

THE RELEVANCE OF MARX TO ALL STUDENTS OF ECONOMICS, NO MATTER THE LEVEL.

Introduction.

Like most economics students we did not encounter Marx in any of our undergraduate economics units (although even at level one we did encounter Marx in our politics option). The absence of Marx would be of no concern if mainstream economics actually made better or clearer sense of the real world than Marx, i.e. if in the last 100 years economics as a science had understood Marx (and other economists) and moved on to a higher level of understanding. The problem, as clearly explained in Freeman (2004), is whether economics can actually be seen as a science. Freeman contends economics is in fact closer to religion than science, or rather it represents an ideology of the market, prioritising its own hidden ‘political agenda’ over genuine scientific investigation. Centrally economic problems, such as unemployment, recurrent cyclical recessions and inequality, can not be seen as problems inherent in the market itself, but must be identified as the outcome of unfavourable external/exogenous influences on the market. The market rules supreme, only our naïve actions can cause it to be imperfect. Once, at masters level (only by option), we finally did encounter Marx, the question, revealed in hindsight, arises as to which Marx did we actually encounter? In addition to ‘worshipping’ the market economics has another strange ‘scientific’ practice, it changes/rewrites what past economists have actually said!¹ Let us be clear on this point we contend economics does not modify past theories, acknowledging their original content, rather it modifies past theories and contends what the modification says is actually what was originally said/or what was originally meant to be said. Don’t go back to past economists’ actual work; just take modern economists word for it! If economics is indeed not a science then many students ‘problems’ in understanding mainstream economics is explained by the peculiar nature of those ideas. However as defence against logical engagement with the substance of their ideas mainstream economics assaults students with both quantity and complexity. Introductory texts are commonly huge, while if the student thinks they understand something there is always a further level of complexity (usually

expressed in maths) to add. The student is left in awe of the abstract religion, more concerned to master it than actually question it/logically engage with it/see any real world relevance to it. We content it is time, long overdue, that we better served our students by teaching them something they can actually understand/relate to i.e. Marx.

Why Marx And Which Marx?

A critic must properly understand what he/she is criticising. Marx as capitalism's most notable critic devoted his life to understanding the system he hoped would be superseded. However Marx neither predicted an imminent end to that system nor doubted the power of capitalism to dynamically spread, sweeping away more 'primitive' forms of society in its wake.² Marx, as an economist, focused on unearthing the underlying tendencies and counter-tendencies within the capitalist system. He concluded centrally that labour was the sole source of profit (the essential thrust of Marx, 1867/1976), the economy would continually cycle from boom to recession/crisis and that an ongoing process of concentration would create a growing polarisation of power/wealth between leading capitals (countries) and everyone else. Furthermore Marx did not rely on 'market imperfections' (such as natural/legal monopolies or militant/organised labour) to account for the fundamental nature of the inherently unstable/dynamic capitalist system. By presenting capitalism in its best light Marx thus sought to strengthen his conclusions about the inherent/endogenous behaviour of capitalism. Marx did not pick his central unit of measurement of economic activity, value by labour time, out of nowhere. We can measure variables in nominal price (prone to distortion through inflation) or physical quantity/use-value terms (prone to distortion through technological change), but the classical political economists (Smith, Ricardo and Mill) choose to develop an alternative concept of measurement by labour value, see Desai (1979). It is this concept of value that Marx took up, and developed, as his central unit of measurement/methodological approach to understanding capitalism. Consequently it should be of no surprise that it is upon the interpretation of what Marx actually meant by value that the question of which Marx, i.e. economics' 'scientific revision' of Marx, centres.

Freeman (1996a), McGlone and Kliman (1996), Ramos and Rodriguez (1996) and Rodriguez (1996) explain how the work of Tugan Baranowsky (1905), Bortkiewicz

(1906-7/1952 and 1907/1984) and Sweezy (1942 and 1949), turned Marx into a simultaneous economist in the simultaneous equilibrium Walrasian tradition (which by no coincidence is the foundation of mainstream economics). Marx's value theory became the labour theory of value and his now infamous transformation problem (to be considered below) failed to add up/needed simultaneous correction. Freeman (1996a) explains how Steadman (1977) proved that 'Marx's' simultaneous concept of labour value amounted to an empty/redundant concept, given that such value terms were perfectly proxied by physical/'real'/use-value terms (by no coincidence the bedrock of mainstream economics). So why read simultaneous/redundant Marx, particularly as mainstream economics developed more sophisticated simultaneous analysis.³ In essence simultaneous/Walrasian economics imagines the economy as a grand market place, in which equilibrium is attained by all simultaneously coming together to trade their wares. Equilibrium is characterised by a set of relative prices, based, whether employing marginal productivity/utility theory or not, on assuming an equalisation of profit rates throughout the economy (Freeman, 1996a). Finally, as if by accident, money is added, which we unsurprisingly find merely acts as a numéraire, turning relative prices into nominal prices, which simply neutrally vary according to the quantity of money we assume. It is hard to turn such a stable system into the ever-cycling and changing economy we all experience. Consequently mainstream economists focus on modelling dynamic disturbances from one steady equilibrium to another, caused by exogenous shocks to the system. Cyclical behaviour is attributed to such factors as random imperfectly adjusted to shocks (real business cycles) or the unreasonable behaviour of organised labour, while mainstream economics questions, in a perfectly rationally expecting world, if government policy can have any effect on the market (unless, absurdly, they act in secret, or some imperfection prevents perfect adjustment to/negation of government policy).⁴

As 'Marx' lay dead and buried in simultaneous complexity, upsetting the backward 'scientific' march of economic thought, a new/original Marx was rediscovered by the Temporal Single System Interpretation (TSSI) of Marx, through actually reading Marx's own work. The TSSI (most notably led by Andrew Kliman and Alan Freeman) contend that rather than having a simultaneous and dualistic methodological approach, Marx had a sequential and non-dualistic methodological approach (to be explained below). Suddenly Marx's original transformation problem added up

without error and all his key results held. Kliman (2002) explains how the TSSI can deduce all of Marx's key conclusions (explicitly identifying 13) from their interpretation of his method, whereas alternative interpretations of Marx fail to do so. Kliman thus concludes, by hermeneutic criterion/Stigler's principle of scientific exegesis, that the TSSI of Marx best claims to represent Marx. It is this Marx, the TSSI, that we contend has everything to say about the nature of the system we live in.

The Transformation Problem/The Inevitability Of Unequal Exchange.

Marx presents the transformation problem in Chapter 9 of Capital Volume III (Marx, 1894/1981), to address how capitals/firms with different ratios of constant to variable capital (organic compositions) can potentially achieve the same rate of profit. Constant capital, C, comprises of all the means of production and stocks that the capitalist has assembled, which embody past i.e. dead labour, to combine in production with his/her purchase of living labour power, L, for V, variable capital (the value of workers wages). If production proceeds as planned L combines with C to increase the value of the firm's total capital to C+L, with $S = L - V$ surplus value being extracted from labour in production, with S/V representing the rate of exploitation/rate of surplus-value. Marx presents the transformation problem in three tables, Marx (1981) pages 255-56.⁵ In his first table Marx lays out 5 capitals with different organic compositions of capital, and calculates the rate of profit each capital would earn if it realised all the surplus value it had extracted in production. Marx's second table modifies (and contains) his first, assuming some C is used up in production, passing into the value of the commodities, while the rest remains fixed, so as to illustrate how profit is reckoned on the total capital advanced, C+V, and not just on what is used up in production. The last two columns in Marx's second table give the value of commodities (used C plus L) and the cost price of commodities (used C plus V). Marx now introduces his third table, to calculate the necessary 'prices of production' to evenly distribute surplus value across the five capitals, Marx (1981) page 257,

'Taken together, the commodities are sold at $2+7+17=26$ above their value, and $8+18+=26$ below their value, so that the divergences of price from value indicated above cancel each other out when surplus-value is distributed evenly, i.e. through adding the average profit of 22 on the capital advance of 100 to the respective cost prices of the commodities I to V. To the same

extent that one section of commodities is sold above its value, another is sold below it. And it is only because they are sold at these prices that the rate of profit for capitals I to V are equal at 22 per cent, irrespective of their different organic composition.’

