Why are Kalecki's rentiers so boom tired?

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Abstract *To many economists, not to mention all central bankers, inflation is considered to be public enemy number one. This paper seeks to understand why inflation should be so despised. To escape from simultaneous restrictions a temporal single system (TSS) approach is employed. Firstly a simple illustration of the TSS approach is considered. In order to focus on distributional issues a positive wage and a class of rentiers are built in. Rentiers hold money stocks, past accumulated value in money terms. Rentiers are assumed to lend to productive capitalists, i.e. we have finance capital. Once we build in money stocks we find that appropriate price increases can potentially hide the effect of falling exploitation of labour, transferring the cost of reduced exploitation from productive capitalists to rentiers. Finally, conclusions are drawn.*

Introduction

Since the appointment of the monetarist thinking Paul Volcker as head of the US Federal Reserve in 1979 the political consensus within advanced market economies has decisively shifted to targeting low inflation/price stability as first priority, no matter the resulting "natural" rate of unemployment. Paradoxically money in conventional macroeconomic analysis acts purely as a veil; rational expectations eliminates/limits the possibility of nominal price changes having any real effect. At most high inflation is seen as a possible source of uncertainty and consequent inefficiency to the economy's "real" equilibrium. Money holders/lenders, rentiers, are simply not considered; economics is split into general equilibrium theory and a separate discipline of monetary economics. Kalecki, exceptionally when considering the question of inflation at full employment, notes the importance of rentier interests:

> Moreover, the price increase in the upswing is to the disadvantage of small and big rentiers and makes them "boom tired" (Kalecki, 1943, p. 329).

Rentiers are assumed to suffer as nominal interest rates fail to increase by inflation, thus eroding the real interest rate. If the real interest rate is maintained there seems no reason for rentiers to become "boom tired". To rentier interests the rate of inflation would appear to be of secondary importance to the real interest rate; thus suggesting no direct economic basis to any rentier preference for price stability. Any case for price stability would appear to rest on the technical matter of maximising the efficiency of expectations; preference for price stability does not appear to be a matter of social significance to rentiers, firms and workers. My paper employs a temporal single system (TSS) Marxist approach and includes money as a stock of past-

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accumulated value, for rentiers to hold and lend, in-order to explore the social basis for Central Bankers' and politicians' preference for price stability.

The TSS approach

There is a dispute between what we might term equilibrium based (physicalist) Marxist analysis and a new approach, the TSS approach (Freeman and Carchedi, 1996a). The crux of this dispute rests on whether it is appropriate to use an equilibrium approach or a temporal/sequential approach, and a dualistic approach to price and value or a non-dualistic approach to price and value. The debate centres on how Marx approached, or "should have" approached the transformation problem (Marx, 1981, Chapter 9). Throughout the transformation Marx insists that two fundamental equalities must be observed, the establishment of prices of production must not alter the total value of commodities and total profit must continue to equal total surplus value (surplus labour).

Debate on the transformation problem began in earnest through two articles published by Bortkiewicz in 1906-1907 (Bortkiewicz, 1952, 1984), which criticised Marx's method of approaching the transformation problem. Bortkiewicz's criticism, originally in German, became known to the English-speaking world through the work of Sweezy (1942, 1949). Subsequently the general basis of Bortkiewicz's criticism has been accepted by equilibrium based Marxist economists (Desai, 1979, 1990). As Freeman (1996a), McGlone and Kliman (1996) and Ramos-Martinez and Rodriguez-Herrera (1996) explain Bortkiewicz's criticism rests on:

(1) Believing Marx imagined two separate systems of prices and values, i.e. dualism, with values purely determined by the physical conditions of production (as in Sraffa, 1960).

(2) Insisting that an equilibrium approach is the only valid approach to the problem.

(3) Through (1) and (2) observing that Marx had failed to transform inputs to take into account these commodities prices of production (stated in an equilibrium context it is only logical that input prices should equal output prices).

(4) The impossibility of both of Marx's fundamental equalities holding if the problem is "properly" defined. Only one equality/normalisation condition, between the separate systems of prices and values can be preserved. Winternitz (1948) normalises by equating total price to total value; Desai (1979) normalises by equating the wage to the exchange value of labour power, while Dumenil (1983) normalises by equating the price of the "net product" to its value.

The TSS approach defend Marx's original treatment of the transformation problem, arguing that the inconsistencies others have accused Marx of do not

exist if we follow Marx's *own* method; both of Marx's fundamental equalities hold. Freeman (1996a, b), McGlone and Kliman (1996), Ramos-Martinez and Rodriguez-Herrera (1996), Rodriguez-Herrera (1996), Naples (1996) and Carchedi and de Haan (1996), all argue that Marx's methodological approach was sequential and non-dualistic. Freeman (1996a) explains how Marx imagined that periods of production and circulation continually follow each other in succession. In the period of circulation capitalists advance capital, buying constant capital (machines, raw materials, etc.) and variable capital (living labour), to make the next production period possible. Production occurs, new sets of commodities are produced, available to circulate in the next period of circulation. Constant and variable capital are bought with money, but what is the value they add to the product? The TSS approach argues:

> In fact the value transferred by constant capital is equal to the value as measured by the *money advanced to purchase* the elements of this capital. Likewise the value of variable capital is measured by the *money advanced to pay the labourer*, not the value of the products she or he consumes (Freeman and Carchedi, 1996b, p. xi (original emphasis)).

