not the unique preserve of Marxism. It is an irreducible concept of economics, as central to it as the concept of energy to physics or life to biology. All schools possess or use a value concept; the differences lying only in what this concept is, and how it is articulated. By examining the real-nominal distinction in neoclassical thought, and Keynes' critique of this distinction, I seek to

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[7] Richard Medley, *Washington Post,* 30th August 1998

demonstrate that only the underpinning of a labour-time value concept can render Post-Keynesian theory coherent.

TOWARDS A UNIFIED VALUE THEORY OR: HOW MANY DARK FORCES ARE THERE?

I begin with two central features of the world which are absent from General Equilibrium, and which all temporal thinkers acknowledge: time, and ignorance. My first purpose is to investigate the connection between the two. I hope also thus to broach value in a way that others will find congenial.

Ignorance is a fruit of time; however 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.

Thus, if we apply Occam's razor properly, we should begin by asking how much we can explain about the economy *just* on the basis of time, without invoking ignorance. If it turns out that there are central aspects of reality which General Equilibrium cannot account for, which do appear in the world, and which surface naturally in a temporal treatment, we should conclude that temporal treatments are better. If *moreover* we can explain, on this basis, many or all of the aspects of reality which Keynesians have until now explained by invoking ignorance or uncertainty, then we are entitled to conclude that a notion of time is more central to the refoundation of economics than ignorance. If, finally, we can explain uncertainty and ignorance on the basis of time, then time itself and alone is a sufficient basis to incorporate Keynes's insights into a new foundation for economics.

RATES OF RETURN UNDER MORE THAN ONE MONEY

Though it may appear paradoxical in an enquiry into fundamentals, I am going to begin by taking a number of concepts for granted, notably the concept of asset, money, profit and price. But I'd like to say why I take these for granted, when there are such wide differences about what they mean, in case it is supposed that I am trying to avoid going to the roots of the concepts I use.

I take for granted that, in a century of economic debate, these concepts have been defined and redefined many times over and in many different ways. The habit in economics is to take one such definition and make it a precondition of discussion; to insist that no further argument can take place until this definition is accepted.

This is not very useful for dialogues. Keynesians and Marxists have different definitions of economic magnitudes and indeed, differ strongly among themselves. We cannot have a discussion if we begin by insisting that one of these definitions must be right. We can however ask a different question: what can we say *independent* of the definition used? Are there conclusions that can be drawn about prices, profits and money which *both* Marxists and Keynesians have to assent to? I think there are; provided that time is introduced. It is by examining these conclusions that I hope to chart the direction that critical appraisal might lead.

Assets and Growth

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

$$\frac{K'}{K},\tag{1}$$

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. I'd like to be forgiven a little notation that will make what follows easier and briefer to write down. I will use m and l 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

$^l K$ 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

$$\frac{^m K'}{^m K} \tag{2}$$

or just

$$^m K^+ \tag{3}$$

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

$$^m K = \,^m_l \times \,^l K \tag{4}$$

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:

$$^m K' = (^m_l \times \,^l K)' = \,^m_l \times \,^l K' + \,^m_l{}' \times \,^l K \tag{5}$$

Divide through by capital stock $^m K$, giving after a small amount of manipulation

$$^m K^+ = \frac{^l K'}{^l K} + \frac{^m_l{}'}{^m_l} \tag{6}$$

$$= \,^l K^+ + \,^m_l{}^+ \tag{7}$$

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:

$$^m_s{}^+ > 0 \tag{9}$$

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

$$^m S^+ = \,^s S^+ + \,^m_s{}^+ \tag{10}$$

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

$$^{m}M^{+} = {}^{s}M^{+} + {}^{m}_{s}{}^{+} \qquad (11)$$

that is

$$^{s}M^{+} = {}^{m}M^{+} - {}^{m}_{s}{}^{+} \qquad (12)$$

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

$$^{s}M^{+} = -{}^{m}_{s}{}^{+} \qquad (13)$$

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)[8] 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.

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[8] "for every kind of capital-asset there must ber 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 everly durable commodity we have a rate of interest in terms of itself," Keynes (1977:222)

Nevertheless, if the asset consists of a single commodity[9] 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' $^cC^+$ 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 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.[10] 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 $^sS'$ 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 $^lS'$ will be less than $^sS'$ and we can separate the total $^lS'$ into two components, *material* and *moral* depreciation:

Material depreciation $= {}^sS'$

Moral depreciation $= {}^lS' - {}^sS'$

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,

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[9] or, which is the same thing, a basket of constant proportions

[10] 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.

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 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 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

$$^£A + {}^£B = {}^£(A+B).$$

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 $^£A$ and some *B* for $^£B$. 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 *A*s and *B*s 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.[11]

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 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 began from a simple supposition which could be endorsed by any temporalist and certainly by both Marx and Keynes[12]; 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. 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 comon 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

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[11] 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.

[12] "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

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.

WHAT IS MACROECONOMICS, REALLY? OUTPUT, CIRCULATION, DISTRIBUTION AND VALUE

Beside insights on money, time, and uncertainty, I take one of the enduring contributions of the Keynesian and Post-Keynesian tradition in economics to be the concept of macroeconomics as such. Here, I would like to tie this back into the discussion of value.

(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 consistutes 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? Inadeuquacy 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 distibution 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 entreprenurial 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.[13]

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 macrodyamics 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 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

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[13] 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

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:

$$ {}^{m}K^{+} = {}^{l}K^{+} + {}^{m}_{l}{}^{+} \tag{14} $$

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 underlyin 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.

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