Table 1 – The Transformation Problem.

Marx's Table 2							
Capitals	Rate of surplus-value	Surplus-value	Rate of profit	Used up c	Value of commodities	Cost price	
I. 80c+20v	100%	20	20%	50	90	70	
II. 70c+30v	100%	30	30%	51	111	81	
III. 60c+40v	100%	40	40%	51	131	91	
IV. 85c+15v	100%	15	15%	40	70	55	
V. 95c+5v	100%	5	5%	10	20	15	
390c + 110v		110	110%				Total
78c + 22v		22	22%				Average
Marx's Table 3							
Capitals	Surplus-value	Value of commodities	Cost-price of commodities	Price of commodities	Rate of profit	Divergence of price from value	
I. 80c+20v	20	90	70	92	22%	+ 2	
II. 70c+30v	30	111	81	103	22%	- 8	
III. 60c+40v	40	131	91	113	22%	- 18	
IV. 85c+15v	15	70	55	77	22%	+ 7	
V. 95c+5v	5	20	15	37	22%	+17	

So what's all the fuss about? Marx does not explicitly define what units the tables are in. To simultaneousists like Bortkiewicz the system did not make sense, it did explain who sold what to who and how the economy could reproduce itself. Centrally, once corrected to define relations between capitals such as to facilitate simple (identical) reproduction of the economy, input prices/values did not equal output prices/values, as they must in balanced simultaneous equilibrium. From this point the dualistic tradition of seeing Marx's table 2 as being expressed in value in hours and Marx's table 3 as being expressed in nominal units of money began (Ramos and Rodriguez, 1996). Henceforth simultaneous Marxists have tried to solve the transformation problem by reconciling these dual systems of price and value together in a simultaneous equilibrium, finding they can not fulfil both of Marx's fundamental equalities (total value is unaltered by exchange/price formation, and total money profit in value terms is equal to total surplus value extracted from labour), if the problem is 'properly' defined. 'Marx' must be inconsistent, forget/correct him.

But what if, as the TSSI contend is clear from his writings, Marx actually had a sequential and non-dualistic concept of the determination of value by labour time.

Freeman and Carchedi (1996) page x (their emphasis), Marx's value theory must be understood as,

‘Non-dualistic (unitary, or redistributive) because it considers that prices and values *reciprocally determine* each other in a succession of periods of production and circulation. Prices are not determined independent of values but neither are values determined independently of prices.’

In practice the length of firms' production periods are likely to vary, while circulation (sale) of commodities takes time and thus overlaps with the next production period. To simplify, maintaining the essence of sequentiality, we assume production periods of uniform length are separated by instantaneous circulation periods. To illustrate the TSSI let us follow the circuit of capital, assuming for simplicity no fixed capital or stocks. The economy simply comprises of a number of capitals/firms. Firms advance capital/purchase inputs for production at t in circulation at t-1, at prices established at the end of production at t-1, $P^{\text{£}}_{t-1}$. Note we use a £ superscript to indicate a variable is expressed in nominal money terms, an o superscript to indicate physical/'real' terms and an absence of any subscript to indicate value terms:

$$M^{\text{£}}_t = P^{\text{£}}_{t-1}C^o_t + V^{\text{£}}_t \quad \text{where } V^{\text{£}}_t = P^{\text{£}}_{t-1}V^o_t,$$

$$M_t = C_t + V_t = P^{\text{£}}_{t-1}C^o_t/x_{t-1} + V^{\text{£}}_t/x_{t-1}$$

$M^{\text{£}}_t$ and M_t respectively represent the money expression and value of the total capital advanced by a firm for production at t. The firm pays $V^{\text{£}}_t$ total wages to its workers, representing a 'real' wage of V^o_t . x_{t-1} equals the money expression of the economy's total capital divided by the labour embodied in that total capital, at the end of production at t-1. x_{t-1} thus represents the monetary expression/measure of an hour of (abstract social) labour at the end of production at t-1.⁶ The TSSI's concept of the monetary expression of labour time enables us to convert nominal money terms into value terms. The value of inputs C_t and V_t at the start of production period t are thus determined by dividing their monetary expression by the monetary expression of labour time pertaining when those inputs were purchased. Production at t now occurs, the firm extracts S_t surplus value from its workers, as it produces Q^o_t physical output, with intrinsic total value Y_t and unit value v_t at the end of production at t:

- (1) $Y_t = C_t + V_t + S_t$ with $L_t = V_t + S_t$,
(2) $v_t = (C_t + V_t + S_t) / Q_t^o = Y_t / Q_t^o$
(3) $\rho_t = S_t / (C_t + V_t)$

The firm would earn an ‘intrinsic’ value profit rate of ρ_t if it actually realised Y_t , i.e. if it expropriated all the surplus value it had extracted from its own workers. At the end of production at t price, $P_t^{\text{€}}$, is formed, ensuring, assuming all output is sold in circulation:⁷

- (4) $v_t^* = P_t^{\text{€}} / x_t$
(5) $Y_t^* = M_t^{\text{€}} / x_t = P_t^{\text{€}} Q_t^o / x_t$
(6) $\rho_t^* = (M_t^{\text{€}} / x_t - M_t^{\text{€}} / x_{t-1}) / (M_t^{\text{€}} / x_{t-1})$
(7) $x_t = \sum(P_t^{\text{€}} Q_t^o) / \sum Y_t = \sum M_t^{\text{€}} / \sum Y_t$

The amount of value the firm actually realises, Y_t^* , the exchange value of a unit of its physical output, v_t^* , and the value profit rate that the firm actually realises, ρ_t^* , thus depend on the process of price formation at the end of production at t. For any firm price/exchange value is likely to deviate from intrinsic value, but within the overall constraint that total value is unaltered by price formation and subsequent circulation (Marx’s first fundamental equality). The TSSI’s calculation of the monetary expression of labour time ensures that Marx’s first fundamental equality is satisfied:

- (8) $\sum M_t^{\text{€}} / x_t = \sum Y_t$ additionally as,
 $\sum Y_t = \sum(C_t + V_t + S_t)$ and $\sum M_t^{\text{€}} / x_{t-1} = \sum(C_t + V_t)$
(9) $\sum M_t^{\text{€}} / x_t - \sum M_t^{\text{€}} / x_{t-1} = \sum Y_t - \sum(C_t + V_t) = \sum S_t$