Such an interpretation rests on a non-dualistic concept of price and value. Freeman and Carchedi (1996b, p. x (original emphasis)), explain that 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 independent of prices.

In circulation commodities' values are defined by their price. Put simply capitalists buy inputs, before production, at their price in circulation, this money price defines their, now validated by exchange, socially determined value. It is with these values that constant and variable capital now enters the production process, the value defined by their money price.

A simple TSS example

To illustrate the striking significance of the choice of method between a TSS approach and equilibrium based approaches I present a simple example taken from Freeman (1998). Freeman imagines a single good economy, which, for constant labour supply, has technological progress such as to ensure that output and inputs increase constantly, with outputs rising faster than inputs. For simplicity Freeman assumes that there is no fixed capital and a state of maximum expanded reproduction, i.e. the entire product is invested (put forward for production) each year and consumed in production. Again to simplify it is assumed that workers consume nothing (V = variable capital = 0). The price of a unit of the commodity is kept constant at \$5. Table I illustrates Freeman's simple economy. Note C represents constant capital, L represents labour power, with L = S surplus labour as V = 0, C′ represents output, with \$ signifying money values, H labour values and O physical units of our commodity (use-value).

Table I.
The simultaneous value concept

Period	C			S = L			C′			M′	MELT	v	Money	Hours	Output	C/C + L
	$	H	O	$	H	O	H	O	$	$	$	H	profit rate	profit rate	profit rate	in hours
0							50	10	5	50	1.00	5.00				
1	50	50	10	10	10	2	60	12	5	60	1.00	5.00	0.20	0.20	0.20	0.83
2	60	40	12	15	10	3	50	15	5	75	1.50	3.33	0.25	0.25	0.25	0.80
3	75	30	15	25	10	5	40	20	5	100	2.50	2.00	0.33	0.33	0.33	0.75
4	100	25	20	40	10	8	35	28	5	140	4.00	1.25	0.40	0.40	0.40	0.71

A simultaneous calculation of labour time, in the Bortkiewicz tradition, would calculate the labour value of a unit of output for each period such as to ensure the economy could reproduce itself each period without changing its proportions. The total labour value at the end of each period is assumed to equal:

$$v_t C'^{O}_t = v_t C^{O}_t + L_t,$$

where, C'^{O}_t = end period physical output, C^{O}_t = start period physical input, L_t = labour in hours and v_t = the commodity's unit labour value for that period. Such values would reproduce the economy in an unchanged way i.e. reproducing that period's output growth. For example take period 2, in Table I, the labour value of a unit of output (or input, by the simultaneous assumption) is 3.33, output grows by 3 units. If in period 3 no technological progress occurred, an input of 30 hours and an output of 40 hours, would produce constant output growth at 3 units of output. Note as V = 0 it is not helpful to define the organic composition of capital as C/(C + V) or C/V, alternatively Freeman uses C/(C + L).

Freeman draws a number of conclusions from this simultaneous result. Values are directly determined by the physical structure of the economy. Hence we might term equilibrium based Marxist approaches physicalist. The organic composition of capital falls, while the rate of profit inevitably rises, with technical progress. Hours mysteriously disappear despite the whole product being invested each period (if productivity fell hours would magically appear from nowhere). The unique "real" output profit rate equals the hours/value profit rate, and is independent of the numeraire, i.e. money (as in neo-classical general equilibrium). The actual price of the commodity in terms of the chosen numeraire affects nothing, as it is both the input and the output price for the already determined quantities. The "real" money profit rate, the nominal profit rate adjusted for inflation, simply equals the unique output/value profit rate. Cheapening inputs, in value terms, as calculated by the simultaneous method, stop the organic composition of capital from rising in value terms (it falls), preventing any fall in the value rate of profit (it rises). Within a simultaneous context the Okishio (1961) theorem is confirmed. Okishio (1961) stated that, if real wages are constant, rising productivity will accompany mechanisation (a rising organic composition of capital) and thus prevent a falling rate of profit. For the rate of profit to fall real wages must rise, accumulation is insufficient in-itself to explain a falling rate of profit.

The simultaneous case is clear, let us now turn to the TSS approach. We must calculate the value of outputs by using a difference equation, where v_0, our initial condition, represents the value of a unit of input at the beginning of production in period 1 (the value of that commodity as determined in circulation at the end of period 0):

$$v_1 C'^{O}_1 = v_0 C^{O}_1 + L_1.$$

Table II shows the temporal calculation, assuming $v_0=5$ (as is implicit in period 1 of the simultaneous example) and that price is constant at \$5.

Initially in period 1 one hour is simply worth one unit of money, one dollar, price in dollars simply equals value in hours. From circulation at the end of period 2 price in dollars deviates from value in hours, one hour is no longer worth one dollar. We need to calculate how the money value of an hour of labour has changed. Freeman (1998) explains how we must calculate the monetary expression of labour time (MELT):

> The MELT is the ratio, at the end of each period, of the price of the stock of capital to the value of the stock of capital. Since in this illustration all capital is consumed in each period, this is the ratio \$X [\$M′] to X [C′] hours (Freeman, 1998, p. 13 (note my comments in square brackets)).

