Southampton Solent University

Faculty of Business, Sport and Enterprise

Research and Enterprise Working Paper Series

Working Paper Number V

January 2009

Money And Finance: Exploring The TSSI

Nick.Potts@Solent.ac.uk

Abstract

Our paper builds on Potts (2009a), which considers how Kliman's and Freeman's valuation methods differ if we include stocks of commodities, despite both being within the Temporal Single System Interpretation (TSSI) of Marx. We aim to explore how 'stocks' of money may be treated in the TSSI of Marx. We conclude that how we treat money depends on whether we imagine a commodity money or, that money has a stamped commodity form or, we see the value of money as being purely fictitious. We then abstractly focus on the financial system as essentially representing monied-capitalists' partial ownership of the productive economy. We assume money is in the form of deposit credit money, which clearly has no intrinsic value. However, if we assume our money deposits to be of stamped commodity form can we imagine that they can actually embody/appropriate value? Rather than attempting to answer this question we firstly assume money deposits embody value and secondly assume that they do not. We imagine for both approaches how monied-capitalists' and productive capitalists' fortunes may vary over time. In conclusion we suggest our results support the notion that changes to the nature of finance-capital may help explain the post-Golden Age growth slowdown.[1]

Keywords: Money, Value-Theory, Finance-Capital

Money And Finance: Exploring The TSSI

A Simple Productive Economy

We shall assume the simplest productive economy we can imagine. We assume, no fixed capital, and that we have identical capitals producing a single identical commodity. Capitalists do not carry over stocks; all output is successfully sold at the end of the period; we have a pure circulating capital model. With only a single commodity capitalists have no reason to trade with each other, so to impose the need to exchange commodities in circulation, we assume capitalists cannot use their own output or stocks for inputs or their own consumption. In circulation at the end of period t-1 total output is sold/demanded. Demand at the end of period t-1 comes from three sources. Firstly, capitalists' purchases of our single commodity for their own consumption. Secondly, capitalists' purchases of our single commodity to apply as constant capital input for period t. Thirdly, through capitalists advancing to workers, at the end of period t-1, their wages for period t, which we assume they entirely spend in circulation at the end of period t-1 i.e. this period's workers consume part of last period's output. With period t inputs defined production proceeds in period t. The labour-time, agreed in the wage bargain at the end of period t-1, is worked in production in period t.[2] Surplus labour-time equals the difference between total labour-time and paid labour-time/variable capital (as determined by the wage paid at the end of period t-1).

At the end of production at t our single commodity has a produced unit value, with total capital equalling the value of newly produced output. With only one-commodity our commodity can not deviate in appropriated value from produced value, as there is no other commodity to match, and thus facilitate, this deviation. Price formation at the end of production at t will simply ensure appropriated value equals produced value. Let us explain the notation we shall employ,

C constant capital input at the start of the production period.

V variable capital input at the start of the production period.

L labour-power applied in the production period.

S surplus-value produced by the end of the production period.

r the rate of exploitation of labour in the production period.

Q the output of our single commodity at the end of the production period.

v the unit value of our single commodity at the end of the production period.

Y total capital at the end of the production period, equal to total output.

ρ the profit rate at the end of the production period.

p the price of our single commodity at the end of the production period.

m the monetary expression of labour-time (MELT) at the end of the production period.

D demand in circulation at the end of the period.

K capitalists' personal consumption purchases in circulation at the end of the period.

£ superscript indicates a variables produced value in nominal units of money.

£* superscript indicates a variables appropriated value in nominal units of money.

o superscript indicates a variable is expressed in physical units of our single commodity.

h superscript indicates a variables produced value in terms of labour-time.

h* superscript indicates a variables appropriated value in terms of labour-time.

t subscript marks which period the variable applies to.

For example, $Y^{£*}_t$ represents the monetary expression of the appropriated value of total capital at the end of production at t (conventionally M'_t). Y^o_t represents the number of physical units of our commodity that make up total capital at the end of production at t. Y^h_t represents the total produced value of capital, measured in terms of labour-time, at the end of production at t. Y^{h*}_t represents the total appropriated value of capital in terms of labour-time at the end of production at t. Note we apply no superscript to MELT (*m* the number of nominal units of money, which represent one hour of labour-time, at the end of production).

Period t inputs are determined in circulation at the end of period t-1. Equations (1) and (2) show how C^{h*}_t and V^{h*}_t are given by their monetary expressions divided by end-period t-1 MELT (which is equivalent to their appropriated unit value in terms of labour-time at the end of period t-1 multiplied by their physical quantity):

(1) $C^{h*}_t = C^{£*}_t / m_{t-1} = v^{h*}_{t-1}C^o_t$

(2) $V^{h*}_t = V^{£*}_t / m_{t-1} = v^{h*}_{t-1}V^o_t$

(3) $S^h_t = L^h_t - V^{h*}_t$

(4) $r^h_t = S^h_t / V^{h*}_t$

(5) $Q^h_t = C^{h*}_t + V^{h*}_t + S^h_t = Y^h_t$

(6) $v^h_t = Q^h_t / Q^o_t$

(7) $\rho^h_t = (Y^h_t - C^{h*}_t - V^{h*}_t) / (C^{h*}_t + V^{h*}_t) = S^h_t / (C^{h*}_t + V^{h*}_t)$

In production at t L^h_t labour-time is worked, which as V^{h*}_t is already given, determines surplus labour-time S^h_t, see equation (3). We can now calculate the rate of exploitation of labour, equation (4), the total value of output (equal to the total value of capital in our simple model), equation (5). We can also calculate the produced unit value in terms of labour-time of our single commodity at the end of production at t by equation (6), and the produced value profit rate in time of labour-time by equation (7). We assume price is established at the end of production at t, allowing us to

calculate end-period t MELT (established at the end of production at t and holding through circulation at the end of period t):

(8) $m_t = Y^{£*}_t / Y^h_t = p^{£*}_t Q^o_t / Q^h_t$

MELT is defined as the total price of capital divided by the total produced value of that capital, in our simple model total capital is simply total output. Equation (9) calculates the 'physical', conventional 'real' terms, profit rate:

(9) $\rho^o_t = S^o_t / (C^o_t + V^o_t)$ where $S^o_t = Q^o_t - C^o_t - V^o_t$

Produced values in labour-time expression can be put in monetary expression by simply multiplying them by end-period t MELT. At the end of production in period t, appropriated values in terms of labour-time, are given by their monetary expression divided by the MELT established at the end of production in period t. Note, total advanced capital, $C^{£*}_t + V^{£*}_t$ in equation (12), is divided by end-period t-1 MELT, the MELT holding when that capital was advanced. The appropriated rate of profit in nominal money terms is given by equation (13):

(10) $v^{h*}_t = p^{£*}_t / m_t$

(11) $Q^{h*}_t = Q^{£*}_t / m_t = Y^{h*}_t = Y^{£*}_t / m_t$

(12) $\rho^{h*}_t = [Y^{£*}_t / m_t - (C^{£*}_t + V^{£*}_t) / m_{t-1}] / [(C^{£*}_t + V^{£*}_t) / m_{t-1}]$

(13) $\rho^{£*}_t = (Y^{£*}_t - C^{£*}_t - V^{£*}_t) / (C^{£*}_t + V^{£*}_t)$

Appropriated values equal produced values in labour-time and monetary expression, as we would expect for a one-commodity aggregate model. For example, if we substitute our expression for MELT, equation (8), into equation (10) we find that the appropriated value of our single commodity in terms of labour-time is tied to its produced value given by equation (6):

$$v^{h*}_t = p^{£*}_t / (p^{£*}_t Q^o_t / Q^h_t) = Q^h_t / Q^o_t = v^h_t$$

Introducing Money Stocks

Just as we have developed a highly stylised/abstract model of the productive economy, we shall introduce money 'stocks' in a highly abstract way. We shall simply assume that a quantity/stock of money exists. It could be commodity money, a simple quantity/stock of gold, abstracting from the detail of its production as a commodity. Alternatively, it could be a quantity/stock of intrinsically value-less money, in 'stamped commodity form'. Freeman (2002) page 3,

> 'The specific role of representing exchange value stamps the commodity-form on money even when replaced by a symbol of itself such as coins or paper tokens, a symbol of something else such as labour time, or by a convertible monetary instrument such as credit money. Therefore, every monetary instrument can and does 'become an appreciated or depreciated token of itself' (Zur Kritik, 173, Marx 1970), ceasing to represent the quantity stamped upon it, whether a nominal metallic denomination, labour-time, or a rate of convertibility into other monetary instruments.'