The value of total money profits equals total surplus value extracted from labour in production i.e. Marx’s second fundamental equality is also satisfied. We can now see, by the TSSI of Marx, how price and value can not be imagined as separate dual systems. Prices are values, exchange values ($P_t^{\text{€}} / x_t$), end-production intrinsic values are also values, which are not determined in isolation in production but depend on the monetary expression of inputs. Given commodities’ prices/exchange values deviate

from their intrinsic values, the value embodied in a firm's inputs is unlikely to equal the intrinsic/'concrete' value actually expended to produce those inputs.⁸

Our simple illustration of the TSSI of Marx allows us to make sense of the transformation problem. Marx's failure to label which terms variables are in fits an implicit assumption that x_{t-1} and x_t equal 1, nominal money and value terms equal each other.⁹ Each firm's inputs are equal in nominal money expression and exchange value, prices of production are carefully chosen to maintain this equality of nominal money terms and exchange values. So what of Bortkiewicz's reproduction question? Ramos and Rodriguez (1996) show, following a non-dualistic approach, how the transformation problem can be adjusted to facilitate simple reproduction, as Bortkiewicz imagines, with output prices/values converging to input prices/values through iterations (assuming no technological change), while continually satisfying both of Marx's fundamental equalities. Marx's 'errors' simply depend on assuming he followed (should have followed) a simultaneous dualistic methodology. Marx does not tie the transformation to a particular scale of production, precisely because he considers it to represent a general tendency for profit rates to equalise, no matter the state of reproduction. Any technological change, or deviation of actual/market price from prices of production (altering input values for the next period), causes the necessary prices of production to equalise profit rates to change. Freeman (1996a) explains how market prices are likely to continually differ from prices of production, producing unequal profit rates across capitals/firms, explaining the continual dynamic movement of capital between sectors in search of the highest profit rate (and thus the tendency for profit rates to converge).

So how is this relevant to unequal exchange? Firstly we see how the first fundamental unequal exchange, the source of all profit, is that between workers (receiving V) and capitalists (extracting $S = L - V$ in production). Secondly we can see how if the market were to 'efficiently' equalise profit rates among firms with different capital/labour ratios then some firms would gain (realising more surplus value than they extract from labour) at the expense of others (realising less surplus value than they extract from labour). The market 'at its best' perpetuates an uneven distribution of human effort. If we assume capital intensive firms are concentrated in 'advanced' countries and labour intensive firms are concentrated in the rest of the world, global

capitalism ‘efficiently’ redistributes human effort to the advantage of the already advanced countries. In human terms free trade is not fair trade.

The Tendency For The Profit Rate To Fall/The Inevitability Of Cycles.

Economists use a wide range of factors to explain cyclical behaviour, often singling out the relationship between capital and labour over the cycle (imagining a negative correlation between ‘real’ wages and unemployment). The bottom line is that something must externally/exogenously disturb the market’s perfect equilibrium. Even if disturbance is inevitable, say through information/co-ordination problems, that inevitability is seen to result through human imperfection rather than market imperfection. Marx explains in part three of Capital Volume III (Marx, 1981) how ‘The Law of the Tendential Fall in the Rate of Profit’ ensures that the market, assuming an absence of any imperfections, inevitably endogenously produces cyclical behaviour. Positive accumulation (growth) in value terms will eventually lead profitability in value terms to fall, creating the conditions for crisis/recession. Crisis, by destroying capital (physically and morally by depreciation through falling price) is absolutely necessary to restore profitability in value terms, thus laying the seeds for future recovery/boom. The implication is both clear and profound, crisis is inherent to the market system, and ‘good’ government can never overcome it.

Table 2 – Falling Value Profitability by TSSI Calculation.

	$C_t^£$ (£)	C_t^o (o)	C_t (h)	L_t (h)	r_t (%)	S_t (h)	V_t (h)	$V_t^£$ (£)	V_t^o (o)	M_t (h)	$M_t^£$ (£)
1	175	175	175	100	100	50	50	50	50	225	225
2	225	225	225	100	100	50	50	50	50	275	275
3	275	275	275	100	100	50	50	50	50	325	325
4	346.7	346.7	325	100	100	50	50	53.3	53.33	375	400
5	463.2	441.2	375	100	100	50	50	61.8	58.8	425	525
	Q_t^o (o)	ρ_t^o (% o)	$P_t^£$ (£)	$M_t^£$ (£)	$\rho_t^£$ (% £)	$Y_t = Y_t^*$ (h)	x_t (£/h)	$v_t = v_t^*$ (h)	$\rho_t = \rho_t^*$ (% h)		
0	225		1			225	1	1			
1	275	22.22	1	275	22.22	275	1	1	22.22		
2	325	18.18	1	325	18.18	325	1	1	18.18		
3	400	23.08	1	400	23.08	375	1.0667	0.9375	15.38		
4	500	25.0	1.05	525	31.25	425	1.2353	0.85	13.33		
5	650	30.0	1.103	716.6	36.5	475	1.5087	0.7308	11.76		

In Table 2 we assume maximum extended reproduction (each period’s entire output is put forward as input, $C_t^o+V_t^o$, for the next period) and consider the economy at the

aggregate level, for simplicity assuming a single commodity and no stocks or fixed capital.¹⁰ We calculate all value magnitudes according to the TSSI, as explained in the previous section. Labour input, L_t , is kept constant, and we assume a constant rate of exploitation, r_t . Although we start our analysis in period 1, the sequential nature of the TSSI ensures we must define the nominal monetary expression, value and physical level of output at the end of period 0. We set our ‘initial conditions’ such as to ensure $x_t = 1$ at the end of period 0, so period 1 inputs are identical in nominal monetary expression and value (and through assuming end period 0 $v_t^* = 1$, are also identical in physical terms). The identity of money, value and physical terms is maintained through periods 1 and 2 and at the start of period 3, through keeping price constant at £1 and assuming an absence of any technological change in period 1 or 2 (constant $v_t = v_t^* = 1$). Such growth and pricing ensures that all profit rates, nominal money, value and physical, are equal to each other in periods 1 and 2 and lower in period 2 than in period 1. From period 3 we assume an escalating process of technological change/excess of physical output over physical input. The physical profit rate consequently rises in period 3, and continues to equal the nominal money profit rate as we continue to assume constant price. As technological change escalates further in periods 4 and 5 the physical profit rate rises further, while assuming 5% inflation each period from period 4 ensures that the nominal money profit rate exceeds the physical profit rate. Despite such physical and nominal developments the value profit rate continually falls throughout our scenario, as C_t grows while L_t and r_t remain constant. Despite the proliferation of physical objects each hour of capital advanced is simply expanding at a lower rate in value terms each period.

Continued accumulation, assuming C_t growth exceeded L_t growth, with constant r_t , would cause the value profit rate to fall further and further. Surplus value would be increasingly spread thinner over the increasing value of total advanced capital. An eventual crisis of value profitability is thus caused by the economy growing/accumulating in value terms i.e. the tendency to value profitability crisis is inherent in the market system itself. Kliman (1999a) explains that, although expansionary monetary and fiscal policies may keep the nominal money profit rate above the value profit rate for some time, the competitive nature of capitalism will ensure that the nominal profit rate will eventually fall towards the declining value profit rate. Crisis will now follow/manifest, until physical and moral depreciation of C_t is sufficient to

restore value profitability and the potential for boom. We have arrived at the ‘basic’ economic problem of ‘scarcity’. Conventionally in their first ever economics lesson students are presented with the production possibility frontier, assuming the economy is cycle free and is at full employment, with the Walrasian auctioneer/society’s preferences deciding which full employment equilibrium is chosen. Ironically we suggest that such a notion of ‘scarcity’ would be of most relevance to a central planner in a planned economy. Alternatively Marx reveals that the basic economic problem of scarcity is a scarcity of surplus value relative to the value of total capital advanced, which inevitably results through the capital-intensive nature of growth in the market system (which we shall consider further in the next section). Marx thus provides a universal endogenous explanation of cyclical behaviour. This does not imply that particular cycles are not influenced by government, worker, firm or financial behaviour, but it does ensure that such, potentially varying between cycles, behaviour, is neither necessary for crisis to eventually occur or capable of avoiding crisis indefinitely. Marx’s ‘Law of the Tendency to Fall in the Rate of Profit’ is thus an absolutely central result, revealing both the essentially dynamic and destructive nature of the market system. However it is a result which has been ‘disproved’ by simultaneous and dualistic Marxists and neo-Ricardians.¹¹

Table 3 – Rising Value Profitability by Simultaneous Dualistic Calculation.