As MELT is defined for the end of circulation each period, the money value and labour value of inputs are thus related by the preceding periods MELT. Their hours value as inputs for the current period is simply defined by their money value at the end of circulation last period divided by the value of MELT at the end of circulation last period.

Sequential calculation produces quantitatively different commodity unit values and value profit rates. The value profit rate no longer equals the output profit rate, which still equals the "real" money profit rate (the nominal money profit rate conventionally adjusted for inflation). No labour hours mysteriously disappear from period to period. Application of Marx's first fundamental equality ensures that no value can be lost in circulation between periods. Each period's surplus labour (equal to total profit, by Marx's second equality) is simply invested, causing C hours to grow. As L (= S) is fixed, at 10 hours, and C hours grows, the organic composition of capital rises, causing the value/hours rate of profit to fall. This result, the reverse of the simultaneous approach's conclusion, squarely backs Marx's original prediction, questioning the "validity" of the Okishio theorem outside of a simultaneous setting.

To conclude, following a sequential and non-dualistic TSS approach instead of a dualistic equilibrium approach produces strikingly different results. Crucially the TSS approach allows us to fulfil both of Marx's fundamental equalities. By Marx's first equality total value, which we will term total social wealth, in hours terms can only be redistributed, and not altered in size, by price changes in circulation. For our simple example:

$$C'^{h}_{t} = P_t C'^{O}_{t} / x_t.$$

Let x now represent MELT, h superscript represent hours terms, O superscript output terms, \$ superscript money terms and t subscript time. Marx's second equality states that the value of total profits should equal the quantity of surplus value extracted from labour:

$$(M'_t/x_t) - (M_t/x_{t-1}) = S^h_t,$$

Table II. The temporal value concept

Period	C			S = L			C′		P	M′	MELT	v	Money profit rate	Hours profit rate	Output profit rate	C/C + L in hours
	$	H	O	$	H	O	H	O	$	$	$	H				
0							50	10	5	50	1.00	5.00				
1	50	50	10	10	10	2	60	12	5	60	1.00	5.00	0.20	0.20	0.20	0.83
2	60	60	12	15	10	3	70	15	5	75	1.07	4.67	0.25	0.17	0.25	0.86
3	75	70	15	25	10	5	80	20	5	100	1.25	4.00	0.33	0.14	0.33	0.88
4	100	80	20	40	10	8	90	28	5	140	1.56	3.21	0.40	0.13	0.40	0.89

where M_t = advanced money capital for the current period, actually advanced in circulation at the end of the previous period, and M'_t is realised money capital in circulation at the end of the current period. Value neither mysteriously disappears nor appears from nowhere. Given value is to be preserved and accounted for, we believe the door is opened to developing richer models of the economy, with more active classes than models which, simply concentrate on capital and labour, while drawing a veil over money and rentiers. We shall extend Freeman's simple model in the next section to include wages, a varying rate of labour exploitation and money as a stock of past-accumulated value.

An extended model

Let us continue to assume maximum extended reproduction and that all constant capital is consumed in production, i.e. we assume no fixed capital. We must now assume that our single commodity can be used as both constant capital and variable capital. Before we assumed infinite exploitation of labour, let us relax this assumption:

$$L^h_t = V^h_t + S^h_t \quad \text{with } e_t = S^h_t / L^h_t,$$

where V^h_t is variable capital, the wage bill in hours terms, and e_t is the rate of exploitation, workers thus receive a proportion of the hours value they transfer to the product. Workers agree e_t at the end of the previous period by negotiation, as its agreed let us assume that its fulfilled. Sequentially, as labour for this period is contracted, paid, and we assume consumes, in circulation at the end of previous period, workers consume last periods output at last period's prices. So the appropriate MELT and unit labour value of our commodity to calculate this period's wages bill in money and output terms is determined in circulation at the end of the previous period:

$$V^t = x_{t-1} V^h_t \quad V^O_t = V^h_t / v^{PC}_{t-1}.$$

Let us continue to assume L^h_t is fixed at ten hours. Assuming maximum extended reproduction ensures:

$$C^O_t = C'^O_{t-1} - V^O_t, \tag{1}$$

$$M_t = P_{t-1} C^O_t + P_{t-1} V^O_t = P_{t-1} C^O_{t-1} = M'_{t-1}. \tag{2}$$

Let production, in output terms, be defined by (note $(1 + e_t)V^h_t = L^h_t$):

$$C'^O_t = C^O_t + (1 + e_t) V^h_t / v^T_t \quad v^T_t = \text{labour productivity}. \tag{3}$$