Freeman (2002) explains, how Marx (1973) imagines that, the contradiction between money's value as the universal equivalent, and as a particular commodity, comes to the fore in crisis. To Marx, outside of crisis, symbols of money may serve as money, but in crisis, amidst universal demand for payment, the commodity form of money comes to the fore. Forms of money are thus ultimately tested by their ability to stand outside of circulation, and retain 'value' through monetary crisis (at least, in the sense of their potential to command value through exchange for commodities). In the UK, banknotes have been able to command value through every monetary crisis, stretching back to Marx's own time/observation (Marx, 1981). We shall imagine that our stock of intrinsically value-less money in stamped commodity form is a stock of banknotes.

Finally, our quantity/stock of 'money' could be fictitious capital, such as shares. A stock of fictitious capital has a monetary expression and

fictitiously appears, to its owners, as a stock of wealth/potential money/money in a different form.

The key question, for our three types of money 'stocks', is whether we believe they actually embody value or not. At the extremes it appears straightforward to say first, yes, and then, no. Gold is a commodity, like any commodity it embodies value. Like any commodity, the value a unit of gold may appropriate may differ from its produced value. We would clearly include stocks of gold commodity money in our definition of total capital. At the other extreme, fictitious capital (Marx, 1981) is defined as fictitious because it does not embody value in any way, and should not be included as part of total capital. However, matters are less clear in the middle, does intrinsically value-less money in stamped commodity form actually embody value? Correspondence with Andrew Kliman suggests he does not believe that such money embodies value. However, the matter is not so clear in *Circulation and Market Prices* (Freeman, 1996, pages 234-241). Freeman includes money stocks in total capital and his calculation of MELT, and identifies the possibility of a transfer of value between money stocks and the productive economy. However, Freeman does not appear to directly address the question of whether his analysis applies to money in stamped commodity form or just commodity money, leaving at least to me Freeman's position unclear. Rather than attributing a position to Alan Freeman that he might not actually take, we shall analyse our two extremes, remembering –

If we imagine that intrinsically value-less money in 'stamped commodity form' actually embodies value, the result will be the same as if it were gold commodity money.

Alternatively, if we imagine that intrinsically value-less money in 'stamped commodity form' does not embody value, the result will be same as if it were fictitious capital.

Table 1 provides an example of our economy including money stocks. We set Q^o_{t-1} at 22, so with C^o_t = 15, V^o_t = 5 and K^o_{t-1} = 2, all output is sold, leaving no stocks of our single commodity to carry forward to period t. We exogenously set end-production in period t-1 MELT equal to one (note all the variables we exogenously set are marked in bold in Table 1). At the end of production in period t-1, through circulation at the end of period t-1, and at the start of production in period t, variables are equal in monetary and labour-time expression.

Table 1 – The Economy Including Money Stocks.

Units	End of Production in Period t-1						Circulation end Period t-1							
			Value Produced				Value Appropriated				Demand			Z
	p	*m*	Q	*v*	Z	Y	Q	*v*	Z	Y	C	V	K	
O			**22**			22	22			22	**15**	**5**	**2**	
£	**5**	1	110	5	*100*	110	110	5	*100*	110	75	25	10	*100*
H			**110**	5	*100*	110	110	5	*100*	110	75	25	10	*100*
£	**5**	1	110	5	100	210	110	5	100	210	75	25	10	100
H			**110**	5	100	210	110	5	100	210	75	25	10	100

Units	Start Production in Period t			End Production in Period t				
	C	V	Z	L	S	r	P	*m*
O	**15**	**5**						
£	**75**	**25**	***100***	60	30		**5**	1.2
h	**75**	**25**	***100***	**50**	25	100%		
£	**75**	**25**	**100**	55.55	27.78		**5**	1.111
h	**75**	**25**	**100**	**50**	25	100%		

Units	End Production in Period t (continued)									
	Value Produced					Value Appropriated				
	Q	*v*	*ρ*	Z	Y	Q	*v*	*ρ*	Z	Y
O	**30**		50%		30	**30**		50%		30
£	150	5	50%	*100*	150	150	5	50%	*100*	150
h	125	4.167	25%	*83.33*	125	125	4.167	25%	*83.33*	125
£	138.89	4.630	38.89%	111.11	250	150	5	50%	100	250
h	125	4.167	25%	100	225	135	4.5	35%	90	225

We assume, at the end of production in period t-1, that £100 of money stocks exist ($Z^{£*}_{t-1} = 100$), abstracting from the question of who holds them, or why they are held. If we imagine these money stocks are fictitious, with no value, they will not contribute to total capital or our calculation of MELT at the end of production in period t-1. We do not need to know what fictitious value these money stocks had at the end of production in period t-2, as at the end of production in period t-1 they will simply have a new fictitious value. When we consider money stocks to be fictitious, we put our equations, and money and labour-time expressions, in Table 1, in black, marking in Italics the fictitious value of money stocks:

(14) $Y^{h}_{t-1} = Q^{h}_{t-1} = 110$

(15) $m_{t-1} = Q^{£*}_{t-1} / Q^{h}_{t-1} = p^{£*}_{t-1}Q^{o}_{t-1} / v^{h}_{t-1}Q^{o}_{t-1} = 110 / 110 = 1$

(16) $Z^{h*}_{t-1} = Z^{£*}_{t-1} / m_{t-1} = 100 / 1 = \mathit{100}$

Let us, alternatively, imagine our money stocks are a £100 of gold, colouring equations, and money and labour-time terms, in Table 1, in red, to signify we are now considering commodity money.[3] We need to specify the value in terms of labour-time, that our £100 of gold appropriated at the end of production in period t-2 (Z^{h*}_{t-2}), and carried forward, through production, to the end of production in period t-1 (Z^{h}_{t-2}). Let us assume, $Z^{h*}_{t-2} = 100$, so, at the end of production in period t-1, money stocks have a 'produced' value in terms of labour-time, $Z^{h}_{t-2} = 100$ ($Z^{h}_{t-2} = Z^{h*}_{t-2}$). Total capital at the end of production in period t-1 must include the value of our money stocks, in monetary expression $Y^{£*}_{t-1} = Q^{£*}_{t-1} + Z^{£*}_{t-1}$, and in terms of labour-time:

(14) $Y^{h}_{t-1} = Q^{h}_{t-1} + Z^{h*}_{t-2} = 110 + 100 = 210$

(15) $m_{t-1} = Y^{£*}_{t-1} / Y^{h}_{t-1} = (Q^{£*}_{t-1} + Z^{£*}_{t-1}) / (Q^{h}_{t-1} + Z^{h*}_{t-2}) = 210 / 210 = 1$

(16) $Z^{h*}_{t-1} = Z^{£*}_{t-1} / m_{t-1} = 100$

Equation (16) is the same, whether we assume money stocks are fictitious or commodity money, but, when we imagine money stocks are gold, they actually appropriate/embody value, as opposed to only having a fictitious

value when money stocks are fictitious. Our exogenous setting of the situation at the end of period t-1, to create a common starting point, ensures that MELT equals one, whether we consider money stocks to be gold or fictitious. We shall see, at the end of production at t, how MELT may differ, depending on the nature of money stocks we assume. Production in period t now occurs. Equations (1) and (2) determine C^{h*}_t and V^{h*}_t. We assume 50 hours of labour-time are worked, equation (3) determines S^h_t, revealing the rate of exploitation of labour (equation 4). We set Q^o_t at 30. The total produced value in terms of labour-time of period t output is given by equation (5), with unit produced value in terms of labour-time given by equation (6). The produced value profit rate in terms of labour-time is given by equation (7):

(1) $C^{h*}_t = C^{£*}_t / m_{t-1} = v^{h*}_{t-1}C^o_t = 5 \times 15 = 75$

(2) $V^{h*}_t = V^{£*}_t / m_{t-1} = v^{h*}_{t-1}V^o_t = 5 \times 5 = 25$

(3) $S^h_t = L^h_t - V^{h*}_t = 50 - 25 = 25$

(4) $r^h_t = S^h_t / V^{h*}_t = 25 / 25 = 100\%$

(5) $Q^h_t = C^{h*}_t + V^{h*}_t + S^h_t = Y^h_t = 75 + 25 + 25 = 125$

(6) $v^h_t = Q^h_t / Q^o_t = [v^{h*}_{t-1}(C^o_t + V^o_t) + S^h_t] / Q^o_t = 125 / 30 = 4.167$