	C_t^o (o)	V_t^o (o)	Q_t^o (o)	ρ_t^o (% o)	S_t (h)	v_t (h)	V_t (h)	r_t (%)	C_t (h)	M_t (h)	Y_t (h)
1	175	50	275	22.22	50	1	50	1	175	225	275
2	225	50	325	18.18	50	1	50	1	225	275	325
3	275	50	400	23.08	50	0.667	33.33	1.5	183.3	216.7	266.7
4	346.7	53.3	500	25.0	50	0.5	26.67	1.875	173.3	200	250
5	441.2	58.8	650	30.0	50	0.333	19.61	2.55	147.1	166.7	216.7
	ρ_t (% h)	P_t^ξ (£)	C_t^ξ (£)	V_t^ξ (£)	M_t^ξ (£)	$M_t^*\xi$ (£)	ρ_t^ξ (% £)	x_t (£/h)			
1	22.22	1	175	50	225	275	22.22	1			
2	18.18	1	225	50	275	325	18.18	1			
3	23.08	1	275	50	325	400	23.08	1.5			
4	25.0	1.05	346.7	53.3	375	525	31.25	2.1			
5	30.0	1.103	463.2	61.8	425	716.6	36.5	3.308			

Following the simultaneous dualistic approach the value of a physical unit of input must equal the value of a physical unit of output, to ensure, if nothing ‘exogenously’ changes, that the economy will continually reproduce itself in the same proportion (all variables growing at a constant rate, with constant profitability):

$$(10) \quad (C_t^o + V_t^o)v_t + S_t = Q_t^o v_t$$

To fully determine the productive economy we just need to know C_t^o , V_t^o , S_t and Q_t^o . Once we know v_t , we can calculate $C_t = v_t C_t^o$ and $V_t = v_t V_t^o$, revealing L_t , r_t , Y_t and ρ_t , see Table 3, which shares the same magnitudes of C_t^o , V_t^o , S_t and Q_t^o as Table 2 each period. The physical profit rate equals the end-production value profit rate. This is no matter of coincidence if we follow a simultaneous dualistic approach:

$$\begin{aligned} \rho_t &= v_t S_t^o / v_t (C_t^o + V_t^o) = S_t^o / (C_t^o + V_t^o) = \rho_t^o \\ \rho_t^{\text{f}} (\text{'real'}) &= P_t^{\text{f}} S_t^o / (P_t^{\text{f}} C_t^o + P_t^{\text{f}} V_t^o) = S_t^o / (C_t^o + V_t^o) = \rho_t^o \end{aligned}$$

Let us in simultaneous dualistic methodological terms, consider the money side of the economy. If we simply price inputs in ‘real’ terms at the same price as outputs, we only need to know P_t^{f} , to calculate the ‘real’ money profit rate. In fact we don’t even need to know P_t^{f} , as $\rho_t^{\text{f}} (\text{real})$ will always equal ρ_t^o , which always equals ρ_t . ‘Real’/physical/use-value terms make both nominal and value terms equally redundant. Actual nominal price and past nominal price are irrelevant to the ‘real’ physical determination of the economy. We have two dual systems, of prices in units of money, and values in hours, which are simply related by the monetary expression of labour time, given at the aggregate/one-commodity level by:

$$\begin{aligned} x_t &= P_t^{\text{f}} Q_t^o / Y_t = M_t^{\text{f}} / Y_t \\ Y_t (\text{Sim/Dual}) &= v_t C_t^o + v_t V_t^o + S_t \\ Y_t (\text{TSSI}) &= v_{t-1} C_t^o + v_{t-1} V_t^o + S_t \end{aligned}$$

The formula for x_t is the same as for our TSSI example; the approaches differ through their calculation of Y_t . Tables 2 and 3 are identical in money and physical terms throughout, and are also identical in value terms up to the end of period 2, while we assume no technological change, so unit input values equal unit output values. The two approaches immediately diverge in value terms when we introduce technological progress in period 3. Simultaneous dualistic replacement-cost valuation of inputs at v_t , rather than TSSI historical valuation of inputs at v_{t-1} , ensures that, as technological change causes $v_t < v_{t-1}$, C_t and V_t are scaled down, reducing Y_t , so as to boost the

value profit rate into equality with the rising physical profit rate. Value is ‘lost’ between periods (would ‘appear’ if technology regressed)! At the end of period 2 Q_t^o , which becomes period 3 $C_t^o+V_t^o$ by assuming maximum extended reproduction, embodies 325 hours of value. However as period 3 input $C_t^o+V_t^o$ embodies only 216.7 hours of value. In the instantaneous circulation period between the end of production period 2 and the start of production period 3 108.3 hours of value are instantaneously lost. Despite achieving maximum possible growth the economy shrinks in value terms each period from period 3. Value is now both redundant, $\rho_t = \rho_t^o$, and a meaningless/badly-behaved concept e.g. we don’t know a period’s labour input until its physical output is determined! Regard for consistency with the really existing past is thrown away in search for consistency with the imaginary future; Marx is ‘discredited’. The simultaneous and dualistic position is famously expressed in the Okishio theorem (Okishio, 1961); viable technological change (cost reducing at current prices) can never cause the ‘uniform’ profit rate to fall, if the real wage is held constant. Table 4 shows how the TSSI refutes the Okishio theorem.

Table 4 – Falling Value Profitability by TSSI Calculation – Example 2.

	$C_t^£$ (£)	C_t^o (o)	C_t (h)	L_t (h)	r_t (%)	S_t (h)	V_t (h)	$V_t^£$ (£)	V_t^o (o)	M_t (h)	$M_t^£$ (£)
1	175	175	175	100	1	50	50	50	50	225	225
2	200	200	200	100	1	50	50	50	50	250	250
3	243.5	231.9	226.2	100	1.05	51.2	48.8	52.5	50	275	296.0
4	300.0	272.1	254.0	100	1.143	53.3	46.7	55.1	50	300.7	355.1
5	373.1	322.3	283.3	100	1.275	56.0	44.0	57.9	50	327.3	431.0
	Q_t^o (o)	ρ_t^o (% o)	$P_t^£$ (£)	$M_t^£$ (£)	$\rho_t^£$ (% £)	$Y_t = Y_t^*$ (h)	x_t (£/h)	$v_t = v_t^*$ (h)	$\rho_t = \rho_t^*$ (% h)	Q_t^{oc} (o)	
0	225		1			225	1	1			
1	275	22.22	1	275	22.22	275	1	1	22.22	25	
2	307.5	23.0	1.05	322.9	29.15	300	1.076	0.9756	0.2	25.6	
3	349.5	24.0	1.103	385.4	30.2	326.2	1.181	0.9333	18.63	27.4	
4	402.6	25.0	1.158	466.1	31.25	353.9	1.317	0.8791	17.74	30.3	
5	469.1	26.0	1.216	570.2	32.3	383.3	1.487	0.8171	17.12	34.3	