Let physical constant capital accumulation affect v^T_t:

$$v_t^T = \{1 - 0.5[(C_t^o - C_{t-1}^o)/C_{t-1}^o]\}v_{t-1}^T. \quad (4)$$

Let us introduce rentiers who hold $Z_t^\$$ money stocks at the end of the period, after both production and then circulation. Money stocks represent hoards of past-accumulated surplus value held in money form. For simplicity let us abstract from the need for money for circulation and the existence of an official state issuer of money (central bank), so $Z_t^\$$ represents the entire end-period money stock. The hours value of the money stock at the end of the period would be simply given by $Z_t^h = Z_t^\$/x_t$. Now x_t (MELT) has to take into account the quantity and value of money stocks, as well as the money value and hours value of total output:

$$x_t = (P_t C'^O_t + Z_t^\$)/(C_t^h + V_t^h + S_t^h + Z_{t-1}^h). \quad (5)$$

Why Z_{t-1}^h? Marx's concept of preservation of value rules out any change to hours total social wealth (TSW_t^h) in circulation. Circulation is entered at the end of the current period with TSW_t^h already defined by the value carried forward from the previous period plus the new surplus labour added this period. The hours value of money stocks at the beginning of period t, before circulation at the end of t, is determined in circulation at the end of the previous period, at $t-1$, $Z_{t-1}^h = Z_{t-1}^\$/x_{t-1}$. It is this value which is carried forward in the money stock to the current period from the previous period.

To help us proceed let us now introduce our first example of the extended model in tabular form. Table III is deliberately constructed, as we shall see through appropriate pricing, to keep the monetary expression of labour time constant at unity, i.e. the value of a unit of money constant at one hour.

Note SP stands for start-period, EP stands for end-production and PC stands for post-circulation. Let us assume, as in our simple example, that $x_0 = 1$, and that total period 0 output, i.e. total period 1 input, equals 10 units, which represent \$50 ($P_0 = 5$) and 50 hours of value ($x_0 = 1$). To ensure $x_0 = 1$ we have to additionally assume that $Z_0^\$ = Z_0^h$, which we will set at 100. For simplicity we assume C_1^O is such that $v_1^T = 5$ in period 1. Let us set the rate of exploitation constant at unity for all five periods. We initially assume that productive capitalists hold no money at the end of period 0, they must borrow \$50 to purchase period 0 output, at period 0 price, for input in period 1. Part of the money stock is thus acting as finance capital. Assume rentiers, when inflation is positive charge a 2 per cent "real" interest rate, i.e. the inflation rate from the previous period of circulation (when the loan is taken out) to the current period of circulation (when the loan is due for repayment) plus 2 per cent. Let us also assume even if there is deflation a 2 per cent nominal interest rate is still charged.

We have now fully defined the initial conditions for period 1; input values in hours, money and physical units are all defined. Production takes place, physical output, C'^O_t, is determined by equation (3). We are now at the end of

Table II.
The temporal value concept

		C			V			S			C′ (EP)	
Period	e	$	H	O	$	H	O	$ PC	H	O	H	O
0											50.00	10.00
1	1.00	45.00	45.00	9.00	5.00	5.00	1.00	4.00	5.00	1.00	55.00	11.00
2	1.00	49.00	49.00	9.98	5.00	5.00	1.02	3.98	5.00	1.10	59.00	12.10
3	1.00	52.98	52.98	11.05	5.00	5.00	1.04	3.96	5.00	1.19	62.98	13.29
4	1.00	56.94	56.94	12.22	5.00	5.00	1.07	3.94	5.00	1.29	66.94	14.58
5	1.00	60.88	60.88	13.47	5.00	5.00	1.11	3.92	5.00	1.38	70.88	15.96

Period	*V (EP)*	*C/C + L hours (EP)*	*Hours profit rate (EP)*	*Output profit rate (EP)*	*Price (PC)*	*M′ (PC)*	*Money profit rate (PC)*	*Interest rate (%)*	*Loan lent (SP)*	*Loan due (PC)*	*M′ – loan – interest (PC)*	*Money profit % (PC – r)*
0	5.00				5.00	50.00						
1	5.00	0.82	10.00	10.00	4.91	54.00	8.00	2.0	50.00	51.00	3.00	6.00
2	4.88	0.83	9.26	9.97	4.79	57.98	7.37	2.0	51.00	52.02	5.96	5.49
3	4.74	0.84	8.62	9.86	4.66	61.94	6.83	2.0	52.02	53.06	8.88	5.03
4	4.59	0.85	8.07	9.68	4.52	65.88	6.36	2.0	53.06	54.12	11.76	4.65
5	4.44	0.86	7.59	9.47	4.37	69.80	5.95	2.0	54.12	55.20	14.59	4.30