(7) $\rho^h_t = S^h_t / (C^{h*}_t + V^{h*}_t) = 25 / 100 = 25\%$

As $m_{t-1} = 1$, whether we imagine gold or fictitious money stocks, produced values of our 'single' commodity in period t in terms of labour-time are the same, if we imagine money stocks are gold or fictitious. Everything now changes when we calculate MELT at the end of production at t. We assume no new units of money stocks arrive or disappear, $Z^{£*}_t = Z^{£*}_{t-1} = 100$. If we assume money stocks are fictitious, they do not contribute to total capital or affect our calculation of MELT, equations (5) and (8) are unchanged. Money stocks simply have a new fictitious labour-time value, given by equation (17):

(8) $m_t = Q^{£*}_t / Q^h_t = p^{£*}_t Q^o_t / v^h_t Q^o_t = 150 / 125 = 1.2$

(17) $Z^{h*}_t = Z^{£*}_t / m_t = \mathit{83.33}$

(10) $v^{h*}_t = p^{£*}_t / m_t = 5 / 1.2 = 4.167$

(11) $Q^{h*}_t = Q^{£*}_t / m_t = Y^{h*}_t = Y^{£*}_t / m_t = 150 / 1.2 = 125$

(12) $\rho^{h*}_t = [Q^{£*}_t/m_t-(C^{£*}_t+V^{£*}_t)/m_{t-1}]/[(C^{£*}_t+V^{£*}_t)/m_{t-1}] = (125-100)/100 = 25\%$

Appropriated values in terms of labour-time are given by equations (10) to (12), and continue to equal produced values in terms of labour-time; fictitious money stocks do not effect values in the productive economy in any way.

Alternatively, if we consider money stocks to be gold, we must include Z^{h*}_{t-1} in our calculation of the produced value of total capital Y^h_t, now given by equation (18), and MELT m_t, now given by equation (19):

(18) $Y^h_t = Q^h_t + Z^{h*}_{t-1} = 125 + 100 = 225$

(19) $m_t = Y^{£*}_t / Y^h_t = (Q^{£*}_t + Z^{£*}_t) / (Q^h_t + Z^{h*}_{t-1}) = 250 / 225 = 1.111$

(17) $Z^{h*}_t = Z^{£*}_t / m_t = 90$

(10) $v^{h*}_t = p^{£*}_t / m_t = 5 / 1.111 = 4.5$

(11) $Q^{h*}_t = p^{£*}_t Q^o_t / m_t = 150 / 1.111 = 135$

(20) $Y^{h*}_t = Y^{£}_t / m_t = (p^{£}_t Q^o_t + Z^{£*}_t) / m_t = 250 / 1.111 = 225$

(12) $\rho^{h*}_t = [Q^{£*}_t/m_t-(C^{£*}_t+V^{£*}_t)/m_{t-1}]/[(C^{£*}_t+V^{£*}_t)/m_{t-1}] = (135-100)/100 = 35\%$

Including our gold money stocks in equation (19) ensures m_t is lower, than when we assumed fictitious money stocks. No longer do we just have a 'single' commodity, produced in the productive economy; we now have a second commodity in the form of our gold money stocks. Price formation may ensure that our two commodities vary in produced and appropriated value. Although, we keep the price of our 'single' commodity constant at £5, increased productivity, ensures the monetary expression of our 'single' commodity's appropriated value ($p^{£*}_t Q^o_t$) exceeds the monetary expression of its produced value ($m_t Q^h_t$). We assume the appropriated value of money stocks in monetary expression ($Z^{£*}_t$) remains constant at £100 (no units of money stocks are created or destroyed, money stocks have a face value of £100). This appropriated value is below the monetary expression of money

stocks 'produced'/carried over value of £111.11 ($m_t Z^{h*}_{t-1}$). In terms of labour-time, the appropriated value of total productive capital (given by equation 11) exceeds its produced value (given by equation 5), while the appropriated value of money stocks (given by equation 17) is smaller than their 'produced'/carried over value (given by equation 16). At the end of production in period t we have a transfer of value, from money stocks to the productive economy, of 10 hours of labour-time (in monetary expression £11.11), which boosts the productive economy's appropriated value profit rate in terms of labour-time to 35% (equation 13). The appropriated unit value of our 'single' commodity in terms of labour-time (given by equation 10) is boosted above its produced unit value in terms of labour-time (given by equation 6). A unit of input of our 'single' commodity in period t+1 would embody 4.5 hours of labour-time, while money stocks would carry over to period t+1 only 90 hours of labour-time.

We will not consider circulation at the end of period t, as the pattern of exchange in circulation only effects events in period t+1, but not period t produced or appropriated values, which are established at the end of production at t. Even if productive capitalists stopped producing in period t+1 (purchasing some output in circulation at t for consumption, as money stock holders purchase the rest, transferring part of their money stocks to productive capitalists), end-period t value magnitudes would be unaffected. That is, assuming these intentions do not change $p^{£*}_t$ from £5 at the end of production in period t. With $Z^{£*}_t$ fixed at £100 in our abstract model, value transfer, between the productive economy and money stocks, are dependent on $p^{£*}_t$ and v^h_t:

(21) $v^{h*}_t = v^h_t$, $Q^{h*}_t = Q^h_t$ and $Z^{h*}_t = Z^{h*}_{t-1}$ if $p^{£*}_t / v^h_t = m_t = Z^{£*}_t / Z^{h*}_{t-1}$

(22) $v^{h*}_t > v^h_t$, $Q^{h*}_t > Q^h_t$ and $Z^{h*}_t < Z^{h*}_{t-1}$ if $p^{£*}_t / v^h_t > m_t > Z^{£*}_t / Z^{h*}_{t-1}$

(23) $v^{h*}_t < v^h_t$, $Q^{h*}_t < Q^h_t$ and $Z^{h*}_t > Z^{h*}_{t-1}$ if $p^{£*}_t / v^h_t < m_t < Z^{£*}_t / Z^{h*}_{t-1}$

(24) $S^h_t \neq Q^{£*}_t / m_t - [p^{£*}_{t-1}(C^o_t + V^o_t)] / m_{t-1}$ unless $p^{£*}_t / v^h_t = m_t = Z^{£*}_t / Z^{h*}_{t-1}$

(25) $S^h_t = Y^{£*}_t / m_t - (p^{£*}_{t-1} C^o_t + p^{£*}_{t-1} V^o_t + Z^{£*}_{t-1}) / m_{t-1}$

If equation (21) is not fulfilled, the total value of productive capitalists' money profits in terms of labour-time will not equal the total surplus labour-time extracted from labour in production (equation 24). Equation (25) shows how, it is the monetary expression of total capital, which must grow in terms of labour-time, from the start of production to the end of production in period t, by the total surplus labour-time extracted from labour in production in period t.

Let us be clear 'monetary-factors' affect values in the TSSI, input values are sequentially derived from their monetary expressions, so prices matter outside of an abstract one-commodity setting. Purely fictitious money stocks do not represent a second commodity, as our model continues to have only one-commodity, appropriated values must equal produced values. A stock of commodity money brings a second commodity to our model, explaining the possibility of appropriated values differing from produced values. But, what of intrinsically value-less money in stamped commodity form? We suggest much research/discussion remains to be done/made public in this area, with such research being hampered by journals' reluctance to accept contributions that explore the TSSI, instead of simply responding to the TSSI's critics.

Alternative Multi-Period Scenarios/Introducing Lending

We wish to imagine two types of capitalists, productive capitalists, producing our 'single' commodity, and monied-capitalists, lending to productive capitalists. As the preceding section makes clear, the type of money we assume determines whether we can imagine that it embodies/appropriates value or not, and thus how we should calculate value magnitudes. Both Lapavitsas (1991) and Freeman (2002) explain how Marx thought that, the dominant form of money changes over time, as the dominant function of money changes. As capitalism and banking develop, the dominant function of money ceases to be to circulate commodities

(Marx's second function of money). Money's dominant function is to now act as a means of payment/hoarding and as the basis to credit (all part of Marx's third function of money). Initially banknote credit money develops, pushing commodity money and mere symbols of commodity money (fiat money), out of circulation. In time, as branch banking develops, efficiently collecting money hoards/deposits to potentially lend as finance capital, deposit credit money largely replaces banknotes. We are left with hoarding/lending/means of payment being the dominant function of money, in a deposit credit money system. Deposit credit money is clearly intrinsically valueless, but can it embody/appropriate value, through having a stamped commodity form? Rather than attempting to answer this question, we shall simply explore both options, firstly assuming they do embody/appropriate value, and secondly assuming they do not.