We keep the ‘real’ wage in physical terms, V_t^o , constant at its period 1 level. Period 1 is unchanged from our first TSSI example in Table 2. From period 2 we assume unit cost reducing, at current prices, technological change increases physical output sufficiently to increase the physical profit rate each period. We slow accumulation in value terms by assuming capitalist consume Q_t^{oc} output, equivalent to half that period’s surplus value, at the end of each period. Simultaneous dualistic calculation would produce a rising value profit rate equal to the physical profit rate. TSSI

calculation produces a steadily falling value profit rate, despite rising exploitation (and assuming a slower pace of accumulation in value terms). Outside of a simultaneous dualistic setting there is no 'universal' profit rate. Different measures/concepts of activity are likely to systematically diverge, while centrally the tendency for value profitability to fall holds, irrespective of physical developments in the economy. By using the term tendency Marx recognises the fact that counter-tendencies, like increased exploitation, may for a while prevent value profitability from falling. But ultimately increased exploitation, given abstractly the most S_t you can capture is all of L_t (as workers starve), can not stop the tendency for falling value profitability from reasserting itself, as long as C_t grows faster than L_t .

Relative Surplus Value/Surplus Profit/What Is Competitiveness?

Why do we assume, believing ourselves to be following Marx, that accumulation is likely to be associated with technological change, which deepens the organic composition of capital (increasing C_t relative to V_t)? Understanding technological change is central to Marx's understanding of capitalism. It is precisely through firms' ability to realise surplus value/increase their total capital that firms have the ability to invest in expanding and improving their means of production. Such accumulation is likely to produce a proliferation of physical output (use-values in concrete form), but, as Marx puts straight in chapter 1 of Volume I of Capital, Marx (1976) page 137,

'variations in productivity have no impact whatever on the labour itself represented in value. As productivity is an attribute of labour in its concrete useful form, it naturally ceases to have any bearing on that labour as soon as we abstract from its concrete useful form. The same labour, therefore, performed for the same length of time, always yields the same amount of value, independently of any variation in productivity. But it provides different quantities of use-values during equal periods of time; more, if productivity rises; fewer, if it falls.'

We have seen how, it is by understanding that value terms and physical terms tend to systematically vary, that the TSSI has 'reinstated' Marx's tendency for value profitability to fall in times of accumulation. When considering this tendency in Volume III of Capital, Marx (1981) page 325-26, Marx explains,

‘The course of the development of capitalist production and accumulation requires increasingly large-scale labour processes and hence increasingly large dimensions and increasingly large advances of capital for each individual establishment. The growing concentration of capitals (accompanied at the same time, though in lesser degree, by a growing number of capitalists) is therefore both one of its material conditions and one of the results that it itself produces. Hand in hand with this, in a relationship of reciprocity, goes progressive expropriation of the more or less immediate producers. In this way a situation comes about in which the individual capitalist have command of increasingly large armies of workers (no matter how much the variable capital may fall in relation to the constant capital), so that the mass of surplus-value and hence profit which they appropriate grows, along with and despite the fall in the rate of profit. The reasons that concentrate massive armies of workers under the command of individual capitalists are precisely the same reasons as also swell the amount of fixed capital employed, as well as the raw and ancillary materials, in a growing proportion as compared with the mass of living labour applied.’

Accumulation will inevitably lead to declining value profitability and the need for crisis; capitalism/the market is ultimately self-defeating. We have seen how, fighting its eventual defeat, technological improvement can allow the rate of exploitation to rise if ‘real’ physical wages are constant (or growing sufficiently slowly). Marx explains this form of exploitation of labour in Volume I of Capital, terming it the production of relative surplus value, an increase in S_t through a reduction in V_t with L_t constant (while increases in absolute surplus value depend on lengthening and increasing the intensity of the working day). Workers are thus likely to become more exploited when technological progress is fast, even if their standard of living is rising in physical/use-value terms, ‘pleasantly’ masking a tendency to inequality. As we noted the production of relative surplus value is ultimately limited by the length of the working day, S_t can’t exceed L_t . Rising exploitation can only act as a counter-tendency to the tendency for falling value profitability as accumulation ensures C_t growth exceeds L_t growth. It seems irrational, why can’t capitalists collectively realise what’s going on, aided by ‘wise’ government, and reduce C_t growth such as to prevent the eventual need for crisis? Marx (1981) pages 373-74,

‘No capitalist voluntarily applies a new method of production, no matter how much more productive it may be or how much it might raise the rate of surplus-value, if it reduces the rate of profit. But every new method of production of this kind makes commodities cheaper. At first, therefore, he can sell them above their price of production, perhaps above their value. He pockets the difference between their costs of production and the market price

of the other commodities, which are produced at higher production costs. This is possible because the average socially necessary labour-time required to produce these latter commodities is greater than the labour-time required with the new method of production. His production procedure is ahead of the social average. But competition makes the new procedure universal and subjects it to the general law. A fall in the profit rate then ensues – firstly perhaps in this sphere of production, and subsequently equalised with the others – a fall that is completely independent of the capitalists’ will.’

It is the very nature of competition for surplus value that drives accumulation and technological progress forward hand in hand together towards inevitable self-defeat. Recurrent temporary defeats/crises (with all the cost to humanity that crisis brings) is the price humanity must pay for capitalism’s dynamic and innovative nature. Leading firms, concentrated in leading countries, with most capital, from earning surplus profits in the past, are likely to innovate fastest, and so to continue to earn surplus profits in the future. Patents helpfully enhance leading firms’ ability to earn surplus profits by creating legal monopolies. Monopolies’ surplus profits reduce the total level of surplus value to be distributed in the ‘competitive’ sector of the economy. Competitiveness is essentially the ability to stay ahead once ahead. Carchedi (2001) explains that ‘free’ competition is not ‘fair’ competition, as leading firms can freely compete their rivals into the ground. So what is the consequence of the concentration of capital in advanced/leading capitalist countries on the rest of the world in our global economy, Freeman (1996b) pages 253-54 (Freeman’s emphasis),

‘Capitalist progress is simultaneous destruction and construction irrevocably intertwined. In raising the *average* productivity of human labour it directly lowers the productivity of *most* human labour because it concentrates the value of each commodity in the hands of a minority, those who deploy the most advanced technology. Otherwise there would be no incentive to deploy the new technology. The more technology becomes a universal component of all means of production, the more pronounced this phenomenon and the less protection the benefits of nature afford to those denied the fruits of technology. This, one of the absolute limits on the capitalist mode of production, has been surgically excised by the mainstream theories, both non-Marxist and supposedly Marxist, which seek to understand it.’

Recognising The Existence Of Money/Understanding The Financial System.