			TSW (PC)				*TSW (PC)*			
Period	*Interest ($)*	*Rentier wealth ($)*	*$*	*H*	*MELT (PC)*	*V (PC)*	*In O*	*In M*	*Hours profit rate (PC)*	*Inflation (%)*
0		100.00			1.0000	5.00	50.00	100.00		0.0
1	1.00	101.00	155.00	155.00	1.0000	4.91	54.00	101.00	8.00	-1.8
2	1.02	102.02	160.00	160.00	1.0000	4.79	57.98	102.02	7.37	-2.4
3	1.04	103.06	165.00	165.00	1.0000	4.66	61.94	103.06	6.83	-2.8
4	1.06	104.12	170.00	170.00	1.0000	4.52	65.88	104.12	6.36	-3.0
5	1.08	105.20	175.00	175.00	1.0000	4.37	69.80	105.20	5.95	-3.2

the production period but are still pre-circulation. We can now calculate period 1 end-production value and output profit rates, and the end-production unit labour value of our commodity, v_1^{EP}. In general the end-production value profit rate is given by equation (6), the output profit rate by equation (7) while equation (8) defines the commodity's end-production unit labour value:

$$r_t^{hEP} = S_t^h/(C_t^h + V_t^h), \tag{6}$$

$$r_t^O = S_t^O/(C_t^O + V_t^O), \tag{7}$$

$$v_t^{EP} = (S_t^h + C_t^h + V_t^h)/C'O_t. \tag{8}$$

We now enter circulation, Let us exogenously set P_1, to reveal M_1' and $S_1^\$$. As we assume maximum extended reproduction M_2 and firms' loan requirement for period 2, to enable them to advance M_2, are identified as soon as we set P_1. In general the nominal money profit rate is given by equation (9):

$$r_t^\$ = (M_t' - M_t)/M_t. \tag{9}$$

In general to calculate "real" money profitability, i.e. the nominal money rate adjusted for price changes, we need to price inputs at P_t:

$$r_t^\$ \text{ "real"} = (P_tC_t'^O - P_tC_t'^O)/P_tC_{t-1}'^O = S_t^O/C_{t-1}'^O = r_t^O.$$

"Real" money profitability simply equals the rate of output profitability; the economy's growth rate in output terms if we assume maximum extended reproduction. In general $r_t^\$ = r_t^O(1 + \Pi_t) + \Pi_t$.

If we were to set P_1 at \$5, despite the period 1 end-production unit labour value of the commodity equalling 5 hours, the equality of one unit of money to one hour of labour would be broken. Equation (5) shows us that x_1 would slightly exceed 1, slightly eroding the value of a unit of money:

$$x_1 = (M_1' + Z_1^\$)/(C_1^h + V_1^h + S_1^h + Z_0^h)(55 + 101)$$
$$/(45 + 5 + 5 + 100) = 1.0065.$$

Payment of interest, combined with re-lending of loans plus interest to maintain maximum extended reproduction, has expanded nominal money stocks by \$1 ensuring $TSW_1^\$ > TSW_1^h$. If $P_1 =$ \$5 the post circulation value of the commodity, in general given by $v_t^{PC} = P_t/x_t$, would fall to 4.97 hours at the end of period 1, below its end-production value. In our extended model, contrary to simultaneous/physicalist belief, production conditions alone do not determine end-period (post-circulation) labour values. To keep $x_1 = 1$, the value of a unit of money constant at one hour, we must price the commodity below its

end-production unit labour value, at $P_1 = \$4.91$, so $M'_1 = \$54$. Equation (5) now delivers $x_1 = 1$.

Given $P_1 = \$4.91$ we can calculate productive capitalists' money profit rate and their post-interest money profit rate. Note we do not subtract productive capitalists' borrowing from M'_1 to calculate their post-interest money profit rate, as borrowed money still counts as capital to earn profit from. Firms repay \$51 to rentiers, retaining \$3. To maintain maximum extended reproduction let us assume that rentiers, like productive capitalists, consume no output, leaving all of C'_1 available for input in period 2. To purchase C'^{O}_1 at $P_1 = 4.91$ firms need $M_2 = \$54$, they have \$3 so need to borrow \$51 from rentiers at the end of period 1 to repay with interest at the end of period 2, i.e. the loan from period 0 to period 1, plus interest, is rolled over. Returning to period 1, once x_1 is established we can calculate the end-period, post-circulation, hours value of money stocks, Z^h_1, and establish how total social wealth in hours is shared between money stocks and end-period output. Finally we need to look at period 1 post-circulation money quantities to find period 1's post-circulation hours/value profit rate. M_1 represents M_1/x_0 hours and M'_1 represents M'_1/x_1 hours. In general the end-period, post-circulation, value profit rate is given by equation (10):

$$r_t^{hPC} = (M'_t/x_t - M_t/x_{t-1})/M_t/x_{t-1}. \tag{10}$$

$r_t^{hPC} \neq r_t^{hEP}$ unless we fulfill Marx's second fundamental equality:

$$S^h_t = (M'_t/x_t - M_t/x_{t-1}) \quad \text{note} \quad C^h_t + V^h_t = M_t/x_{t-1}. \tag{11}$$

We find (see the Appendix) that equation (11) is only fulfilled if $v_t^{PC} = v_t^{EP}$ and that in general:

$$r_t^{hPC} = [(v_t^{PC} - v_t^{EP})/v_{t-1}^{PC}](1 + r_t^{O}) + r_t^{hEP}. \tag{12}$$

If $r_t^{hPC} \neq r_t^{hEP}$ we are now satisfying a modified form of Marx's second fundamental equality at the level of the economy's hours total social wealth:

$$S^h_t = (TSW^{\$}_t/x_t) - [(Z^{\$}_{t-1} + P_{t-1}C^o_t + P_{t-1}V^o_t)/x_{t-1}].$$

Period 1 is complete; pricing below end-production value has transferred 1 hour of value from the value of output to the value of money stocks. As $v_1^{PC} < v_1^{EP}$, r_1^{hPC} falls below r_1^{hEP} as equation (12) suggests. Rentiers clearly gain at productive capitalists' expense. For period 2 to 5 price is continually set below end-production labour value to preserve the hours value of money at unity, i.e. $x_t = 1$.