To concentrate on Marx's, now dominant, third function of money we shall abstract from the need for any form of physical units of money (paper or commodity) to facilitate circulation (Marx's second function of money). We assume all agents in our economy hold accounts in a, perfectly operating, deposit credit money system, abstracting from the need for any resources to operate this system (to avoid the complexity of modelling banking). We have in fact already in our model introducing money stocks implicitly assumed the operation of such a perfectly functioning deposit credit money system, by abstracting from the need for any actual physical units of money/operating 'cash' balances to facilitate circulation. Money stocks were simply held by 'someone', and took no part in facilitating circulation. It would seem that most economic models implicitly assume such a perfectly functioning deposit credit money system, without any discussion, such is the ingrained separation between monetary economics and the study of the 'real'/productive economy.

We shall build on our money stocks example with no stocks of our 'single' commodity; all output is demanded and exchanged (the market clears) in circulation at the end of each period. Monied-capitalists are now identified

as the mysterious 'someone' who holds money stocks, or rather, positive deposits in our deposit credit money system. Let us assume monied-capitalists consume no output and purely seek to lend their money deposits to someone. But whom can they lend to? So far we have implicitly assumed productive capitalist own all of their inputs, and thus all of their output, so have no reason to borrow from monied-capitalists. As we enter circulation, all productive capitalists' and workers' deposits stand at zero, to flash into credit/debit and back to zero in circulation, as productive capitalist sell, and with workers buy, total output. We do not wish to introduce lending by assuming workers borrow (being subject, through their inability to earn surplus-value, to primitive usury), while, in our simple model, we have no state/budget deficit. For productive capitalists to borrow from monied-capitalists we must change our assumptions on ownership. If we assumed all productive capitalists agreed to sell up at the end of period t-1, to a new set of productive capitalists, with no money, the new productive capitalists would need to borrow from monied-capitalists. Money deposits would be lent to new productive capitalists at the end of period t-1, who through purchasing their inputs, would pass them on to the old productive capitalists, who would be initially holders of idle money deposits. Over time, assuming further ownership changes provide further lending opportunities, old productive capitalists and monied-capitalists would merge together to become simply monied-capitalists, lending a proportion of their money deposits to productive capitalists. We now have the two types of capitalists we wish to model, productive capitalists and money lending, to productive capitalists, monied-capitalists.

We wish to alternatively model fast and slow growth, but do not wish to start our analysis with an already dynamic situation. To illustrate how growth develops we shall assume a state of simple reproduction for period 1, and for all periods leading up to period 1. To adjust our model in Table 1 to simple reproduction, we set $Q^o_{t-1} = 25$, $K^o_{t-1} = 5$ and $Q^o_t = 25$. Similarly, to ensure interest does not already affect MELT (as it would if we imagine money deposits embody value), we shall abstractly assume an absence of

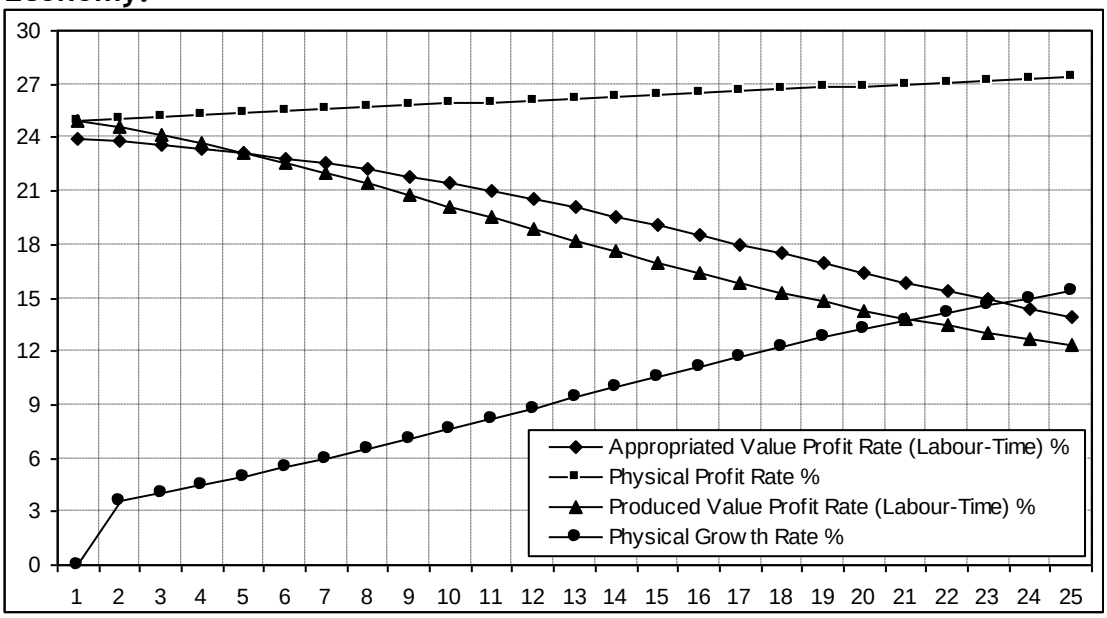
interest, but not lending, for period 0 and all periods leading up to period 0. We assume, at the end of period 0, productive capitalists borrow £100, to repay their loans taken out at the end of period 0-1. Assuming monied-capitalists total money deposits equal £100 at the end of period 0 ensures they lend all of their money deposits. Let monied-capitalists now, for period 1, charge a 2% 'real' interest rate. The loan taken out at the end of period 0, plus interest 2% above inflation from period 0 to period 1 must be repaid at the end of period 1. In circulation at the end of period 1, assuming no stocks or monied-capitalist consumption, Q^o_1 must be sold between productive capitalists and to workers to clear the market. Productive capitalists will realise $p^{£*}_1Q^o_1$, if they spend $p^{£*}_1Q^o_1$ on C^o_2, K^o_1 and V^o_2 (through advancing $V^{£*}_2$ to workers for period 2, assuming workers consume all their wages), thus clearing the market. With loans from period 0, plus interest, due for repayment they will be precisely this amount of money short of affording to clear the market. If we allow productive capitalists to simply rollover their loan plus interest at the end of period 1 they will be able to clear the market and avoid realisation crisis.

We thus assume productive capitalists simply have their loans, plus interest, rolled-over at the end of each period, while monied-capitalists, consuming nothing, watch their money deposits grow by the amount of interest 'paid' at the end of each period. In circulation, at the end of each period, productive capitalists borrow monied-capitalists' money deposits, so they can simultaneously repay their due loans to monied-capitalists, returning monied-capitalists' money deposits back to monied-capitalists. Abstractly, monied-capitalists permanently hold their money deposits, except for an instant in each circulation period, when they are re-borrowed to be repaid. We shall imagine that loans/repayments actually flow in circulation, but are determined symmetrically with price at the end of the production period, before our instantaneous circulation period.[4]

In our simply reproducing period 1 we assume no productivity improvement (technological change), $v^h_1 = v^{h*}_0 = v^h_0$. The produced value profit rate

equals the physical profit rate at 25%. The scale of reproduction in period 2 will depend on the level of productive capitalist consumption we assume at the end of period 1. From the end of period 1 let us assume productive capitalists consume output, embodying a proportion B, of that period's surplus-value in terms of labour-time, $K^o_t = BS^h_t/v^{h*}_t$. For our initial strong growth scenarios we set B = 0.85, to deliver significant growth in inputs, in labour-time and physical terms, from period 2 onwards. We assume, from period 2, that L^h_t grows 1% each period, exploitation stays constant at 100% and inflation (the rate our single commodity's price increase each period) stays constant at 8%. Monied-capitalists charge a 10% nominal interest rate each period, so 'enjoy' a 2% 'real' interest rate. From period 2 we exogenously set Q^o_t to deliver a 0.1% increase in the profit rate in physical terms each period. Let us first calculate values assuming our monied-capitalists' money deposits actually embody/appropriate value. Variables are calculated by the equations in red in our introducing money stocks section, and equation (1) to (7) and equation (17) in black, which apply whether we imagine money stocks embody value or not.