Mainstream economics has little concern for money. Monetary economics is considered a separate discipline, as macroeconomists work in simultaneous ‘real’

terms, assuming neutral money cannot affect the 'real' economy. Given exchanges in a simultaneous equilibrium could be conducted by barter, money is assumed to exist because it makes things more 'convenient'. In contrast the TSSI emphasises how Marx thought money was absolutely essential to capitalism. It is the very form in which value is expressed, without money individual commodities' exchange values could not deviate from their intrinsic values, eliminating the whole dynamic process of innovation, producing uneven profit rates, and capital movement between sectors/firms, acting tendentially to equalise profit rates. In pre-capitalist societies economic relations were largely determined directly by social relations, with money operating at the margins (between social groups). In contrast capitalism is characterised by the universal use of money in all economic relations, with the very aim of capitalism being the accumulation of capital/value expressed in money form.

Freeman (2002) explains how Marx's concentration on gold commodity money, and abstraction from credit money in much of his work, left most economists in the 20th century considering Marx as a simple metallist, e.g. Schumpeter (1994).¹² Although Marx's writings on money, particularly credit money, are considered to be incomplete, Freeman (2002) and Lapavitsas (1991) argue that Marx's completed work on money, can act as a basis for a fully developed theory of money relevant to today.¹³ They explain how Marx's theory of money is a complex theory, linking the dominant function/form of money to the stage of development of the economy. Marx's first function of money, money as a measure of value/unit of account, is the dominant function of money, when monetary exchange first supersedes barter. Marx's second function of money, money as a means of circulation, becomes the dominant function of money, as commodity exchange for money becomes generalised. The dominance of the circulating function allows symbols of money to be introduced to facilitate circulation. Marx's third function of money, money as capital (Freeman, 2002), incorporates money as, a means of hoarding/store of value, a means of payment/means of deferred payment (basis to credit) and as world money. The third function develops as capitalism develops, endogenously explaining the development of the financial system.

Lapavitsas (1992) records, how Marx (1885/1978) explains that capitals/firms must necessarily hoard over the circuit of capital (with circulation taking time and

overlapping production). Hoards include the precautionary 'reserve fund', hoards resulting from the gradual depreciation of fixed capital, investment/profit hoards not yet of sufficient size for reinvestment and 'coin-in-suspension' for the gradual purchase of inputs. Such hoards increase the total capital firms' must advance/hold idle, while as it may take some time to realise/sell output, either more capital must be advanced to continue production, or it must be suspended until sufficient capital has been realised. The financial system endogenously develops to minimise these 'circulation' costs, allowing the circuit of capital to be speeded up and additional activity to be supported by previously idle hoards (lent at interest, usually lower than the profit rate, reflecting their idle nature/inability to be individually advanced as productive capital). The financial system thus increases the total activity/extraction of surplus value that a given level of total capital can support. Financial institutions/capitals, despite creating no surplus value themselves (with their operating costs being a deduction from the economy's total surplus value), are thus absolutely necessary to capitalism, and participate in the formation of/and tendentially receive the average rate of profit. Lapavitsas (1991) explains how commercial and monetary credit developed. Commercial credit, being the advance of commodities against promises to pay, and monetary credit being the regular advance/lending of money with a view to earning interest, i.e. interest bearing capital. Commercial credit developed between firms to speed up the circuit of capital, allowing production to re-commence before realisation is complete. Commercial credit displaces much money in circulation, eroding the circulating function of money. Money becomes chiefly a means of payment, when promises to pay imperfectly cancel each other out. Dominance of the means of payment function of money helps credit money to emerge and grow. Lapavitsas explains how banknote credit money arose as firms, searching for liquidity, approached banks with bills of exchange, for banks to privately discount and in return issue their own more liquid promises to pay, i.e. banknotes. Banks provide means of payment, by effectively advancing interest-bearing capital, through their discount operations. Banknotes thus arose through the linking of commercial credit to monetary credit. Most significantly banknotes may exit circulation, through forming 'cash' hoards or by re-entering banks as deposited money. Lapavitsas explains, how the quantity of banknote credit money in circulation, is not only determined by the needs of exchange, but by the result of credit operations, which accompany the real process of accumulation, Lapavitsas (1991) page 311,

‘Whether this quantity achieves regularity in its determination, and if so at the desired level, cannot be generally guaranteed. Its proportionate relationship to gold, and hence the stability of the nomenclature of prices, is constantly re-established by the credit system.’

The emergence of one banknote from many private banknotes, is inevitable, to maximise the universal acceptability of banknotes, Lapavitsas (1991) page 313,

‘In all the crises of the 19th century the banknotes of the Bank of England, rather than those of other banks, were the absolutely necessary means of payment, which decisively resolved monetary panics. Monetary crises act as levers for generalizing the acceptability of one banknote and strengthening its role as the universal means of payment. This makes it easier for the state to give its backing to one banknote and centralize its issue.’

Lapavitsas explains how as banking, particularly branch banking, develops a deposit system progressively replaces banknotes role, in acting as the basis for commercial and monetary credit. Deposit credit money reflects the growing dominance in capitalism of the hoarding function of money. Claims on banks, deposits, can be made without the need for the mediation of the banknote. Such a deposit system relegates banknotes to the sphere of individual exchange for consumption, with the quantity of banknotes in circulation being dependent on the pattern of expenditure of private disposable income. Lapavitsas and Itoh (1999) identify joint-stock capital as a highly developed form of capital, with return linked, through asset substitutability, to the rate of interest for interest-bearing capital. Hilferding (1910/1981) explains how the development of banking and industrial concentration led to the development of finance capital, Tomlinson (1990) pages 188-89 (page numbers refer to Hilferding, 1981, our comment in bracketed italics), followed by Hilferding (1981) page 334-35,

‘When this process of credit expansion encompassed the financing of fixed capital the relationship of the banks to industrial capital began to change, as banks came to have an enduring rather than a monetary (*momentary?*) interest in the fortunes of industrial enterprise they lent to. So emerged the characteristically ‘German’ interlinking of banks and industry, ... This growing concentration of banks was seen as interacting with the growth of concentration amongst industrial firms, and is thereby closely linked with the development of the joint stock company. The growth of shares, which Hilferding stresses should be seen as another form of (irredeemable) credit, is a pre-condition of the growth of the joint stock company, which in turn is a

pre-condition of a full utilization of the possibilities of technological advance (pp. 123-3). These joint stock companies become more and more concentrated and tend to the elimination of free competition. This is paralleled by the growth of 'an ever more intimate relationship' between banks and industrial capital: 'Through this relationship ... capital assumes the form of finance capital, its supreme and most abstract expression' (p. 21).'

'Finance capital ... detests the anarchy of competition and wants organization, though of course only in order to resume competition on a still higher level. But in order to achieve these ends, and to maintain and enhance its predominant position, it needs the state which can guarantee its domestic market through a protective tariff policy and facilitate the conquest of foreign markets. ... It needs also a strong state which will ensure respect for the interests of finance capital abroad, and use its political power to extort advantageous supply contracts and trade agreements from smaller states; a state which can intervene in every corner of the globe and transform the whole world into a sphere of investment for its own finance capital. ... finance capital demands unlimited power politics, and this would be the case even if military and naval expenditures did not directly assure the most powerful capitalist groups of important markets, which provide in most cases monopolistic profits.'