Clearly to preserve the hours value of money price has to fall further than technological change reduces end-production unit labour values. Hayek (see Desai, 1995) had recommended that, to preserve the value of money, money

authorities should aim for a "natural" state of deflation equal to the rate of technological change. Our example suggests Hayek may have underestimated the required natural rate of deflation to preserve the value of money. In accordance with equation (12) post-circulation hours profitability falls below end-production hours profitability. Rentiers clearly gain as the hours value of their total wealth grows.

Let us consider a further example, this time with substantial price variability, see Table IV. Let price rise from \$5 in period 1 to \$5.5 in period 2 and \$6.5 in period 3. As price strongly rises above end-production unit labour value, post-circulation hours profitability strongly exceeds end-production hours profitability. Note end-production hours profitability is slightly lower in period 2 and 3, as compared to Table III, because, as value is transferred from money to commodities, the hours value of inputs comparatively rise, slightly pushing up the organic composition of capital.

While price is rising the post-circulation unit labour value of output is boosted, ensuring, as we assume labour exploitation is in hours terms, less output has to be advanced to labour as wages at the end of period 2 and 3. Consequently, assuming maximum extended reproduction, more constant capital can be applied, boosting output growth, as compared to Table III, up to and including period 4. Assuming constant exploitation in hours terms leaves workers comparatively worse off, in output terms, the higher prices rise, i.e. the higher the post-circulation unit labour value of the commodity rises. So far workers are in fact best off, in output terms, in Table III's deflationary scenario. We might ask if rentier and workers interests are consequently strangely united against the interests of productive capitalists? I would suggest not, we could easily assume a constant or rising output wage. Furthermore, if we were to relax our assumption of maximum extended reproduction, and recognised the existence of variable demand and stocks, deflation may directly harm employment (but intriguingly, if we maintain hours based exploitation, leaving those in work better off in output terms).

Rentier and productive capitalists' fortunes are reversed in period 4, as price drops to £5. Value is transferred from output to money stocks. Period 5's further price fall to \$4.37 (our final price in Table III) further transfers value to money stocks leaving rentiers substantially better off. In fact, although P_5 in Table IV equals P_5 in Table III, the deflationary scenario, rentiers are much better off in Table IV's variable price scenario with an eventual overall deflationary trend. More interest has been paid, expanding money stocks, and the proportion of money stocks lent to productive capitalists. Productive capitalists are effectively bankrupt at the end of period 5, M'_5 is insufficient to pay back productive capitalists' period 5 loan. To maintain maximum extended reproduction productive capitalists would have to borrow more than M_6 ($P_5C'^{Q}_{5}$) to clear their period 5 debts. It would appear that rentier interests are best served in the long run by significant price instability, as long as what goes

Table IV.
Variable price

Period	e	C $	C H	C O	V $	V H	V O	S $ PC	S H	S O	C′ (EP) H	C′ (EP) O
0											50.00	10.00
1	1.00	45.00	45.00	9.00	5.00	5.00	1.00	5.00	5.00	1.00	55.00	11.00
2	1.00	49.97	49.65	9.99	5.03	5.00	1.01	11.61	5.00	1.11	59.65	12.11
3	1.00	61.18	56.34	11.12	5.43	5.00	0.99	20.28	5.00	1.26	66.34	13.37
4	1.00	80.66	64.75	12.41	6.23	5.00	0.96	−12.94	5.00	1.42	74.75	14.79
5	1.00	68.25	59.81	13.65	5.71	5.00	1.14	−3.35	5.00	1.37	69.81	16.16

Period	*V (EP)*	*C/C + L hours (EP)*	*Hours profit rate (EP)*	*Output profit rate (EP)*	*Price (PC)*	*M′ (PC)*	*Money profit rate (PC)*	*Interest rate (%)*	*Loan lent (SP)*	*Loan due (PC)*	*M′ − loan − interest (PC)*	*Money profit % (PC − r)*
0	5.00				5.00	50.00						
1	5.00	0.82	10.00	10.00	5.00	55.00	10.00	2.0	50.00	51.00	4.00	8.0
2	4.93	0.83	9.15	10.09	5.50	66.61	21.11	12.0	51.00	57.12	9.49	9.98
3	4.96	0.85	8.15	10.37	6.50	86.89	30.44	20.2	57.12	68.65	18.24	13.14
4	5.05	0.87	7.17	10.64	5.00	73.95	−14.89	2.0	68.65	70.02	3.93	−16.47
5	4.32	0.86	7.71	9.23	4.37	70.60	−4.53	2.0	70.02	71.42	−0.82	−6.42