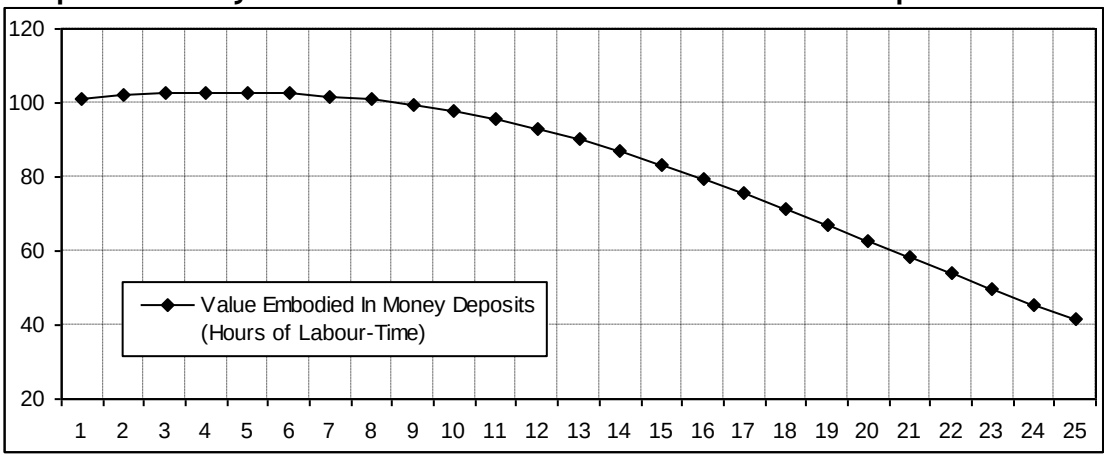
Graph 1 – Money Embodies Value – Fast Growth – The Productive Economy.



Graph 1 shows, the produced and appropriated value profit rates in terms of labour-time, the physical growth rate and the physical profit rate, over 25

periods. As $\rho^{o}{}_{t}$ gradually rises, and physical growth strongly rises, both $\rho^{h}{}_{t}$ and $\rho^{h*}{}_{t}$ fall, as $C^{h*}{}_{t}$ rises faster than $V^{h*}{}_{t}$, deepening the organic composition of capital. This result supports Kliman and Freeman's position, in their debate with Laibman, over whether the value profit rate can move in a different/opposite direction to the physical profit rate in a temporal setting (see Freeman and Kliman, 2000a and 2000b, and Laibman, 1999a, 1999b, 2000a and 2000b). At first, productivity improvement ($v^{h}{}_{t} < v^{h*}{}_{t-1}$) is too slow (0.4% in period 2) to prevent, at the end of production each period, up to period 5, a value transfer to the value embodied in money deposits from the value embodied in productive capital, depressing $\rho^{h*}{}_{t}$ below $\rho^{h}{}_{t}$.

Graph 2 - Money Embodies Value - Fast Growth - Monied-Capitalists.



Graph 2 shows how the value embodied in money deposits in terms of labour-time rises up to period 5. Equation (30) applies:

(30) $v^{h*}{}_{t} < v^{h}{}_{t}$, $Q^{h*}{}_{t} < Q^{h}{}_{t}$ and $Z^{h*}{}_{t} > Z^{h*}{}_{t-1}$ if $p^{£*}{}_{t}/v^{h}{}_{t} < m_{t} < Z^{£*}{}_{t}/Z^{h*}{}_{t-1}$

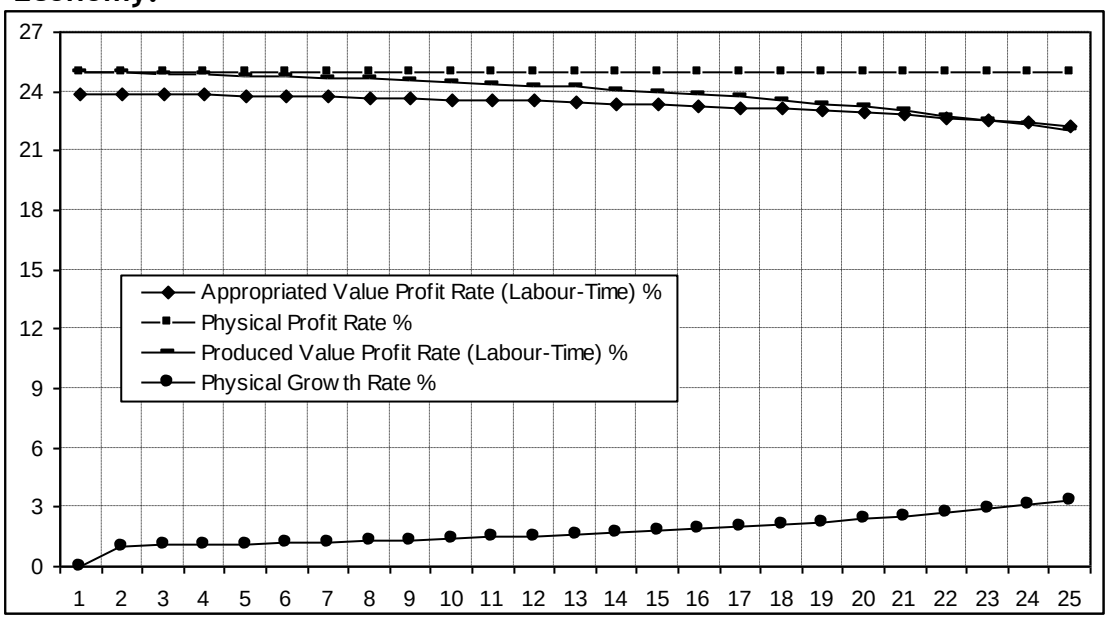
Productivity improvement escalates each period from period 2 onwards. By period 6 productivity improvement is sufficient, and continues to be sufficient up to period 25, to transfer value from the value embodied in money deposits to the value embodied in productive capital, at the end of every period, boosting $\rho^{h*}{}_{t}$ above $\rho^{h}{}_{t}$ and depressing $Z^{h*}{}_{t}$. End-period 25 $Z^{h*}{}_{t}$ falls to 41.4 hours of labour-time. Equation (29) applies:

(29) $v^{h*}_t > v^h_t$, $Q^{h*}_t > Q^h_t$ and $Z^{h*}_t < Z^{h*}_{t-1}$ if $p^{£*}_t/v^h_t > m_t > Z^{£*}_t/Z^{h*}_{t-1}$

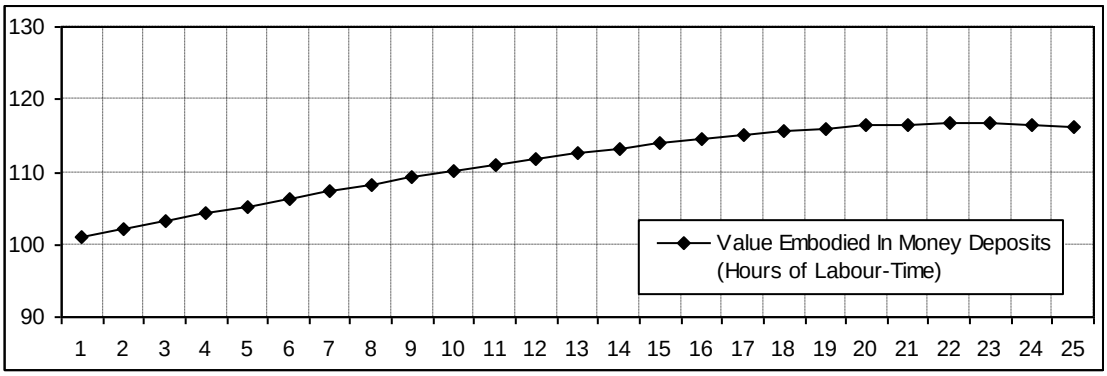
Value transfers depend, primarily on the rate of productivity improvement (v^h_t relative to v^{h*}_{t-1}), and secondarily on inflation, as we assume a 100% of monied-capitalists' money deposits are lent (if we assumed constant price, period 25 Z^{h*}_t would only be 2.1 hours of labour-time higher at 43.5). Value transfers, from money deposits to productive capital, can be seen as another potential counter-tendency to Marx's tendency for the value profit rate to fall in times of accumulation/a deepening organic composition of capital. From period 6 our new counter-tendency acts to boost appropriated value profitability in terms of labour-time, but not sufficiently to overcome the effect of accumulation, ρ^{h*}_t still falls. From period 6 monied-capitalists' suffer a continual, and escalating, erosion of the value embodied in their money deposits. Z^{h*}_t falls to 12.4% of Y^{h*}_t by the end of period 25, from 44.9% at the end of period 1, despite all money deposits being lent at an interest rate 2% above inflation. Strong growth clearly undermines monied-capitalists' fortunes in value terms, while productive capitalists enjoy a dynamic economy, but the behaviour of profitability in terms of labour-time indicates the inevitable need for crisis to restore profitability.