Hilferding's vision of finance capital as a bank led close fusion between industrial firms, banks and the state is shaped, historically specific, to the development of capitalism in Germany. However as Tomlinson (1990) explains in other times/countries other financial institutions may take the lead in creating/organising finance capital. The form of finance capital (relations between state, financial system and firms) is not unique, but historically specific and subject to change (a point we shall shortly return to). Freeman summarises the development of the financial system and alerts us to the inevitability of monetary/financial crisis, Freeman (2002) page 7 (Freeman's emphasis),

'Credit is no longer a simple instrument of circulation but becomes a requirement of accumulation as money capital, accumulated in reserves and hoards, is mobilised and pressed into the service of industrial capital through the developed system of finance credit, bank loans, joint-stock finance and the entire system of *finance capital*. ... It becomes the special function of the banking system to convert credit into means of exchange, payments and circulation through the issue of banknotes and system of deposits, chequing and fund transfers. On top of this system is overlaid the entire edifice which arises from the capitalisation of anticipated income streams; shares, bonds, financial instruments and *fictitious capital* in general, all of which constitute forms of credit. ... The development of credit therefore directly and indissolubly ties the monetary system to the entire process of capitalist reproduction and accumulation and all the contradictions of accumulation

burst forth, at the point of crisis, in the contradictions of the money form. It is therefore a central but underrated consequence of Marx's monetary theory that monetary crisis becomes first of all a *moment* of capitalist crisis in general, and secondly that periodic monetary crisis becomes inevitable and cannot be overcome by 'sound monetary management'; a 'return-into-self' of his earliest critique of utopian bank reform.'

We arrive at the question of commodity money. Marx's monetary theory imagines many forms of money/credit, including, as a historical base to the development of the other forms of money, gold commodity money. Through representing exchange value the commodity form is stamped on all forms of money, with crisis testing each form of money's ability to retain value, like hoarded commodity money, in crisis (Freeman, 2002).¹⁴ Given money/credit in the form of fictitious capital (shares, bonds, e.t.c.) represent the capitalisation of expected future income, such forms of money are likely to fall in value sharpest upon the onset of crisis. Lapavitsas (1991) explains how, initially, banks concentrated gold hoards to bolster the credit and monetary system in times of crisis. But once banking and credit money became sufficiently developed the banking system, ultimately led by the Central Bank, could now provide its own means of payment to alleviate crises, in banknotes or, increasingly in advanced countries, money deposits. Gold passed to becoming world money, the initial basis to international settlements and Central Bank reserves. Lapavitsas (2000) explains how the exchange value of credit money is anchored to the intrinsic value of commodity money, imperfectly over the cycle, if credit money is freely convertible into commodity money. The exchange value of credit money falls as prices and the quantity of credit money rise in the last phase of the upswing. Convertibility into gold ensures that the Central Bank must take action to defend its gold reserves as the exchange value of credit money falls. The Central Bank's actions (restriction of credit) ensures that the economy will fall into crisis and depression, so increasing the exchange value of credit money as prices and the quantity of credit money fall.

Lapavitsas (2000) argues that a commodity money based system existed under Bretton Woods, but after its breakdown inconvertibility between credit money and commodity money ensures that the intrinsic value of commodity money can no longer act as an anchor for the exchange value of credit money. Credit money creation remains endogenous to the real process of accumulation, but freed from the discipline

of gold and subject to state interference, the quantity of credit money can persistently be out of balance with the needs of exchange, permanently changing the exchange value of credit money. The Central Bank appears to be free to try to ease crisis, set the interest rate and influence the price level, enhancing its importance. However as Lapavitsas and Itoh (1999) make clear the Central Bank now faces new difficulties. With the link to gold severed exchange rates can fluctuate widely, achieving some degree of exchange rate stability thus limits Central Banks' ability to independently set interest rates. Elimination of commodity money reserve discipline creates the possibility that credit money creation will contribute to inflation, and lead to pressure to control inflation through higher interest rates, which by harming accumulation may place another constraint on the Central Bank's ability to decisively act.

Inconvertibility increases the autonomy of the financial sector to the real process of accumulation, with increased instability heightening speculation and the possibility of speculative bubbles, which again influence/impinge upon Central Bank monetary policy. Saad-Filho (2000) concludes inflation/inconvertibility may in certain circumstances foster accumulation and postpone/smooth crisis, but cannot avoid crisis indefinitely (and may make it worse when it comes). Finally we suggest that the Japanese or German/European financial system in the Golden Age can be seen to confirm to Hilferding's vision of finance capital, at least in terms of prioritising the development of the productive economy. However many observers suggest, as the financial system has become 'relatively autonomous' to the interests of the productive economy and the control of the state since the end of the Golden Age, that the nature of finance capital has changed, hampering growth, Fine, Lapavitsas and Milonakis (1999), pages 71-73 (our comment in bracketed italics),

'This pronounced disparity of dynamism between industrial and financial accumulation marks a new development in the history of capitalism. ... Indeed, far from drawing its dynamism from lending to industry, the remarkable growth of the financial system during the last two decades has been associated with speculative trading in foreign currencies, stock market securities, real estate, and the like. The repercussions of this development are profound. In the late 1980s, trading in shares and real estate encouraged the formation of speculative bubbles across the developed world, above all in Japan. Bursting of those bubbles precipitated recession in the UK and USA in the early 1990s, but has left Japan crippled by bad debts throughout the decade. In the mid-1990s, trading in financial derivatives and stock market securities resulted in another series of speculative bubbles, this time encompassing the USA and the UK but also the East and South East Asia and

a host of other 'emerging markets. The burst of these in 1997-8 has already crippled Asia and Russia, and the repercussions for the dangerously stretched US financial system are far from clear at the time of writing (*the bubble burst big in 2000*). ... Mixes of fiscal and monetary policies that risk higher inflation, or those that include higher taxes, are fiercely resisted by financial capital. Finance-induced policy 'orthodoxy' means price stability and high real interest rates. ... industrial accumulation is confronted with a predatory and destructive explosion of financial accumulation, ... In our view the long downturn has been heavily influenced by the emergence of relative autonomy of finance, which functions to a large extent at the expense of industry.'¹⁵

We conclude that Marx has laid the foundations for an integrated study of the productive economy and the financial system, able to recognise the existence of endogenous inter-linked tendencies within those systems, and the historical specificity of different forms of finance capital. We content that Marxist theory makes mainstream macroeconomic notions of neutral intrinsically valueless/ fiat money, obeying the quantity theory of money either immediately, or in time through imperfect adjustment, seem as empty, being purely tied abstractly to the physical equilibrium of the productive economy, as indeed they are.¹⁶

Conclusion.

We are indebted to the work of the Temporal Single System Interpretation of Marx (in particular to the efforts of Andrew Kliman and Alan Freeman) for its rediscovery of the central message/power of Marx, revealing how capitalism is both endogenously dynamic and destructive. The ideology of market perfection may well, like any good religion, let us sleep comfortably in our beds, but like any good religion is highly unlikely to help us understand the real working/movement of the global economy. Clearly it might be argued that the political role of such an understanding of the world may be important to the continuation of capitalism, but we cannot imagine how it might be of any practical use to business. Consequently we doubt if conventional economic wisdom is actually practically applied by business and am not at all surprised by Ormerod's (1994) announcement of the death of economics. With economics dead, are we mature enough to return to political economy/Marx, or do we have to continue teaching what we don't believe/actually apply to our own everyday understanding of the world?

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¹ We shall explore this further for Marx, but contend that it holds generally for economists who do not fit into the mainstream, see for example Desai (1975) on the issue of the Phillips Curve, or Chick and Tily (2004) on the reinvention of Keynes.