Period	Interest ($)	*Rentier wealth ($)*	*TSW (PC) $*	*TSW (PC) H*	*MELT (PC)*	*V (PC)*	*TSW (PC) In O*	*TSW (PC) In M*	*Hours profit rate (PC)*	*Inflation (%)*
0		100.00			1.0000	5.00	50.00	100.00		0.0
1	1.00	101.00	156.00	155.00	1.0065	4.97	54.65	100.35	9.29	0.0
2	6.12	107.12	173.73	160.00	1.0858	5.07	61.34	98.66	12.25	10.0
3	11.53	118.65	205.53	165.00	1.2457	5.22	69.75	95.25	13.70	18.2
4	1.37	120.02	193.97	170.00	1.1410	4.38	64.81	105.19	−7.08	−23.1
5	1.40	121.42	192.02	175.00	1.0973	3.98	64.34	110.66	−0.72	−12.6

up remembers to come down again. As such the nineteenth century's substantial price variation, within an overall deflationary trend (Hobsbawm, 1987), can be seen to ideally suit rentier interests.

Finally let us imagine a falling rate of labour exploitation scenario (see Table V). The rate of labour exploitation falls 5 per cent a period from period 2 onwards. Remember, by assuming maximum extended reproduction, hours total social wealth grows between periods by the quantity of surplus labour. As surplus labour declines total social wealth grows less strongly than in our previous examples. Let us imagine that firms price each period to preserve post-circulation hours profitability at 10 per cent. Such a pricing policy successfully preserves post-circulation hours profitability at the direct expense of "improvised" rentiers, whose hours total wealth falls each period. Our result is sensitive to both the proportion of money stocks that are lent and the pace of technological change. If we assume all money stocks are lent then nominal money stocks will potentially grow faster than M'_t if the real interest rate is positive, potentially transferring value to money stocks. However if technological change is sufficiently fast M'_t will be sufficiently further boosted by rising C'^{O}_{t}, to ensure that appropriate pricing can transfer value to output to maintain a 10 per cent post-circulation value profit rate.

Pricing in dollars significantly above the commodity's end-production unit labour value ensures that post-circulation our commodity's unit labour value consistently rises. As we assume exploitation is in hours terms, the growing value of the commodity ensures workers wages in output terms in Table V are nearly identical to that in the deflationary, constant rate of labour exploitation, scenario, depicted in Table III. Inflation is holding back labour's advance, but not by money illusion (we have no rate of exploitation illusion!), but by a far more complex route of value transfer from money to commodities.

Conclusion: inflation "public" enemy number one

For simplicity, among other things, we have assumed a fixed labour input, as such Table V could be interpreted as an economy booming at "full employment". Such a scenario would explain why the rate of exploitation falls, as workers gain confidence in a benign labour market. Kalecki (1943) suggested that an economy at full employment would, not inevitably but through social conflict, generate rising inflation. Business profitability would be preserved by the rising rate of inflation, as rentiers become "boom tired" (if nominal interest rates do not increase by the rate of inflation). Conventional mainstream economic analysis would suggest that such an inflationary expansionary phase is unsustainable rather than immediately harmful to business and rentier interests. Business can price to maintain money profitability in the face of wage increases, while the "real" interest rate can be increased to reflect inflation, the only difference is a rising rate of inflation. The situation is not immediately threatening but to prevent "eventual hyperinflation", "rampant unemployment"

Table V.
Falling exploitation, constant post-circulation hours profitability

Period	e	C $	C H	C O	V $	V H	V O	S $ PC	S H	S O	C′ (EP) H	C′ (EP) O
0											50.00	10.00
1	1.00	45.00	45.00	9.00	5.00	5.00	1.00	6.10	5.00	1.00	55.00	11.00
2	0.95	50.87	49.87	9.97	5.23	5.13	1.03	7.77	4.87	1.09	59.87	12.09
3	0.90	58.32	55.24	11.04	5.56	5.26	1.05	10.15	4.74	1.18	65.24	13.27
4	0.85	68.01	61.14	12.19	6.01	5.41	1.08	13.69	4.59	1.28	71.14	14.55
5	0.80	81.06	67.65	13.45	6.66	5.56	1.10	19.31	4.44	1.38	77.65	15.93

Period	*V (EP)*	*C/C + L hours (EP)*	*Hours profit rate (EP)*	*Output profit rate (EP)*	*Price (PC)*	*M′ (PC)*	*Money profit rate (PC)*	*Interest rate (%)*	*Loan lent (SP)*	*Loan due (PC)*	*M′ – loan – interest (PC)*	*Money profit % (PC – r)*
0	5.00				5.00	50.00						
1	5.00	0.82	10.00	10.00	5.10	56.10	12.20	4.0	50.00	52.00	4.10	8.20
2	4.95	0.83	8.86	9.90	5.28	63.87	13.86	5.6	52.00	54.91	8.96	8.66
3	4.92	0.85	7.83	9.78	5.58	74.02	15.89	7.6	54.91	59.07	14.95	9.38
4	4.89	0.86	6.90	9.64	6.03	87.71	18.49	10.1	59.07	65.02	22.69	10.45
5	4.87	0.87	6.07	9.49	6.72	107.02	22.01	13.4	65.02	73.76	33.26	12.05