Let us turn to an alternative very slow growth scenario. We reduce the scale of accumulation in value terms to a very slow, but still positive pace, by increasing productive capitalist consumption, raising B to 0.95. To reflect slow accumulation, we keep L^h_t constant at 50 hours of labour-time, still assume constant exploitation at 100%, set output to keep the physical profit rate constant at 25% and assume 2% inflation from period 2. We maintain the same 2% 'real' interest by assuming monied-capitalists charge a 4% nominal interest rate each period.

Graph 3 – Money Embodies Value – Slow Growth – The Productive Economy.



Graph 4 – Money Embodies Value – Slow Growth – Monied-Capitalists.



Graph 3 shows how growth in physical terms rises from 1.0% in period 2 to 2.0% by period 17 and 3.4% by period 25. Productivity improvement ($v^h_t < v^{h*}_{t-1}$) is now much lower at 0.03% in period 2, rising to 1.0% by period 17 and 2.4% by period 25. Our arbitrary capitalist consumption rule thus delivers very slow, but gradually escalating, rates of physical growth and productivity improvement. Up to period 22 productivity improvement is sufficiently slow to ensure value is transferred, at the end of production each period, from the value embodied in productive capital to the value embodied in money deposits, depressing ρ^{h*}_t below ρ^h_t. Equation (30) applies:

(30) $v^{h*}_t < v^h_t$, $Q^{h*}_t < Q^h_t$ and $Z^{h*}_t > Z^{h*}_{t-1}$ if $p^{£*}_t/v^h_t < m_t < Z^{£*}_t/Z^{h*}_{t-1}$

Graph 4 shows how the value in terms of labour-time embodied in money deposits rises up to period 22. From period 23 to 25 productivity improvement is high enough to turn value transfers slightly in favour of productive capital, slightly boosting ρ^{h*}_t above ρ^h_t and slightly reducing Z^{h*}_t. Equation (29) now applies:

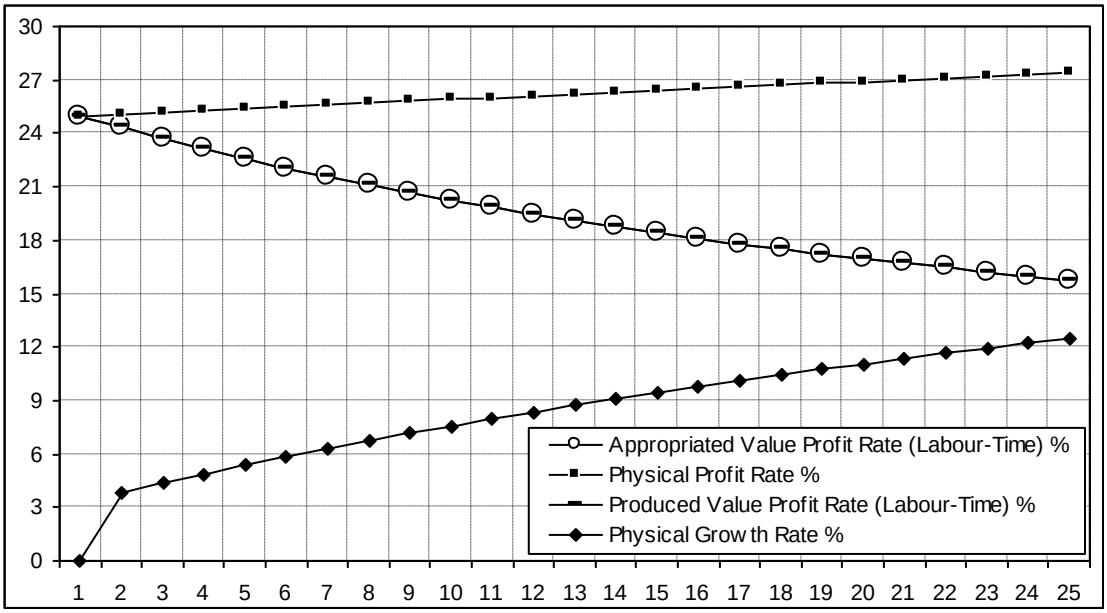
(29) $v^{h*}_t > v^h_t$, $Q^{h*}_t > Q^h_t$ and $Z^{h*}_t < Z^{h*}_{t-1}$ if $p^{£*}_t/v^h_t > m_t > Z^{£*}_t/Z^{h*}_{t-1}$

We can clearly see how the slower productivity growth (and to a much lesser extent the lower inflation), associated with slower growth, is to monied-capitalists' advantage in value terms. Z^{h*}_t rises up to period 22, increasing monied-capitalists share of Y^{h*}_t to 46.4% by the end of period 22, from 44.9% at the end of period 1. The contrast in monied-capitalists fortunes in value terms between scenarios is striking, despite both scenarios assuming the same initial loan and constant 2% 'real' interest rate. Productive capitalists are now faced with an undynamic economy, but very slow accumulation ensures profitability in terms of labour-time only gradually declines, with that decline escalating towards the end of our example, as productivity improvement and accumulation pick up. We might conjecture a potential unity of leading productive capitals' and monied-capitalists' interests in promoting very slow growth, if such slow growth is accompanied by the disproportionate expansion of leading productive capitals over smaller productive capitals (Potts, 2003, considers such a scenario for the Eurozone).

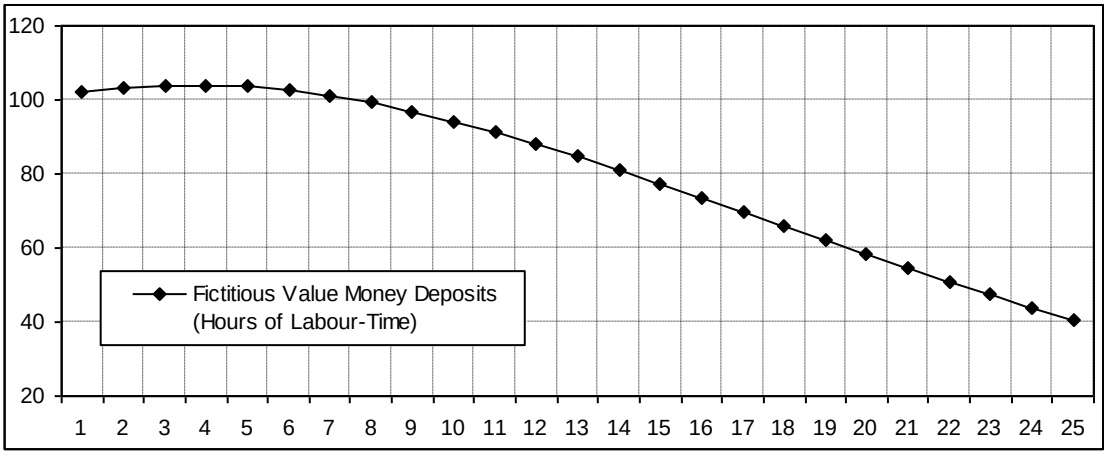
Let us consider how our scenarios are affected by assuming monied-capitalists' money deposits do not embody value. Money deposits now only have a fictitious value, and do not form part of total capital or, figure in our calculation of MELT. Values are determined by the equations in black in our money stocks section. For, both our fast and slow growth scenarios, let us assume the same initial conditions of ongoing lending (with interest first

being due at the end of period 1) and simple reproduction (in period 1 and all periods leading up to period 1). To simulate fast growth let us again set B = 0.85 from the end of period 1, to deliver growth from period 2 onwards. We continue to assume, from period 2 onwards, that inflation stays constant at 8% a period, L^h_t rises by 1% a period, a constant 2% 'real' interest each period and the physical profit rate rises by 0.1% a period.

Graph 5 – Valueless Money – Fast Growth – The Productive Economy.



Graph 6 – Valueless Money – Fast Growth – Monied-Capitalists.