² Desai (2002) points out how, before the Russian revolution, Lenin had criticised the then 'anti-globalisers', the Narodniks, for not recognising the progressive, but ultimately doomed nature of capitalism. Desai focuses on explaining how the dynamic nature of capitalism, that Marx identified, has ensured its survival, despite twentieth century Marxists' predictions of its demise. He concludes that

we best return to Marx's original analysis to understand the nature of globalising capitalism, suggesting capitalism may have considerable life left in itself before it has 'exhausted its potential' (to Desai, when it is no longer capable of progress, as judged by the world's population).

³ In parallel political economy followed the simultaneous approach, culminating in Sraffa (1960) and the development of neo-Ricardian economics.

⁴ We would suggest that economists tend to fall into two camps, the mainstream extreme worshipers of the market, remove all exogenous imperfections and let the market rip, and the benevolently concerned Keynesians/Post-Keynesians, who imagine they can manage the economy to a superior equilibrium, if only they had the chance.

⁵ In fact this is the first example of the transformation problem presented in Chapter 9 of Marx (1981); a second, neglected, example is presented on page 264 of Marx (1981).

⁶ The term abstract social labour may seem obscure, but it accurately expresses how, although labour is the sole source of value, its expression/distribution (the operation of capitalism) is a particular social process. McGlone and Kliman (1996) page 31 to 32 (their emphasis), "As Marx (1964:122-23) wrote in 'Alienated Labour': 'The worker puts his life into the object, and his life no longer belongs to himself but to the object ... The *alienation* of the worker in his product means not only that his labour becomes an object, assumes an *external existence*, but that it exists independently, *outside himself*, and alien to him, and that it stands opposed to him as an autonomous power. The life which he has given to the object sets itself against him as an alien and hostile force.' That which is called 'embodiment' in *Capital* is here referred to as life that 'belongs ... to the object', labour that 'exists independently, *outside himself*, and life ... given to the object'. It should be clear that Marx's embodied labour theory is a theory of abstract, alienated labour. Because the embodiment of abstract, alienated labour is a peculiar social process, not a technological requirement as such, the abstract labour embodied in a commodity need not equal the amount of (concrete) labour needed to (re)produce it."

⁷ We assume all output is sold in circulation to fulfil our simplifying assumption of no stocks, but if we introduced stocks our calculation of v_t^* , Y_t^* and ρ_t^* would be unchanged. Stocks would have the same unit value as sold output and would be included positively on firms' balance sheets valued in money terms at the same price, P_t^e per unit, as sold output. Freeman (1996b) explains how it is the formation of prices, and not the precise pattern of trade, which determines exchange values and the resultant distribution of value among capitalists.

⁸ We would suggest that the following passage, which immediately follows Marx's second presentation of the transformation problem, clearly supports the TSSI of Marx. Marx (1981) pages 264 to 265, Marx's emphasis, 'It was originally assumed that the cost price of a commodity equalled the *value* of the commodities consumed in its production. But for the buyer of a commodity, it is the price of production that constitutes its cost price and can thus enter into forming the price of another commodity. As the price of production of a commodity can diverge from its value, so the cost price of a commodity, in which the price of production of other commodities is involved, can also stand above or below the portion of its total value that is formed by the value of the means of production going into it. It is necessary to bear in mind this modified significance of the cost price, and therefore to bear in mind too that if the cost price of a commodity is equated with the value of the means of production used up in producing it, it is always possible to go wrong. Our present investigation does not require us to go into further detail on this point. It still remains correct that the cost price of commodities is always smaller than their value. For even if a commodity's cost price may diverge from the value of the means of production consumed in it, this error in the past is a matter of indifference to the capitalist.'

⁹ We must remember that Frederick Engels assembled Volumes II (Marx, 1978) and III (Marx, 1981) of *Capital*, from Marx's notes, after Marx's death.

¹⁰ Assuming a single commodity is a simplifying assumption i.e. we could model many commodities, but this would not alter our results at the aggregate level, the level we wish to focus on. In a single commodity model we must abstractly assume that firms cannot use their own output for consumption or constant or variable capital input for the next period, to ensure that firms must actually sell their output in the market. This may appear unrealistic, but is in fact merely an abstract way to retain the essential features of capitalism, while not unnecessarily overcomplicating our analysis. We should also note, by TSSI calculation, the inclusion of stocks and fixed capital would strengthen the tendency for the value profit rate to fall, not reduce it.

¹¹ Kliman and Freeman (Kliman, 1999b, Freeman, 1999, Freeman and Kliman, 2000a and 2000b) debate with Foley (1999 and 2000) and Laibman (1999a, 1999b, 2000a and 2000b), over the behaviour of the value profit rate and the physical profit rate in a temporal setting. Foley and Laibman contend that, although the physical and value profit rates may differ, they eventually travel in the same direction i.e. if through technological progress the physical rate is rising the value rate will also eventually rise.

Kliman and Freeman dispute such a finding, suggesting it rests on employing a replacement cost approach to valuation (as in the simultaneous approach re-valuing inputs at the value of outputs). Kliman and Freeman explain, that it is only when value is determined sequentially and non-dualistically by labour time, that the systematic tendency for the value profit rate to fall as technological change causes the physical rate to rise, is revealed.

¹²As Freeman (2002) explains Marx believed, that if he started with a more advanced form of money such as credit money, reflecting a more advanced form of capitalism, in his explanation of the emergence of capitalism, that his analysis would be circular, by already assuming the existence of that more advanced form of capitalism.

¹³Freeman (2002) lists Marx's completed works, which in Freeman's opinion, shed light on the question of money; Comments on James Mill (Marx, 1992a), Economic and Philosophical Manuscripts (Marx, 1992b), Grundrisse (Marx, 1973), Zur Kritik der Politischen Okonomie (Marx, 1970) and Parts 1 and 2 of Volume I of Capital (Marx, 1976).

¹⁴We suggest that house prices are highly fictitious, as they depend on the expected future income of borrowers and the expected future level of interest rates.

¹⁵Note Potts (2003a and 2003b) presented abstract three-sided models of the economy, including firms, workers and rentiers, to explore how each 'class' may be affected in value terms by simulating alternative scenarios of strong growth and technological change and very slow growth and technological change. We found rentiers gained in value terms from very slow growth/technological change and suffered in value terms from fast growth/technological change (assuming rapid deflation does not maintain the value, as sequentially and non-dualistically determined by labour time, of money). We concluded that our abstract analysis might provide a value motive for the financial system to impede growth if it has the relative autonomy to do so. We must point out, and apologise, for identifying our illustrative concept of post-circulation exchange value with the TSSI, which, as we now appreciate, assumes exchange values are formed at the end of production, pre-circulation (thankfully our numerical results are unaffected by applying either concept). It would seem an appropriate point to apologise in advance for any misconception/misrepresentation of authors or approaches in this paper.

¹⁶As Lapavitsas (1991) explains Marx does consider the behaviour of symbolic/ fiat money. Firstly we must be clear about what Marx meant by symbolic/ fiat money. Lapavitsas explains how Marx is not talking about banknotes, which represent a form of credit money, but money issued by the state, independent of the credit system, in direct symbolisation of gold/silver commodity money. As such we may find fiat money hard to imagine, from a now 21st century context. Fiat money, issued by the state, enters circulation from the single point of state expenditure, leaving by the same point, only if the state is prepared to take it back in tax or for bonds. Marx concludes the quantity theory of money holds for this very peculiar form of money; the form mainstream macroeconomists take for granted, in their highly peculiar world.