Period	*Interest ($)*	*Rentier wealth ($)*	*TSW (PC) $*	*TSW (PC) H*	*MELT (PC)*	*V (PC)*	*TSW (PC) In O*	*TSW (PC) In M*	*Hours profit rate (PC)*	*Inflation (%)*
0		100.00			1.0000	5.00	50.00	100.00		0.0
1	2.00	102.00	158.10	155.00	1.0200	5.00	55.00	100.00	0.1000	2.0
2	2.91	104.91	168.79	159.87	1.0558	5.01	60.50	99.37	0.1000	3.6
3	4.16	109.07	183.09	164.61	1.1123	5.02	66.55	98.06	0.1000	5.6
4	5.95	115.02	202.73	169.20	1.1982	5.03	73.21	96.00	0.1000	8.1
5	8.74	123.76	230.78	173.65	1.3290	5.06	80.53	93.12	0.1000	11.4

and "complete collapse", action against inflation must be taken at some point before the situation goes "too far". So why are central bankers so set against "comparatively harmless" inflationary expansionary periods?

The TSS approach appears to immediately explain the situation. Table V clearly shows a situation of apparent surface stability, but such stability is indeed only surface deep. As exploitation falls pricing to preserve profitability in value terms transfers value from money into commodities, causing rentiers to already suffer in hours terms. It is not surprising that Kalecki's rentiers should be boom tired, to be more accurate they are already boom battered in value terms (no matter if the real interest rate is maintained). This is the real threat that even mild inflationary expansion creates, it is a threat to accumulated wealth i.e. to rentier interests.

Employing a TSS approach allows us to understand economic phenomena in greater depth, revealing how logical certain "irrationally" held prejudices really are! Central bankers clearly despise inflation more passionately than many mainstream economists, particularly post-Keynesian economists, can understand within the restrictions of their equilibrium approaches. As part of the post 1979 international ideological switch to the right rentier representatives have increasingly been granted guardianship of apparently democratic countries' macroeconomic policy. The new independent European Central Bank now eagerly worries about inflation and labour market inflexibility (see Potts, 2001). We should not be surprised if rentier representatives guard rentier interests, i.e. the value of past accumulated wealth. Truly this must be the real meaning of the ideology of price stability. We can now appreciate how the average inflationary twentieth century must have been a great disappointment to rentier interests as compared to the average deflationary ninetieth century. Given increased rentier/Central Bank control of advanced capitalist countries' monetary policy should we not expect an average deflationary twenty-first century? We can be sure that if inflation were to threaten the value of past accumulated wealth, its guardians, the independent central bankers, would fight to restore/enhance its value by increasing interest rates, plunging living labour and productive capitalists into crisis. Living labour is thus dominated by dead labour (past accumulated wealth).

My model fails to reflect all the features of the real world we live in. Fixed capital, stocks, foreign trade, international capital movements and exchange rates are all ignored, as is government. Prices and the rate of labour exploitation are arbitrarily exogenously chosen, while production and input requirements are also defined in an arbitrary fashion. I hope to address many of these factors through further research. It is my hope that my model, imperfectly assumed as it is, captures more of reality than any countless number of equally contrived equilibrium models which ignore money as a stock of real value.

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Appendix

Let us explore – find a condition to fulfil – equation (11). Noting $x_t = P_t/v_t^{PC}$, $M_t/x_{t-1} = (C_t^h + V_t^h)$ and $M't = P_tC'^O_t$ we can rewrite equation (11) as:

$$S_t^h = M_t'/(P_t/v_t^{PC}) - (C_t^h + V_t^h) = v_t^{PC}C'^O_t - C_t^h - V_t^h.$$

Given $v_t^{EP} = (C_t^h + V_t^h + S_t^h)/C'^O_t$:

$$v_t^{EP}C'^O_t = (C_t^h + V_t^h + S_t^h).$$

So if $v_t^{PC} = v_t^{EP}$, then equation (11) would be fulfilled.

If $v_t^{PC} \neq v_t^{EP}$:

$$(M_t'/x_t - M_t/x_{t-1}) = v_t^{PC}C'^O_t - C_t^h - V_t^h = (v_t^{PC} - v_t^{EP})C'^O_t + v_t^{EP}C'^O_t - C_t^h - V_t^h,$$

$$(M_t'/x_t - M_t/x_{t-1}) = (v_t^{PC} - v_t^{EP})C'^O_t + S_t^h.$$

How are r_t^{hPC} and r_t^{hEP} related? Note assuming maximum extended reproduction ensures:

$$M_t/x_{t-1} = C_t^h + V_t^h = v_{t-1}^{PC}C'^O_{t-1}.$$

We can rewrite equation (10) as:

$$r_t^{hPC} = [(v_t^{PC} - v_t^{EP})C'^O_t + S_t^h]/(C_t^h + V_t^h) = [(v_t^{PC} - v_t^{EP})C'^O_t/v_{t-1}^{PC}C'^O_{t-1}] + r_t^{hEP},$$

$$r_t^{hPC} = [(v_t^{PC} - v_t^{EP})/v_{t-1}^{PC}](C'^O_t/C'^O_{t-1}) + r_t^{hEP}.$$