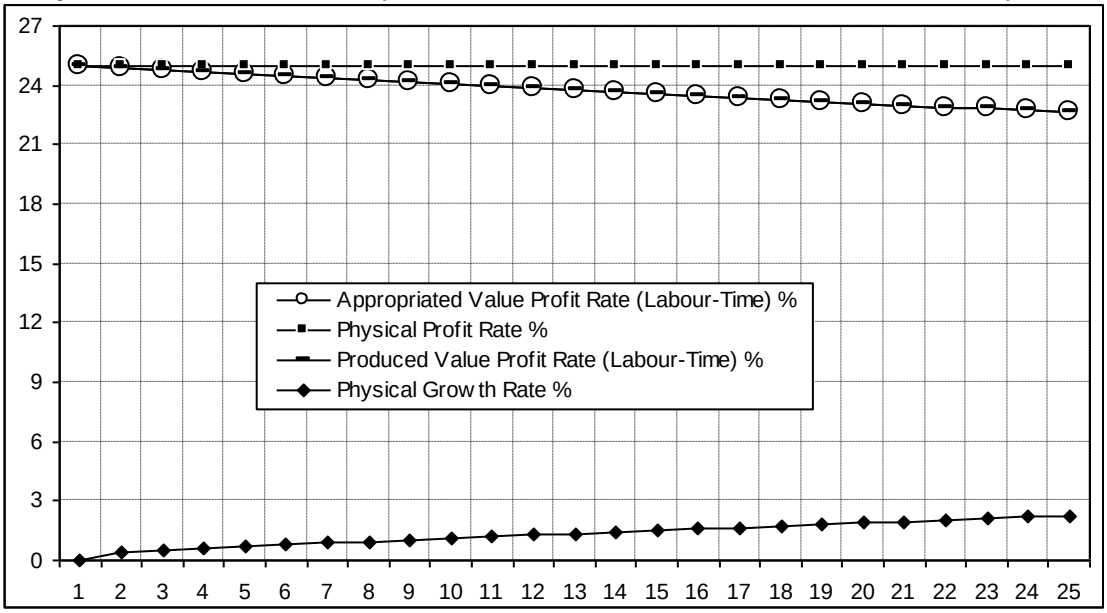
Graphs 5 and 6 show a very similar picture to our fast growth scenario, when we assumed money deposits embodied value, but centrally money deposits no longer embody value, they only have a fictitious value. We have no

process of value transfer, as fictitious money deposits no longer represent a second commodity to make such a transfer of value possible. The appropriated value profit rate is consequently tied to the produced value profit rate, in terms of labour-time $\rho^{h*}_t = \rho^{h}_t$. The profit rate in labour-time terms steadily declines, in response to accumulation, while the physical profit rate gradually rises and the pace of physical growth escalates. The now fictitious value of money deposits in terms of labour-time initially slightly rises, to subsequently steadily decline. At first productivity improvement is too slow, to prevent the fictitious value of money deposits in terms of labour-time from rising, but as productivity improvement escalates, fictitious Z^{h*}_t substantially falls. Productivity improvement, again, primarily accounts for the erosion of the now fictitious value of money deposits (if we assume constant price period 25 fictitious Z^{h*}_t would only be 1.4 hours of labour-time higher, at 42.1 hours of labour-time). The 'value' of money deposits in terms of labour-time in our fast growth scenarios is very similar, from period 1 to 25, whether we assume money deposits actually embody value, or only have fictitious value. As, we have no value transfers, when we assume money deposits only have fictitious value, Q^{h*}_t cannot be boosted by value transfers to the productive economy. So, although value transfers boost ρ^{h*}_t above ρ^{h}_t, when we assume money deposits embody value, by boosting Q^{h*}_t, value transfers ensure that, from period 18, ρ^{h*}_t falls below ρ^{h*}_t (= ρ^{h}_t) for our fictious money deposits scenario.

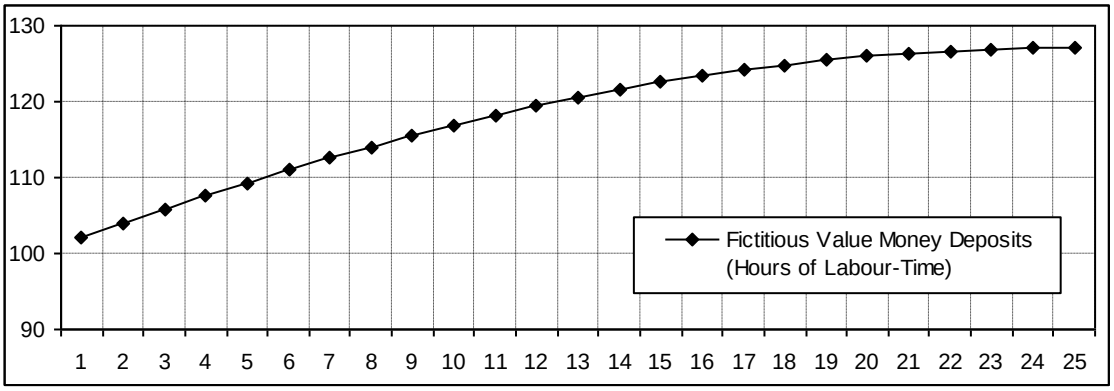
Let us now consider very slow growth with fictitious money deposits. We again keep L^{h}_t fixed at 50 hours of labour-time, assume exploitation stays constant at 100%, set output to keep physical profitability constant at 25%, keep inflation constant at 2% and maintain a 2% 'real' interest rate (by assuming monied-capitalists charge a 4% nominal interest rate). If we tried to simulate slow growth by setting productive capitalist consumption at the same proportion of S^{h}_t we assumed when money deposits embodied value (B = 0.95), growth in physical terms would be too high, reaching 3% by period 10 and 5.7% by period 25. This is because, when we considered slow growth

assuming money deposits embodied value, a transfer of value, from Q^h_t to Z^{h*}_t each period, depressed Q^{h*}_t below Q^h_t, reducing v^{h*}_t. As we assume productive capitalist consumption is determined by $K^o_t = BS^h_t/v^{h*}_t$, reduced v^{h*}_t increases productive capitalist consumption in physical terms, and thus holds growth back in physical terms. With no value transfers being possible, when we assume money deposits do not embody value, we need to set B higher to achieve slow growth. Let us set B = 0.9825. Graph 7 shows how we now have a slow, but gradually rising, rate of growth in physical terms. A slow rate of accumulation ensures profitability in terms of labour-time ($\rho^{h*}_t = \rho^h_t$) only gradually falls. The slow pace of growth in physical terms ensures productivity growth is sufficiently slow, to boost the fictitious value of money deposits in terms of labour-time every period.

Graph 7 – Valueless Money – Slow Growth – The Productive Economy.



Graph 8 – Valueless Money – Slow Growth – Monied-Capitalists.



Just like our fast growth scenarios, our slow growth scenarios are very similar, whether we assume money deposits embody value or not. Profitability in terms of labour-time only gradually falls, while the 'value' in terms of labour-time of monied-capitalists' money deposits grows (whether this gain is fictitious or, an actual appropriation of labour-time).

Conclusion.

Our abstract focus on ownership fits Hilferding's (1981) notion of finance capital, as a matter of who owns the productive economy. We suggest the fusion of interests between banks, growing joint stock companies and the state, that Hilferding imagines, would lead to a focus on the interests of the productive economy, rather than on the interests of the ultimate deposit/share/wealth-holder. The Japanese or German financial system in the Golden Age could be seen to confirm to Hilferding's vision of finance capital, prioritising the development of the productive economy over depositor/share-holder interests. Many observers, notably Fine, Lapavitsas and Milonakis (1999), believe that 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, and that this has hampered growth. So has a new form of finance capital developed? The notion of shareholder value would appear to fit the idea that, as the financial system becomes relatively autonomous to the state and the productive economy it would prioritise the interests of deposit/share-holders, over simply prioritising the development of the productive economy. Our results would appear to support such an interpretation of a changing nature of finance capital. Our strong growth scenarios prioritise growth at the cost of the value (embodied or fictitious) of monied-capitalist' money deposits, while monied-capitalist' interests in value terms are best served in our very slow growth scenarios. Our results could be seen to help explain why in the Golden Age, with the financial system

internationally limited and heavily influenced by the state, the productive economy grew faster, only to subsequently slow, with the growth of the relative autonomy of the financial system (see Potts, 2005).

The weakness of such a conclusion is that it relies on the financial system actually having the influence to 'manage' the productive economy to slow growth. Grossmann (1992, first published in German in 1929) explains how Hilferding's notion of finance capital is opposed to Marx's view of capitalism precisely because if the financial system, the sphere of circulation, dominates, the central role of production in determining the tendential behaviour of capitalism is lost.[5] Grossmann focuses instead on Marx's concept of surplus capital. As accumulation/boom precedes and the profit rate tends to fall surplus capital is not productively invested; it is speculatively invested, creating an unsustainable boom in fictitious capital. Writing in 1928/early 1929 Grossmann (1992) explains how the US had reached this stage of over-accumulation and was facing an imminent crisis. It is striking how events in 2007 and 2008 resemble the situation Grossmann is describing in 1928/early 1929. Potts (2009c) considers the concept of surplus capital in Marx (1981) and Grossmann (1992) and puts forward a model of how in boom capital may become 'surplus' and is invested in fictitious capital, creating an unsustainable boom in fictitious capital.

In summary, we have attempted to explore the TSSI, and to use it as a methodological approach to help us attempt to integrate the productive economy and the financial system. As our conclusion makes clear we do not feel our abstract identification of powerful monied-capitalists is realistic. But we do think that our paper (and Potts, 2009c) raises key methodological issues relevant to any attempt to integrate the productive economy and financial system together without loosing sight of the determination of commodities' values by labour-time. We hope that we have not misinterpreted the TSSI. Above all, we hope to have encouraged the reader to explore the TSSI on it own terms.

Endnotes.

1. The term Golden Age is used by economists (for example, Marglin and Schor, 1990) and historians (for example, Hobsbawm, 1995) to identify the period of 'unprecedented' fast growth enjoyed by developed capitalist countries from 1950 to 1973 (Maddison, 1995). Economists recognise the stylised fact that developed capitalist countries have grown significantly slower in 'real'/physical terms since the end of the Golden Age. Many economists, employing a wide variety of approaches, have tried to account for this phenomenon (for example see, Bruno and Sachs, 1985, Marglin and Schor, 1990, Armstrong *et al*, 1991, Brenner, 1998, and responses to Brenner in *Historical Materialism*, 1999a and 1999b).

2. If production proceeds as planned the labour-time promised in the wage bargain is delivered. If, for any reason, actual labour-time falls short of (or exceeds) the labour-time promised in the wage bargain, it is this reduced (or higher) level of labour-time, that we deduct the value of variable capital from, to establish surplus labour-time. We assume all labour-time magnitudes are in units of average socially necessary simple labour-time (with no specific skill and average intensity, put to work under socially average conditions of production).

3. If we did not just abstractly assume a fixed quantity of gold money stocks, we would have to consider gold production. Following Kliman's approach to commodity stocks, see Potts (2009a), we would have to re-value the produced value of stocks of gold each period to reflect the produced socially necessary value of a newly mined unit of gold each period, before we could calculate total capital or MELT.

4. At the end of period 0 the £100 loan equals productive capitalists' total advanced capital for period 1 ($C^{£^*}_1+V^{£^*}_1$ = £100). As long as the nominal money profit rate exceeds the nominal interest rate each period (as we assume it does), productive capitalists have the 'collateral' to rollover their loans plus interest. Productive capitalists do not fail to 'pay' interest because they cannot 'afford' to. The requirement to rollover loans in our abstract model is a 'demand' requirement, directly following from assuming no monied-capitalist consumption or worker borrowing (and if we included a state, no budget deficit). Productive capitalists could repay interest, as long as such demand sources compensated, so the market continued to clear. 'Potential' repayment of interest is made possible through recognising that, over the period of the loan, the production period, productive capitalists extract surplus-value from labour.

5. By good chance we were alerted to Grossmann's work in the spring of 2008 by being asked to review Kuhn (2007), see Potts (2009b).

References

Armstrong, P., Glyn, A. and Harrison, J. (1991) *Capitalism since 1945*, Blackwell: Oxford.

Brenner, R. (1998) The Economics of Global Turbulence, *New Left Review*, No.229.

Bruno, M. and Sachs, J. (1985) *Economics of Worldwide Stagflation*, Basil Blackwell: Oxford.

Fine, B., Lapavitsas, C. and Milonakis, D. (1999) Addressing the World Economy: Two Steps Back, *Capital and Class*, No.67 pp.47-90.

Freeman, A. and Kliman, A. (2000a), Two Concepts of Value, Two Rates of Profit, Two Laws of Motion, *Research In Political Economy*, Vol.18 pp.243-267.

Freeman, A. and Kliman, A. (2000b), Rejoinder To Duncan Foley And David Laibman, *Research In Political Economy*, Vol.18 pp.285-293.

Freeman, A. (1996) Price, value and profit - a continuous, general, treatment, in Freeman, A. and Carchedi, G. (eds) *Marx and Non-Equilibrium Economics*, Edward Elgar: Cheltenham, pp.225-279.

Freeman, A. (2002) GELD: Marx on money-second Draft, [WWW], London: Greenwich University, Available from: www.greenwich.ac.uk/~fa03 [accessed 17th April 2002].

Grossmann, H. (1929) *The Law of Accumulation and Collapse of the Capitalist System: also a Theory of Crises*, Hirschfeld: Leipzig. English translation, Grossmann, H. (1992) *The Law of Accumulation and Breakdown of the Capitalist System: Being also a Theory of Crises*, Pluto: London.

Kuhn, R. (2007) *Henryk Grossman and the Recovery of Marxism*, University of Illinois Press: Urbana and Chicago.

Hilferding, R. (1981) *Finance Capital*, Routledge and Kegan Paul: London.

Historical Materialism, (1999a) Symposium: Robert Brenner and the World Crisis (Part 1), No. 4 Summer.

Historical Materialism, (1999b) Symposium: Robert Brenner and the World Crisis (Part 2), No. 5 Winter.

Hobsbawm, E. (1995) *Age of Extremes*, Abacus: London.

Laibman, D. (1999a) Okishio and his critics: historical cost versus replacement cost, *Research In Political Economy*, Vol.17 pp.207-227.

Laibman, D. (1999b) The profit rate and reproduction: a rejoinder, *Research In Political Economy*, Vol.17 pp.249-254.

Laibman, D. (2000a) Two Of Everything: A Response, *Research In Political Economy*, Vol.18 pp.269-278.

Laibman, D. (2000b) Numerology, Temporalism, And Profit Rate Trends, *Research In Political Economy*, Vol.18 pp.295-306.

Lapavitsas, C. (1991) The Theory of Credit Money: A Structural Analysis, *Science and Society*, Vol.55 No.3 (Fall) pp.291-322.

Maddison, A. (1995) *Monitoring the World Economy 1820-1992*, OECD: Paris.

Marglin, S. and Schor, J. (eds) (1990) *The Golden Age Of Capitalism*, Oxford University Press: Oxford.

Marx, K. (1970) *A Contribution to the Critique of Political Economy - Zur Kritik der Politischen Okonomie*, Progress Publishers: New York.

Marx, K. (1973) *Grundrisse: Foundations of the critique of political economy*, Penguin: London.

Marx, K. (1981) *Capital: A critique of Political Economy*, Volume III, Penguin/Vintage Publishers edition: London and New York.

Potts, N. (2003) To Whose Value Is The Euro?, *European Business Review*, Vol.5 No. 4.

Potts, N. (2005) The Political Economy of Money, Profitability and Value, *University of London*, Ph D thesis, June.

Potts, N. (2009a) Valuation in the Presence of Stocks of Commodities: Exploring the Temporal Single System Interpretation of Marx, *Critique of Political Economy*, forthcoming.

Potts, N. (2009b), Reclaiming Marx: Past and Present, *Critique*, forthcoming in No.49.

Potts, N. (2009c) Back To C19th Business As Usual: A Surprise?, Southampton Solent University Faculty of Business, Sport and Enterprise Research and Enterprise Working Paper, No. 7.

Biographical Note

Nick Potts is a Reader in the Faculty of Business, Sport and Enterprise. He successfully completed his PhD on the question of integrating the productive economy and the monetary system together using a sequential and non-dualistic concept of value in 2005 (University of London, supervisor Lord Desai). He is interested in general in how to apply Marx's analysis of the inner workings of capitalism to the economic issues of today (including globalisation, the Euro and knowledge-based production). To find out more about Marx's economics we recommend www.copejournal.org the website of *Critique of Political Economy* the journal of the International Working Group on Value Theory.